

Vol. V



June 1970

BHARATIYA VIDYA BHAVAN

Sardar Patel College Of Engineering

ANDHERI BOMBAY 58

SARJANIKA



BHAVAN'S FAITH

The Bhavan stands for the reintegration of Indian culture.

In a world falling to pieces under the impact of an amoral technological avalanche, it tries to hold fast to the fundamental values for which our culture stands—RITA, SATYA, YAGNA and TAPAS:

FAITH in God WHO in-forms the Cosmic Order;

TRUTH which is accord between mind, word and deed;

DEDICATION which offers all movements of life as an offering to God;

SUBLIMATION which purifies the body and mind and transmutes instincts, passions and emotions into things of beauty.

This, regardless of forms and doctrines, is Dharma, the three-fold aspects of which are SATYAM, SHIVAM, SUN-DARAM—Truth, Love and Beauty.

For these values our forefathers lived and died. So did Sri Ramakrishna Paramahansa, Swami Dayananda, Swami Vivekananda, Gandhiji and Sri Aurobindo, among the moderns.

They are embedded in our national outlook.

We command the respect of the world because of them.

We can look forward to the future with confidence only because they have the vitality which gives the power to vindicate their validity even in this fear-and-avarice ridden age of ours.

We, the Bhavan's family, whether it is the smaller one or the larger one, must make every effort in restoring an awareness of these values in personal and collective life.

Raja Munshi



BHARATIYA VIDYA BHAVAN

Sardar Patel College Of Engineering

SARJANIKÀ



VOL. V



JUNE 1970

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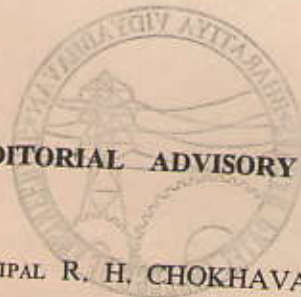
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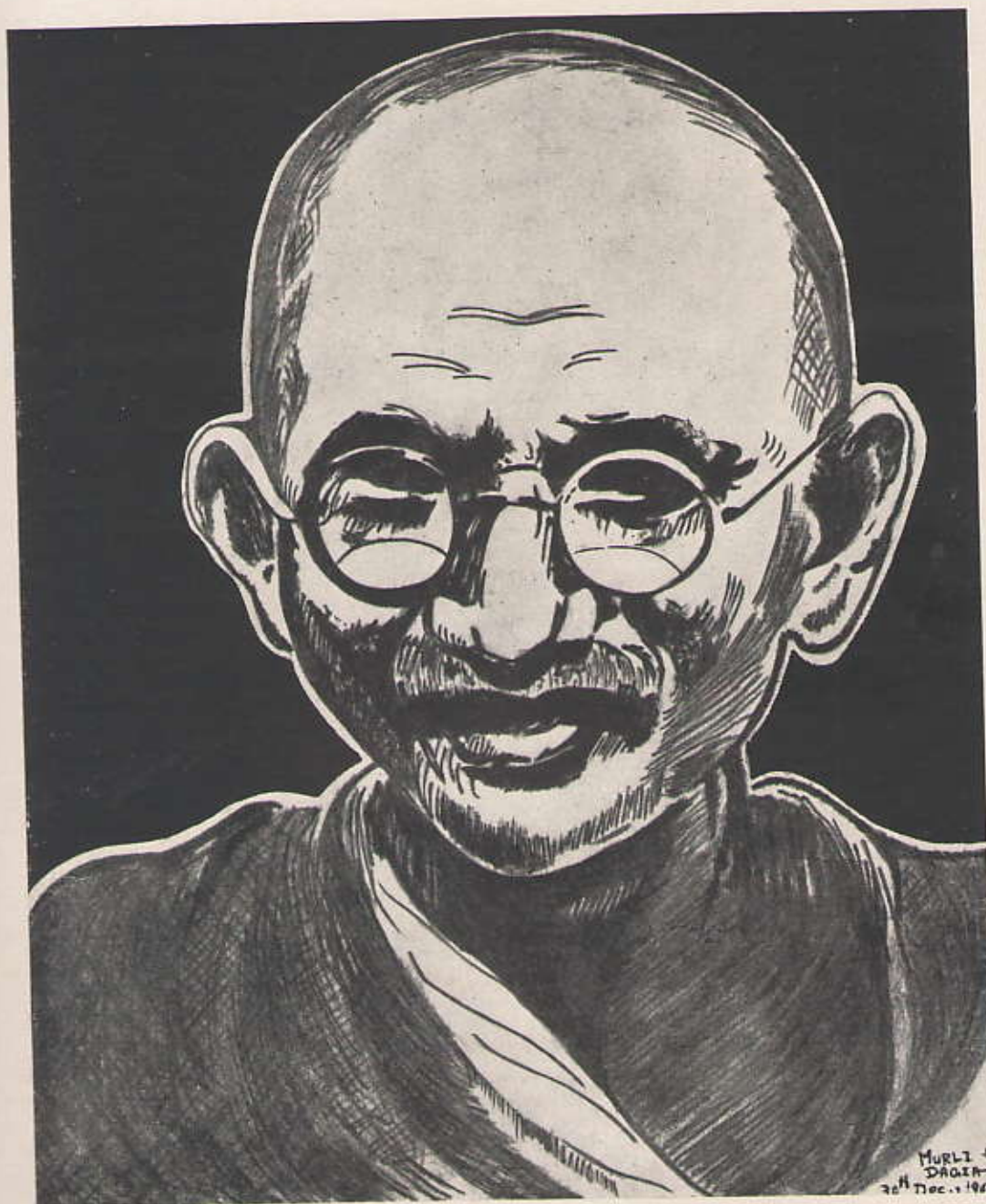
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CONTENTS



ENGLISH SECTION

	Page
Editorial	v
Principal's Report	1
Vice Chancellor's Address	7
The Beginning of the End— <i>Sri A. A. Merchant</i>	8
Gandhiji and the Technological World— <i>Sri Mathakia C. K.</i>	10
Junction FETs and Insulated Gate Devices— <i>Sri A. Vijayakumar</i>	12
Industrial Disputes Causes & Remedies— <i>Sri M. S. Quraishi</i>	16
Reflections on Some Structural Aspects of our Educational System — <i>Sri S. N. Desai</i>	20
Mathematics of Eternity— <i>Sri Pradeep D. Pradhan</i>	21
Birth-Day Greetings To Our First Principal	22
Electronic Computers— <i>Sri S. A. Gadag</i>	23
The Master Key to Self-Control— <i>Sri Romero L. D'Souza</i>	26
In Delirium— <i>Sri A. Vijayakumar</i>	28
Why "Speakers' Forum"— <i>Sri Romero L. D'Souza</i>	31
Au Revoir— <i>Sri T.C. Fernandes</i>	32
Adios Amigo— <i>Sri Romero L. D'Souza</i>	33
She— <i>Sri Vasant P. Dave</i>	34
A Visit to Koyna— <i>Sri Rao M. B.</i>	35
Soul: Physicist's View— <i>Sri V. R. Doiphode</i>	37
Wireless—Transmitter Receiver Set:— <i>Sri P. K. Mody</i>	38
Impala Herd— <i>Sri Vasant P. Dave</i>	39
Digital Voltmeter— <i>Sri A. Vijayakumar</i>	40
How To Reach Top Management Without Deserving— <i>Sri A. V. Deshmane</i>	44
He was my Companion— <i>Sri T. C. Fernandes</i>	48
Countdown— <i>Sri Kiran Walimbe</i>	49
Occult World— <i>Sri J. G. Panji</i>	53
Solar Energy— <i>Kum. L.E. Thailamani</i>	55
New Method in Slide Rule— <i>Sri S. B. Pandit</i>	57
Sunset in the Serengeti Plains— <i>Sri Vasant P. Dave</i>	63
The True Executive— <i>Sri D.K. Darooka</i>	64

College News Bulletin	65
(i) General Secretary's Report	
(ii) Bhavan's Engineering Economics and Management Asscn.	
(iii) Speaker's Forum	
(iv) S.P.C.E SOCCER	
(v) Staff Club	
Academic Awards, 1969-70	72
Athletic Events	73
List of Students who Have passed The Graduation In Engineering Examination	75
Staff Members of Sardar Patel College of Engineering Andheri, Bombay-58 ..	78

★

— मराठी विभाग —

मुंबई ते मसुरी-व्हाया सिमला	श्री. रमेश काळे	...	...	81
झूल	श्री. अशोक श्रीराम परचुरे	...	...	82
वृत्त्य	श्री. शशांक मराठे	...	...	82
शोप	श्री. अनिल र. बापट	...	...	83
आठवणी	श्री. प्रदीप द्वा. प्रधान	...	...	84
फुटनीक ! म्हणजे मी !	श्री. प्रदीप द्वा. प्रधान	...	...	85
स्वप्न	श्री. अशोक श्रीराम परचुरे	...	...	86
सूड	श्री. प्रकाश कामत	...	...	87
जीवननीका	श्री. धर्मधर गोपाळ मांजरेकर	...	...	89
अश्रु } संमोहन }	श्री. शशांक मराठे	...	...	92
सापळा	'चकोर'	...	...	92
असा मी; असा मी !	श्री. दिलीप एल. खेडेकर	...	...	92

★

— हिन्दी विभाग —

कुछ पक्तियाँ } एक गीत }	श्री. परमार जयन्तीलाल एम्.	...	...	93
फिर क्यों नजरें चार किये जाती हो ? यूं देखा न करो तुम मुझे प्यासी नजर से }	श्री. परमार जयन्तीलाल एम्.	...	...	94

★

— गुजराती विभाग —

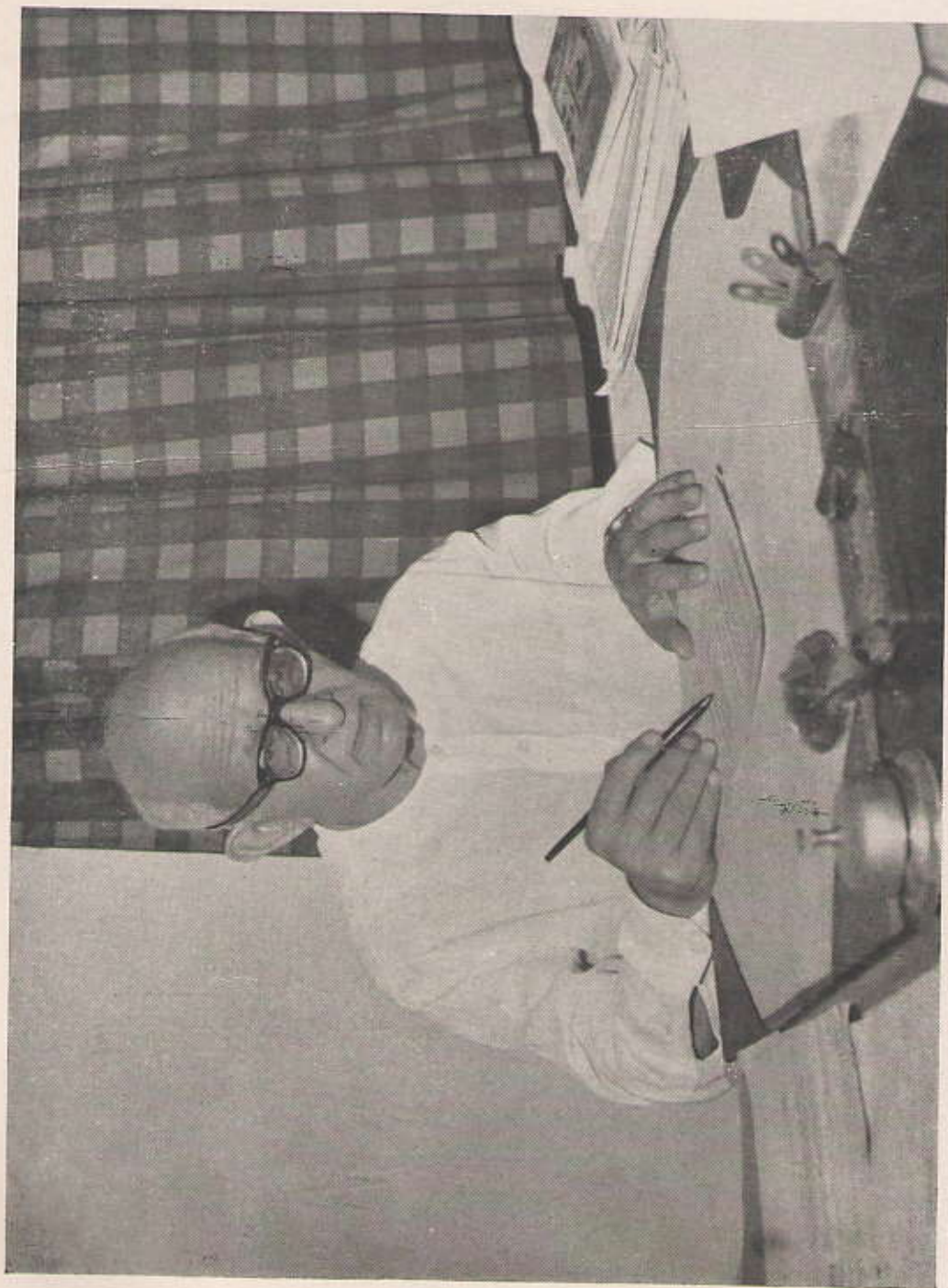
(?) દેવીને કાજ	શ્રી. સૂર્યકાન્ત કાનજી લાલા	...	...	95
એજી તમે ઓરો...આવો તે	...	...	...	95
કૃતિ	...	...	...	95
આ કબરથી	શ્રી. યોગી ત્રિવેદી	...	...	95
તમારી આંખોમાં	...	...	...	95
બંધનની રક્ષા	શ્રી. સોલંકી ડી. જી.	...	...	96
ક્યોરનર્ટઈન !	...	...	...	96

IRON MAN OF INDIA



SARDAR PATEL
(1875-1950)

KULAPATIJI



Dr. K. M. MUNSHI

Editorial

We have a great pleasure in presenting to our esteemed readers, the fifth volume of our college magazine, 'Sarjanika'. Our students and staff have shown a lot of enthusiasm to make this magazine what it is.

We thank all our patrons and the Associated Advertisers and Printers for their kind co-operation in printing and releasing this magazine on our behalf in a very short period with a fine get up.

Prayer To The Almighty

All our achievements so far had been due to the inspiring guidance of our Kulapati Dr. K.M. Munshi. Let us pray to God that our Kulapati be blessed with a long life to serve the country in general and the Bhavan in particular.

The Academic Year 1969-70

Our Principal Sri R.H. Chokhavatia inaugurated the academic year on June 23, 1969. Thereafter we have had varied activities in the college under his able stewardship.

The introduction of the four year degree course in June 1966 has been the third phase in the development of the college, since its inception in 1962. These develop-

ments were possible due to the magnificent grants of Rs. 28,68,000/- and Rs. 15,52,330/- by the Government of India and the Government of Maharashtra respectively. We are thankful to both the governments for their generous help. Further, the Government of India has offered an interest free loan to construct an additional storey for the college building, which will be completed shortly.

An Eventful Year

This year had been one of great excitement and anxiety. Man made his footprints on the moon and proved that anything can be achieved through science and technology.

Genuine Servant of God

The people of India had amidst them, Badshah Khan, fondly called as the Frontier Gandhi. Badshah Khan's mission of mercy to different parts of India is befitting the Gandhi Centenary Year.

May Their Soul Rest In Peace

We regret very much the passing away of Dr. P.V. Cherian, the Governor of Maharashtra, and a great patron and friend of the Bhavan. We also had the misfortune of losing Sri D. Sivaramakrishnan, the Re-

gistrar of the Bhavan, who devoted the best years of his short life in the service of the Bhavan. In their demise the Bhavan has suffered an irreparable loss.

Gymkhana Elections

Soon after the commencement of the academic year, elections were held to select representatives from among students to the various committees of the Gymkhana. Sri R.S. Uttamsingh was elected the student's General Secretary and Sri A.B. Gandhi, the Joint Secretary.

New Associations Formed

Due to the enthusiasm of Sri K. K. Chawla, the Bhavan's Engineering Economics and Management Association came into existence. Sri R.L. D'Souza, a student of the B.E. (Elec.) class, founded the Speakers' Forum. The activities of these associations added to the lively atmosphere of the college.

The Cine Club formed by Sri Haresh Barucha of S.E. class, entertained the students and staff with good films on Friday evenings, when it was most welcome, after a week's hard work in the laboratories and workshop.

Prof. V.R. Doiphode organised the staff club, a medium for the get-together of all the members of the staff.

Other Activities

Sri R.S. Contractor of B.E. (Civil) class, organised a musical evening (August Melody), Apollo-11 (Man on the Moon) film was screened in the college for the information of all the students and staff. The USIS were kind enough to make this film available to us. For the benefit of the students, a week long training programme on "How to Start a Small-scale Industry" was conducted

in the college with the co-operation of the Small Industries Service Institute. We are thankful to the Institute for their services and assistance.

Gandhi Centenary Year

In connection with the Gandhi Centenary Celebrations, we held elocution and essay competitions. We also conducted an Inter Bhavan Elocution Competition.

Annual Day Celebrations

Dr. Gajendragadkar, Vice-Chancellor of Bombay University, was our Chief Guest. Mrs. Gajendragadkar was kind enough to distribute the prizes. The function was a grand success due to the efforts of our Principal and the Gymkhana Committee.

Our Outstanding Students

Sri A.R. Nene of the B.E. (Civil) class, was adjudged the best all-rounder and was awarded the Kulapati's Gold Medal. Sri A.M. Kapnadak of the B.E. (Elec.) class, received Kulapati's Silver Medal for being the second best all-rounder.

Sri S.R. Desai was awarded the Dr. Theodore Cook Memorial Prize at the B.E. (Civil) Examination. Sri D.G. Namjoshi received the Jamshedji Dorabji Naegamwalla Prize at the same examination. Sri A.R. Nene secured the Rao Bahadur Rajadhyaksha Scholarship at the T.E. (Civil) Examination. The Anandrao Ganesh Pandit Scholarship and the Nusserwanji Jehangirji Wadia Scholarship were awarded to Sri B.K. Rupani and Sri R.E. Kadva respectively at the S.E. Examination. Our congratulations to these brilliant students.

Sri C.B. Dhamankar, student of the T.E. (Mech.) class, has been selected for per-

manent commission in the Engineering Branch of the Indian Navy under the University Entry Scheme. We wish him all the best.

Not Merely Studies

Our Marathi Drama secured the third place in the University of Bombay Annual Youth Festival. Sri P.D. Pradhan of the T.E. (Elec.) class was adjudged the second best actor. Sri V.S. Kogekar of B.E. (Mech.) class, won the second place in Marathi discussions at the same Youth Festival.

In the Inter-Collegiate Elocution Competition (extempore), organised by the Cultural Association of Andheri, Sri Sam Bhadha of S.E. (Elec.) class, won the second prize and the third prize went to Sri Deepak Chandvadkar of F.E. class. Sri V.P. Dhumale of B.E. (Elec.) class, was the recipient of the first prize at the A.D. Shroff Memorial Elocution Competition. In the debate organised by the English Debating Society of Podar College, Sri Girish Vaidya of F.E. class and Sri V.P. Dhumale won the Trophy. The first prize in the Inter Bhavan Elocution Competition was bagged by Sri Sam Bhadha. We congratulate the prize winners on their outstanding performances.

Educational Visits

Students of the B.E. class organised the following tours. B.E. (Mech.) class visited various industrial units in the north and east of the country. B.E. (Civil) class toured North India. B.E. (Elec.) class visited the Koyna Power Station. A special trip to the B.A.R.C. Trombay, was arranged by the college for the students of the B.E. class.

Our Staff

We are proud that our Principal Sri R.H. Chokhavatia, has been elected as the Dean of The Faculty of Technology. Our Vice-Principal Sri S.S. Dighe, has been elected as the member of the senate of the Bombay University from the Constituency of Teachers in Technology. Our hearty congratulations to them.

Dr. S.S. Maneck, Assistant Professor in Electrical Engineering, has developed a "Transistorized High Sensitivity Galvanometer". This can replace the spot galvanometers which are being imported. A paper on this has been published in the Bombay University Journal. Another paper by Dr. Maneck, titled "Two New R.C. Frequency Bridges" was read at the Golden Jubilee Technical Session of the Institute of Engineers.

Prof. S.R. Sanghani, Assistant Professor in Mechanical Engineering along with Prof. M.C. Shaw, has published the following valuable papers in the Annals of the International Institution for Production Engineering Research (C.I.R.P. Annalen).

- (i) Cutting characteristics with variable undeformed chip thickness.
- (ii) On the origin of cutting vibrations.

Prof. V.R. Doiphode's (Professor of Physics) contribution to the Vishwa Kosh, Wai (Government of Maharashtra publication), is "Ultra Violet Radiation".

We are happy to incorporate here these valuable contributions of our colleagues.

Congratulations!

Sri R. L. Narasimhan, lecturer in Metallurgy and Sri D.S. Joshi, lecturer in Structural Engineering were promoted to the post of Assistant Professor.

We Will Miss Them Very Much

Sri V.B. Singh, our Registrar was transferred to the central office of the Bhavan. A warm send off was given in his honour. Prof. V.S. Chandrasekar of Civil Engineering Department, could not be with us last year as he was on study leave. We eagerly await his joining us. Sri V.D. Patankar, lecturer in Civil Engineering, Sri S.K. Patel, associate lecturer in Mechanical Engineering and Sri Virendra Kumar, lecturer in Mathematics, left for U.S.A. for higher studies. We wish them bright success in their academic pursuits.

Sri K.P. Shanbagh, Sri K.N. Kudalkar, Sri N. Iyer and Sri M.K. Gore, all of Electrical Engineering Department, Sri M. M. Zurale of Physics Department and Mrs. M. A. Shah of the college office left us to improve their prospects.

We Welcome Them In Our Midst

Sri S.R. Sanghani, joined the Mechanical Engineering Department as assistant profes-

sor. Sri E.K. Warriar became our new registrar. Other new members of the staff are, Sri S.J. Thakkar, lecturer in Electrical Engineering, Sri D.D. Desai, lecturer in Civil Engineering, Mrs. S. Kanekar, lecturer in Mathematics, Sri S.P. Savla and Sri P.P. Dagli, associate lecturers in Civil Engineering. Sri A.R. Sebastian, Sri P.M. Jain and Sri A.M. Desai, associate lecturers in Electrical Engineering, Sri S.J. Kothari associate lecturer in Structural Engineering, Sri S.N. Desai, demonstrator in Physics, Miss Z.F. Contractor, Miss S. Indira, Miss R.S. Dighe in the office, Mr. V.M. Deshpande, technical assistant, Electrical Engineering Department, Miss A. Shah and Mr. Tulpule in the library.

Out Going Students

This year the first batch of students belonging to the four-year degree course will pass out from our college and this will be the sixth batch of Engineering graduates passing out from this college. We wish them all success and a prosperous future.



Principal Sri R. H. Chokhavatia



Gymkhana Committee 1969-1970



Principal Reading the Annual Report

ANNUAL DAY CELEBRATIONS



Mr. R. S. Uttamsingh
General Secretary, 1969-'70



Mr. A. B. Gandhi
Joint Secretary, 1969-'70

Principal's Report

EIGHTH ANNUAL COLLEGE DAY

Respected Mummy, Dear Vice-Chancellor
Dr. P.B. Gajendragadkar, Mrs. Shalini
Gajendragadkar, Members of the Staff,
Dear Students, Ladies and Gentlemen :

It has been customary for our College to have our Kulapatiji amidst us on such occasions. But during these days he is not in a physical condition to preside over such functions. I therefore apologise to you all for his absence at the very outset. However, I am reading out his message :

"I have received the invitation to the Eighth College Day celebrations of our Sardar Patel College of Engineering to be held on 17th December 1969.

On account of health, I am sorry I have to deny myself the pleasure of attending the celebrations. However, I wish it every success in your effort to integrate the country."

Sir, I have great pleasure—indeed I consider it a great honour to welcome you all and our respected Vice-Chancellor and Mrs. Shaliniben in particular most heartily on this auspicious occasion, on my own behalf, on behalf of the members of the Staff of our College and our students for participating in our Annual Day Celebrations this evening. I am extremely grateful to you Sir for accepting our invitation to be the Chief Guest of the day at such a short notice despite your very busy engagements.

It will not be out of place if I mention that Sir, it is since last three years I and my students have been trying to have you in our midst on such evenings and owing to your heavy bookings we were all very much disappointed. The joy that we felt

when you accepted our this invitation is beyond description. We are extremely happy that our beloved and most respected dynamic and popular Vice-Chancellor is today in our midst to advise us on our future responsibilities and actions.

The country today is passing through a great trial and test and the young men and women of our country and specially of Bombay City are looking to you Sir for your guidance. The coming critical period demands many things which our young generation can do and are supposed to do and it is in that event that your counsels will be of immense significance, and will beckon the path of our youth with the clear vision that you possess.

On such occasions it is customary to introduce the Chief Guest. But our beloved Vice-Chancellor needs no introduction. He is so very popular both among students and general public that it would be impudent on my part to say anything to introduce him. I would therefore venture to say a few words from his life which inspire our young men and women.

"A brilliant scholar of India from Maharashtra, a great master of Hindu law, Sanskrit Scholar, Chairman of Bank Award Commission 1955, Judge Bombay High Court from 1945-57, Judge of Supreme Court 1957-64 and then Chief Justice Supreme Court upto March 1966 when thereafter he took charge as our Vice-Chancellor. I am reminded of his most inspiring words when he took up the challenging task of revision of pay scales for University teachers and on certain other matters. He once exhorted us—the young men to shed fear and express our opinion in those August Bodies of the Uni-

versity—Senate and Academic Council, fearlessly. Indian intelligentsia are following up his most fascinating speeches on different platforms and arousing in them the passion for democratic ideals and democratic way of life. He is the living embodiment of spiritual, cultural and emotional integration of our country and is working to achieve this objective in closest co-operation with our Bharatiya Vidya Bhavan. He has addressed our students as the Chief Guest of Bharatiya Vidya Bhavan at the twentieth Convocation in December 1966 on this very Campus.

In 1965 at the invitation of the Chief Justice of the Supreme Court of U.S.A. he visited the States and delivered a series of lectures on "the Constitution of India and first fifteen years" at several leading Universities. He represented India and spoke on her behalf at the Magna Carta Celebrations in London on June 1965, led delegation of Indian Jurists to the Soviet Union in July 1965. He was the Chairman of Dearness Allowance Commission, Government of India 1966-67 and various other Commissions. On the academic side his biggest and most memorable achievement is reforms in the Examination System of our Engineering Faculty. But for him, our new system of part Examination System would never have materialised. He has given free scope for developing our academic side also. He is an ideal Vice-Chancellor with the interest and welfare of the students and the teaching community at his heart and possessing zeal and enthusiasm to help in reforming the educational system in the country. He is so energetic that even at this age, we always find him working in his chamber over and above the normal timings of the office hours. He is a source of great inspiration to the youth of our land.

I therefore consider it a great honour and privilege that we have you Sir and Mrs. Shaliniben in our midst today.

I shall now give a short report on the History of our College:

This College was started by Bharatiya Vidya Bhavan in June 1962 with the partial completion of the construction of the Western Wing of this building, and the formal inauguration ceremony was performed by our late beloved Prime Minister Pandit Jawaharlal Nehru on 19th August, 1962. The land for the College premises and its development into the beautiful Campus has been provided by Bharatiya Vidya Bhavan under the most able guidance of our Kulapati Dr. K.M. Munshi and our Vice-President Mrs. Munshi. The first phase of the construction was completed by October 1964 and the college was fully equipped for the three year's course by March 1966. This development has been achieved during the most critical period of our history—There were Chinese aggression in October '62 and war with Pakistan during 1965. The second phase of the development commenced from June 1965 and was completed by March 1967. The third phase of development from 3 years course to 4 years degree course which was introduced from June 1966 is still going on. It will take another year to complete the same since the funds required for the purpose have been received only during this year. So far Bhavan has contributed Rs. 15,50,000 for the building and equipment over and above Rs. 10,00,000/- for the cost of land and its development. The development has been possible because of magnificent grants from the Government of India and the Government of Maharashtra. The grants received so far are Rs. 28,68,000/- from the Government of India and Rs. 15,52,330/- from the Government of Maharashtra besides a loan of Rs. 7,90,000/- for the construction of students' hostel. The total cost of the project will be Rs. 94,40,000/- for all the three phases of development of which Rs. 79,40,000/- have been spent so far, and

the project is likely by December 1970.

The Institution intake of 120 in J University of Bomb was increased to 18 chemical and 60 E still continues today has been changed t and the first batch scheme will pass t this scheme over the needs of the introduced. These Postgraduate Conced in Civil co Circuit Theory a have been introd planning and Te ing and Metroh Refrigeration an Engineering. An made to keep th modern stage o logy has been what we human challenge and tion.

We have sci social and eco try do not ch the science an your country I despite this w trying our at young men in I on behalf we shall not turn our ye large of our the develop

The collie accommoda for the hall

the project is likely to be completed fully by December 1970.

The Institution was established with an intake of 120 in June 1962, affiliated to the University of Bombay. From June 1964 this was increased to 180 with 60 Civil, 60 Mechanical and 60 Electrical and this intake still continues today. The three years course has been changed to 4 years from June 1966 and the first batch of graduates under this scheme will pass out in June 1970. Under this scheme several new subjects which are the needs of the modern times have been introduced. These are Concrete Technology, Prestressed Concrete, Soil Mechanics introduced in Civil course, Electronics, Controls, Circuit Theory and Electromagnetic theory have been introduced under Electrical Engineering and Turbine, Industrial Engineering and Metrology, Air Conditioning and Refrigeration are introduced in Mechanical Engineering. Attempts have therefore been made to keep the training of students to the modern stage of development. But technology has been advancing much faster than what we human being can do to meet the challenge and reform the system of education.

We have several handicaps. The political, social and economic structures in the country do not change at the speed with which the science and technology advance. For a poor country like ours it is but natural. But despite this we on the educational field are trying our utmost to give the best to our young men in the existing circumstance and I on behalf of my staff assure you Sir, that we shall not leave any stone unturned to train our young engineers to meet the challenge of our times and give their best to the development of our country.

The college has a hostel building with an accommodation of 204 students and plans for the building of another hostel to accom-

modate additional 156 students, have already been approved. The construction of this new hostel will soon be taken up. At present the college is able to provide hostel accommodation to all those who ask for the same, in other words to those who can afford. The year that has passed by, has been very critical. The teaching staff had to work under strenuous economic conditions—the prices rising higher and higher and the salary scales the lowest in the whole country. The State Government which has revised the scale of pay under Badkas Commission for the technical and non-technical teaching staff of Government Engineering Colleges right from 1966 has still not communicated orders to make those scales applicable to non-Government Engineering Colleges. This differential treatment by the Government causes a lot of discontent in the staff. I appeal to you Sir to take up the cause of our teaching staff and use your good offices to see that these recommendations of Badkas Commission and other recommendations of the State Government applicable to Government Engineering Colleges are automatically made applicable to the non-Government Engineering Colleges in the State.

The State Government on the initiative of the Central Government has from this academic year lowered the tuition fees from Rs. 500/- per year to Rs. 360/- thus reducing the burden of technical education on the middle class families.

I would like to give a brief review of the facilities given to the students of this college.

We have spent Rs. 2,02,952/- on college library and have 7038 volumes of books. Besides a Student's Library has been established with 1115 volumes of books, mostly text books. We created this from June 1963 and every year we are spending Rs. 6,000/- added to the library facilities. Besides this

the college has contributed Rs. 4,000/- for Book Banks as our share of the contribution to Students' Aid Society, Bangalore, who in their turn contributed twice our share; thus a fund of Rs. 12,000/- was created from which 656 volumes of text books on different subjects have been purchased. The students are issued upto 3 volumes at a time.

The College has been giving scholarships, merit-cum-means scholarships, freestudentships, loan scholarships and other financial assistance to the needy students. Funds for this purpose are collected from State Government, Government of India and students. Assistance is also received from University Grants Commission and our University from the Vice-Chancellor's funds. Total amount thus made available is as under:

Rs. 15,750/- for 21 merit-cum-means scholarships received from Ministry of Education & Youth service, Government of India.

Rs. 5,760/- for 12 Open merit scholarships received from the State Government.

Rs. 9,945/- for E.B.C. freestudentship to 39 students, received from the State Government.

Rs. 8,214/- for 14 students, freeship for sons & daughters of Primary Teachers and

freedom fighters, from State Government.

Rs. 19,400/- National loan scholarship for 20 students received from Government of India.

Rs. 1,350/- for 8 students National Scholarship from Government of India.

Rs. 7,400/- for financial assistance to 6 backward class, scheduled caste and scheduled tribes students received from Government of India.

Rs. 1,500/- from University Grants Commission to be distributed to the needy students for either/and tuition fees, examination fees with Rs. 1,600/- contributed by students.

A nominal contribution is Re. 1.00 per term towards Poor Boys Fund.

Rs. 1,000/- from University of Bombay Rs. 50/- each to 20 needy students.

Such aids are given every year according to the rules framed by the Governments from time to time. The total number of beneficiaries from all these funds is 174 out of a total of 794 students on roll today.

The results of University Examination during 1969 April are as under:—

	1969					1967		1968
	Appeared	PASSED I	II	P	%	ATKT	%	%
F. E. ...	181	15	112	5	72.92	11	67.03	41.90
S. E. (M) ..	67	37	16	-	79	9	64.1	93.70
" (E) ..	103	27	53	-	77.67	13	21.84	91.18
" (C) ..	38	1	24	1	68.42	5	24.6	51.92
T.E.(M) ..	76	17	47	-	84.21	3	-	-
" (E) ..	74	14	51	-	87.8	6	This batch appeared for the first time under the 4 years Course.	
" (C) ..	41	2	23	1	63.41	-		
B.E. (M) ..	55	4	24	4	58.18	-	57	64.06
" (E) ..	52	1	19	-	38.46	-	29	71.01
" (C) ..	52	6	21	6	63.46	-	43.83	55.74

Our College won the following distinctions:

University Merit Awards: Prizes:

1. Shri S.R. Desai was awarded Dr. Theodore Cook Memorial Prize in B.E. (Civil) for securing the Second highest marks in the University.
2. Shri D.G. Namjoshi was awarded "Jamshedji Dorabji Naegamwalla Prize" for securing the highest number of marks in Drawing & Project in B.E. (Civil) examination in April 1969.

Scholarships:

1. Shri A.R. Nene was awarded "Rao Bahadur Rajadhyaksha Scholarship" for securing First Class and highest number of Marks in T.E. (Civil) examination in April 1969.
2. Shri R.E. Kadva was awarded "The Nusserwanji Jehangirji Wadia Scholarship" for securing the highest number of marks in S.E. (Civil) examination in April 1969 from among the Parsi Students.

It has been customary to announce the names of the best around students (First and Second) who are awarded Kulapati's Gold Medal at Bhavan's Convocation. Unfortunately as the results of October examinations have not yet been known the decision is deferred for some time more. It is expected that we would be able to reach the decision before the close of the year 1969.

The following students have been awarded Kulapati's Gold and Silver Medals for distinction and merits at this College:

1. Gold Medal for securing the First rank at the B.E. (Mech) examination and passing with First class distinction in October 1968 examination—**Shri D. V. Tendulkar**
2. Gold Medal for securing the First rank at the B.E. (Elec.) examination

and passing in First Class at April 1969 examination.—**Shri Virendrakumar Jain.**

3. Gold Medal for securing the First rank in B.E. (Civil) examination and passing in First Class. Secured the Second Rank at the University working Dr. Theodore Cook Memorial prize in April 1969.—**Shri S.R. Desai.**
4. Silver Medal for securing Second rank and passing in First class at B.E. (Mech.) examination. Since there are two students with the same marks two medals are awarded.:
Shri K.M. Jhaveri
Shri R.N. Jethani
5. Silver Medal for second rank at B.E. (Elect.) examination and passing in Second Class from our College—**Shri P.R. Bhagawati.**
6. Silver Medal for Second rank at B.E. (Civil) examination and passing in first class from our college.—**Shri S.J. Kothari.**

Major Dubhashi Prize for the highest marks in Design and Drawing at the T.E. (Civil) examination.—**Shri A.R. Nene.** He secured 152/200 marks in that paper.

Prithuvish Killawalla Prizes are awarded to the following students:

1. Shri A.B. Kulkarni
For being first student in S.E. (E) class having passed F.E. examination in First Class in April 1969.—
Rs. 120/-.
2. Shri B.K. Rupani
For having secured highest marks in S.E. (E) examination in April 1969 and joined T.E. (E) of this college.—
Rs. 120/-.
3. Shri V.V. Jain
For having secured first rank with first class in B.E. (E) examination from this college, in April 1969.—
Rs. 150/-.

My heartiest congratulation to all of them for achieving these honours.

The year that passed was the Gandhi Centenary year. Shri S.B. Joshi our Chief Guest last year exhorted our students on the fundamental teachings of Bapuji laying special emphasis on truth, discipline in life, kindness to fellow beings and nobility and Courage to Correct Oneself. Our Students followed up by creating two new Associations. Business Economics and Management Association "BEEMA" and Speaker's Forum for training in leadership. Both these associations kept up the humming atmosphere with a large number of students participating, in discussions. The trustees of the A.D. Shroff Memorial Elocution competition organised an Elocution Competition on 1st September 1969. 14 students participated. Shri V.P. Dhumale won the First prize Rs. 60/- (Rs. 40/- plus a book of Rs. 20/-) and Shri S.P. Badha won the Second prize of Rs. 40/- (Rs. 20/- plus a book of Rs. 20/-). The College organised an elocution competition on different aspects of Gandhiji's life, the subjects offered were: (1) Gandhi and Religion and (2) Gandhi and Politics (3) Gandhi on the Contents of the Government and (4) Gandhiji on Education.

Ten students participated in the competition. Shri. S. P. Badha won the first prize of Rs. 50/-, Shri D.M. Chandavarkar won the Second prize of Rs. 30/- the third prize of Rs. 15/- was divided between Shri V.P. Dhumale and Shri G.G. Vaidya. The Lions Club of Andheri organised an inter-collegiate Elocution Competition with four participants from each college. Shri V.P. Dhumale won the consolation prize.

The college also organised an essay competition. The topics offered are:

1. Impact of Gandhiji on Modern Thoughts.

2. Gandhiji and Technological World.

Four essays were received. The essay submitted by Shri Mathakia C.K. a student of B.E. (Mech) class has been judged the best, winning a prize of Rs. 50/-. This essay will be published in our "SARJANIKA" College Magazine. The Second prize of Rs. 25/- was won by Shri V.P. Dhumale of B.E. (Ele) class. We have also decided to hold an Inter Bhavan Elocution Competition in January 1970, before the end of the Gandhi Centenary Year.

Our students have also been taking keen interest in various sports activities participating in games such as inter-collegiate competition in Badminton, Table-Tennis, Cricket, Kho-kho, Music and Fine Arts.

The achievements of the students have been brought about by the closest co-operation between the members of the staff and students in all their activities. I shall therefore be failing in my duty if I fail to acknowledge their sincerity and devotion to duty, on this occasion. They have been helping the college in all its manifold activities. I am also grateful to our Kulapatiji and Mummy for their valuable guidance and inspiration. Our Kulapatiji will be entering Eighty third year of his life at the end of this year on 30th December, 1969. I pray to Almighty that, He may bestow on him and Mummy long life and keep them healthy to serve the country and the Bhavan, in particular.

I also acknowledge the assistance given to me by our Principal S.B. Junnarkar the first Principal of this College. He entered his 75th birthday during October of this year. I join with his other students in praying for his long life. May God keep him and Mrs. Gulabben Junnarkar in the best of health.

In conclusion I once again welcome you Sir, and Mrs. Shaliniben and thank you for participating in our celebrations.

I thank you all once again.

EXCERPT FROM THE ADDRESS BY THE VICE CHANCELLOR TO THE STUDENTS ON THE EIGHTH ANNUAL COLLEGE DAY

MY first point to you in relation to teaching and examination part is there should be a continuous dialogue between you students, teachers and principal. No educational system particularly in Technological bend can hope to remain Modern or Effective unless there is a continuous dialogue between the teachers and the taught, as to the contents of the curriculum, as to the methodology of Technology and as to the mechanism of Engineering system, I am glad we have made a beginning. One always learns by experience. We should not be afraid of change. You are at perfect liberty to come to me and tell me what changes you want to make. Engineering Education cannot remain outdated. You must have heard of unemployment of Engineers. It is a passing phase.

The Bombay University does not wish to remain static in the matter of experimentation of higher education. Experimentation is the very source of modern education. Engineering branch is always alive to the challenge of times. You are engineers. I know nothing of Engineering, but I wish to speak to you not of Electrical, Mechanical or Civil Engineers but of Social Engineers. Young generation to-day has to recognise that the students' study in Universities in India, whether it is Medicine, Humanities or Science, they have a part to play in the matter of Social Engineering. Social Engineering has a task to perform. You must be social engineers when you join the stream of national life. You have got to assist the principles of creating new social orders. Indian democracy wants to evolve a new social order. Who will evolve it? Do not trust the Politicians to do that job. I am afraid some of you are likely to be politicians. This task cannot be achieved by political power. This task can be achieved if every one of you, without mental reservation,

without allowing cynicism to overpower the mind, makes a determination to put his or her shoulder to the national chariot which is rolling on. When I speak of Social Engineering, I am referring to the task of creating a social value on which the new social order can be. First and foremost please try to inculcate in your mind that you and I, and all of us are Indians first. Do not let ourselves divide into Gujaratis, Marathis or Bengalis.

India to-day tends to become a mere geographical entity. India is not a national human entity.

We are Indians first Indians second and Indians last. Social equality? What law can achieve? Law can achieve many things. Law cannot be fully effective without the co-operation of the public.

Social equality and caste system can never go together. Caste is an institution which refuses to be cast away. You have to be either with the social order or against it.

Third point and that again is a vital one.

Means are important to the end. Hindu philosophy tells you that there are many ways that lead to God and so why divide into different communities and fight ourselves. Narrow circle leads to a narrower circle and narrower circle leads to a still narrower circle. Democracy and violence cannot just go together.

Your minds should be pure, legitimate.

Violence never solves any problem. On the contrary it creates more problems. Therefore, if you are going to play your part of Social Engineers, remember you have to be Indian first.

Advocate and preach economic justice. Violence is not the way you should go on.

THE BEGINNING OF THE END

By A. A. MERCHANT

B.E. (Elec.) 1969-70

SANDWICHED between a mountain of regrets and a hillock of fresh hopes I sat sipping my Coke. A year packed with climaxes and anti-climaxes was about to be laid to rest. The ashes of my still-born desires lay scattered all around me. And yet, the incredible was happening. I could see the fledgling of hope flapping its wings with the buoyancy of a new-born. Like the Phoenix it emerged from the ashes.

Emerging from the slough of the third year into the sunshine of the fourth, I cannot help recalling the lines that Lord Alfred Tennyson wrote many years ago;

*"Ring out the old, ring in the new,
Ring happy bells across the snow;
The year is going, let him go;
Ring out the false, ring in the true."*

However much one may try it is difficult to get rid of the 'hang-over' of the dying year. Time rolls on with an inexorable forward look. But the mortals have to look back over their shoulders, find out where they had strayed on their path and try to choose new ones. That's why new resolutions are made every year and readily discarded the moment they are made.

"My last year at college, what a relief!" This, I am sure, must have been the thought in the mind of every student during the first week of college in the B.E. class. The joy of having reached the end of one's period of probation before going out into the open world is rather a mixed one. We enter the final year with a horde of new resolves, new hopes, fresh enthusiasm and new dreams.

Looking back over the past three years stirs up nostalgic memories of the first day when we stepped into the engineering domain. At that time, our goal was way ahead and we were always cherishing the day when we would finally be over with studies, over with four years of hard work, perseverance and determination, over with student life into maturity. We were, then, sincere, honest and punctual at our work, new to our surroundings and everyone around us. We were, so as to say, in alien land. Professors were to us like something out of this world—someone whom we looked upon with deep awe, respect and admiration. Each day was like the rest—the same old dull and dreary routine day in and day out, shunting between classrooms and laboratories and workshop, till each day found us linked together in a new bond of friendship, professors breaking into familiar faces and shedding their stern exterior and college life becoming more and more interesting and varied.

Days turned into a year, two, three and now—it appears as if we have just joined. Time is a thief. It walks on padded feet. A new year is born and even before you have savoured the multitude of new possibilities that open before you, even before you have licked your wounds and made a pile of new resolves, even before you have shed all your salty tears on shattered hopes and fractured dreams, even before you have stretched the new canvas and conceived the new contours—the new year has already lost its shine. You find yourself trailing far behind. The new year becomes a mere blur in the distance. A dot in the murky pool of your memory. Bravely, I fought the invading hordes of grey thoughts. This was no time for pulling a long face. From all indications, this was going to be a fateful year, a year of keeping forgotten promises, a year of less platitudes and greater implementation.

Each new year saw us welcoming a fresh batch of students joining the college. Each



Floral Offerings to our Chief Guest Dr. Gajendragadkar



Chief Guest delivering his address



Mrs. Munshi Speaks to Our Students



Vote of Thanks

new year saw us growing in stature and maturity and audacity—expand our field of interest, enlarge our circle of friends, break the barrier of aloofness with professors to a close contact with them and, above all, delve deeper and deeper into the fascinating world of science and technology.

In the final year, we are looked upon—to some extent—with respect. The fresh students and other juniors look up at us with envy mingled with admiration, while the professors treat us as young men who have by now developed a sense of responsibility. We, who had headed for a goal are now looked upon as a goal to be achieved by others.

We, the top class, are looked up to for example in discipline, standard of behaviour, self-reliance and the yardstick of etiquettes for the benefit of the 'juniors'. We are looked upon as the pride and joy of Sardar Patel, belonging to a group of young gentlemen that step out annually beyond the portals of the college to face the grim battles and realities of life, and to join the number of good old SPCE boys. It is with this peculiar air of superiority that can be felt from the cricket field to the classroom, that the top boys perform their respective duties.

However, all these joys are short-lived; for, as the days wear on, a sense of wistful sadness creeps in; sadness not due to an external cause, but to the realization that at the end of the year we will have thrown off the mantle of studenthood and with it all the pleasures and joys attached thereto.

It is only now that one begins to feel the burden of a hundred and one responsibilities thrust all at once upon one's shoulders. That is why, at this particular stage, one prefers to be one's old self—laughing, joking, playing and studying only occasionally.

Unfortunately, the burden of sadness never lessens—it weighs us down as the

days flit by and, as if, to build up to a climax we have to face an examination at the end of each term, which extorts more of what we don't know rather than the other way about, which is the actual purpose of an examination. This pinpoints to another vagary of our exams, of which we now have a fairly good experience—we do not get what we deserve when we are sure of it but get what we don't deserve when least expecting it. The years at college have also taught us to study only as an average student would and leave the rest to the University.

The examination marks the termination of days of toil and hard labour—if you wish to say so—and is the foundation of our future careers or...doom!

Leaving the intellectual aspect aside once and for all, and dwelling on sports, it is noticeable that even there we are busy making memories for us to treasure in later life. From the football field to the badminton court, we are looked upon as model sportsmen by the 'youngsters' to copy in style and fineness—ahem! ahem! (although we land nowhere when it comes to inter-collegiate tournaments where we are always the underdogs, at the expense of which, other teams really enjoy winning and boosting their morale and average!).

As the days rush by and our ultimate destination seems near, a train of happy memories flies past the mind's eye. We will be leaving behind this college and its beautiful campus to which we had become so attached, leaving behind the familiar classrooms and professors (some of whom we regret leaving and some we are glad to!), leaving behind friends, some close, some loquacious, some timid, some sweet and charming, some haughty and some mean. It will be with great sorrow when we put our heads together to solve the last paper on the last day of the examination that we will say, "Goodbye, Sardar Patel."

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GANDHIJI AND THE TECHNOLOGICAL WORLD

By MATHAKIA C. K. B.E. (Mech.) Class

Prize Winning Article for Gandhi Centenary Essay Competition

WITH the man landing on the moon, this world of Science and Technology has made a long cherished dream of mankind come true. The outlook of our world is so rapidly changing that if a person awakens after sleeping for half a century, he would certainly hesitate to believe that it is the same land he used to walk on! We are racing towards such technological achievements which at one time, nobody could even think of. But, are we on the right path? Does it lead towards the welfare and uplift of the people in general? Well, while the task of answering this question is a little bit difficult, it will be worthwhile to recall the ideas of our great Father of the Nation, Mahatma Gandhiji.

With the aim of studying and practising law, Gandhiji went to England and turned himself into a popular worker of the Asians in Africa who were suffering under the British regime. The world knows of his tremendous achievements there, through 'non-violence' and subsequently in India which fetched Independence for us.

The thoughts advocated by Gandhiji on introducing mechanised techniques lead one to conclude that he was generally in opposition to the introduction of such systems. But, a bit deep reader will be able to reveal that it was not always so. In fact, Gandhiji was happy to utilize the discoveries of human brains to make the work easier provided it in no direct or indirect way, deprives one of his bread.

The Britishers came to India and our country began to be 'Westernised'. We dreamt of shaping the future of our country by acknowledging their culture and using

their advanced knowledge in the field of science and technology. Gandhiji did not like this blind following. He said, "this may be good for small countries like England and Italy or a big but thinly populated country like U.S.A. but for a thickly populated large country like India, where most of the people live in villages, it will not serve any useful purpose. A fur coat is a necessity for a man at the Pole but how far is it going to be useful for a man on the Equator?"

Gandhiji always accepted the importance of the scientific techniques and machinery but he strongly opposed such machinery replacing the labour force built up of people who earn their living out of it. 'It is an act of injustice and crime to introduce mechanised processes unless some alternative job which can be done at home is found out,' he believed. It really seems foolish to install inanimate machines against the crores of live machines—the people of the seven lakh villages of India.

Use of machines should help a man in his effort, it should make his work easier. Today, the trend is using the machines to make a few rich, richer depriving several others of their bread. At the famous Phoenix Ashram in Africa, Gandhiji did use a printing machine for 'Indian Opinion'. The 'Phoenix' is a supreme example of Gandhiji's well thought planning. All the basic requirements to live a simple life were produced there along with the publication of 'Indian Opinion', and that too most regularly! This was a remarkable demonstration to prove that men need not depend on others to survive. He boldly told, 'The growing population looks to pose a great problem but

it is not so serious in my opinion. If all the lands are properly cultivated, India can provide food for as much as double its present population.' How great this man was! But alas! The people did not want simple life. The modern technological world has been unable to find so simple a solution to meet the basic requirements of life of major portion of the mankind. We have started believing it inevitable to depend on other countries. Ruskin's 'Unto the Last' made an appeal to Gandhiji's heart and this resulted in the birth of 'Phoenix.' Two whites, Mr. Pollock and Mr. West became Gandhiji's followers with its establishment and they were among the numerous Europeans whose living, whose thinking were remarkably influenced by Gandhiji's ideals till they died.

Gandhiji was criticised by many people for ideas of preserving the village industries. The critics argued, 'by using the mysterious energies of the world, an American can afford to keep thirty-three servants today.' But Gandhiji remained firm in his belief that if India adopted that way, the slavery of Indian people would increase by thirty-three times. When we have more people than what are needed it will be harmful to use machines. A cloth produced in a mill is, no doubt, cheaper but it has caused the unemployment of thousands of labourers and is, thus, costlier than even the costliest Khadi woven in villages.

'Strike' has become a common feature of our life. Gandhiji predicted the fear of the political 'leaders' taking undue advantage of the dissatisfaction of the striking workers for the benefit of their party or for their own sake. Today, we notice this dirt in the politics of our country as well as other countries of the world. Gandhiji said, "Strike is a marvellous means to gain justice; but, at the same time there are chances of its being used in an improper way which is extremely harmful for the society." He was pained when the strikers resorted to uncivilised ways to force their rights. 'Gene-

rally a bullet ends the life of a gun-man', he said. Gandhiji outlined the following conditions for a successful strike.

- 1) There should be appropriate reason for the strike. An unjustified strike will not have the sympathy of other people.
- 2) There should be unity among the strikers.
- 3) There should be no ill treatment of the non-strikers.
- 4) They should find out some temporary earning during the period of strike.

Gandhiji found no reason to believe that the western people are fast progressing. 'Mere possession of wealth does not ensure morality in life,' he said. In the lecture delivered at the 'Inter Asian Relations Conference,' the greatest preacher of non-violence said, "I want you to understand the Asian message of peace and non-violence. That cannot be achieved by making atom bombs. In this era of democracy, in this world of enlightened people, let the message of love, truth and non-violence reach the ears of every creature. The West longs for true wisdom, true knowledge. Atom bombs have let it down; it is a means of destruction for the rest of the world as well as themselves. You have the opportunity to save the world and it is your humble duty to take it." The truth of these words is seen in the modern technologically advanced world which is now tired of wars and weapons. America has already agreed to withdraw the troops from Viet Nam and stop the war.

The Gandhian way of thinking has attracted the interests of many people from different parts of this technological world and they have appreciated what he said and showed. It is really a matter of utmost sorrow and grief that the people of his own country have forgotten what Bapu desired to be done. Instead of paying attention to the village industries and making them alive, we blindly offered our candidature to the blind race and took steps to westernise ourselves. Isn't it a non-pardonable act of injustice on our part to the 'Mahatma'?

Junction FETs and Insulated Gate Devices

Contributed by: A. VIJAYAKUMAR, B.E. (Elec.)

Asso. lecturer in Elec. Engg.

TRANSISTORS are replacing good old tube devices at a faster rate, in the field of Electronics. Low input impedance being an inherent disadvantage in the conventional bipolar transistors, the tube devices survive in the charming electronics field. But, now things are changing at an unexpected pace. A variety of Field Effect devices such as Field Effect transistors, insulated gate devices (also termed as MOS-metal oxide semiconductor) which have very high input impedance are now commercially available. Odd though it may seem FET and IG devices were discovered in 1948 along with the bipolar transistors. But, difficulties in manufacturing a uniform product, delayed the commercial availability for more than a decade.

Field Effect Transistor is a unipolar device. The designation "unipolar" indicates that the device incorporates only one type of current carriers-electrons or holes- but not both. Carriers will be holes or electrons depending on whether the parent material is P-type or N-type semiconductor wafer, respectively.

Strangely enough the basis of operation of FET is intuitively easy to understand. An N-type (or P-type) filament of silicon material of proper geometrical dimensions is selected and junction is formed on to it by any standard available process. This junction associated with the diode forms a "channel" through which carriers can pass. Unlike in bipolar transistors in FET the current carriers move parallel to the junction.

FET configurations are given in Fig.1. The gate junction is normally reverse biased. The number of carriers that can pass across the transverse electric field created by the

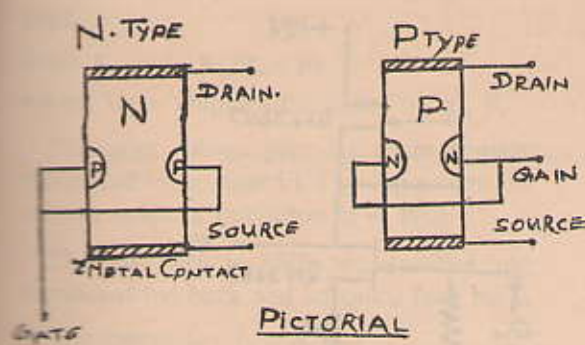
junction is determined by the gate voltage. The driving source "sees" the reverse biased gate junction and hence the high input impedance. Drain current is controlled by the gate voltage. The gate voltage forms a sort of space charge, the channel width of which depends on the gate voltage. Larger the width, larger the drain current. The functional characteristics of FET (N-type) are similar to pentode self characteristics. The voltage V for which there is no increase in drain current is termed as "pinch off" voltage, analogous to the saturation current in a pentode. This Pinch-off voltage varies from 0.6V to about 4 Volts in various types of FETs. At a specific voltage, breakdown occurs in the silicon filament and the current becomes independent of gate bias. Obviously FET is not operated in this region.(Fig.2)

FET amplifiers can be fabricated very easily. A typical amplifier is given in Fig 3. Source resistor facilitates the required gate bias. Zero bias operation can be obtained by shorting source lead. Source resistor also gives d.c. stabilization of the circuit. A typical FET 2N 3086 with zero bias is with a drain load of 10K (Fig.3) and gives a gain of 7. An un-bypassed source resistor leads to negative feed back. Circuit analysis of FET is similar to that of tube amplifiers. Norton's equivalent of FET amplifier is given in Fig. 4. Here

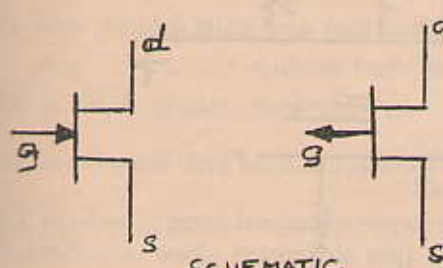
$$g_m = \frac{i_s}{e_g} \text{ (with } V_{ds} \text{ const)}$$

$$\text{Therefore } I_o = g_m \left(\frac{R_o R_L}{R_o + R_L} \right) E_g$$

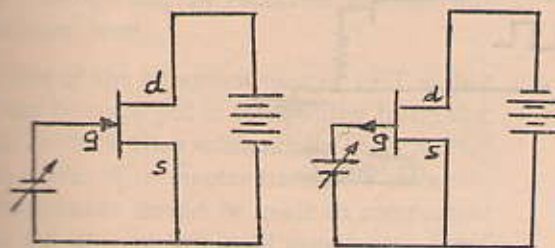
where R_o is the internal impedance of FET
Usually $R_o = 5 R_L$



PICTORIAL



SCHEMATIC



CIRCUIT BIASING

FIG-1

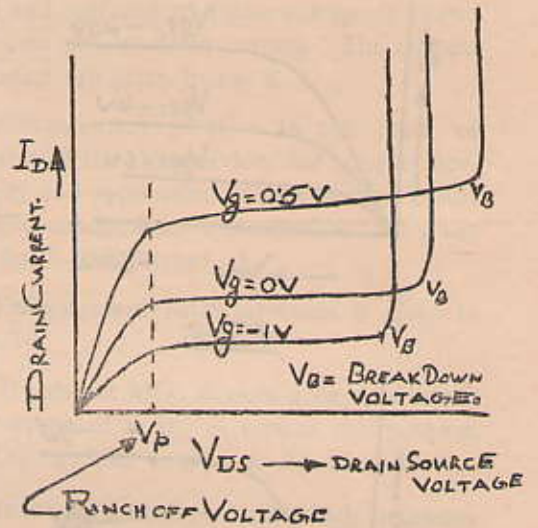
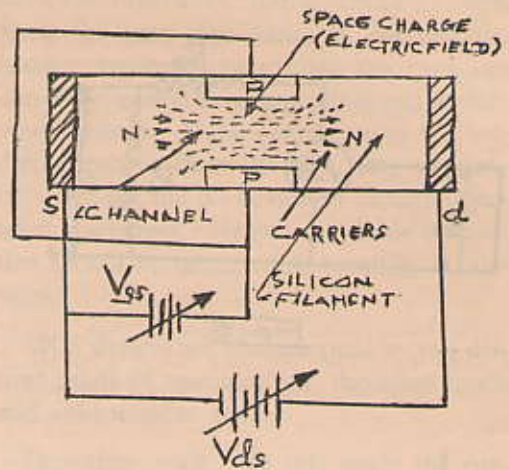


FIG-2

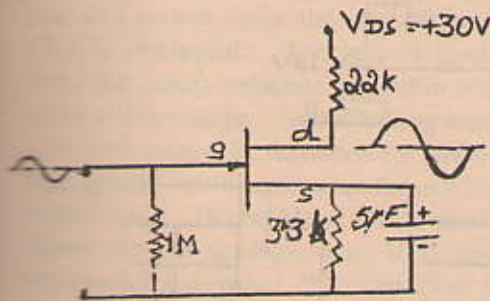


FIG-3

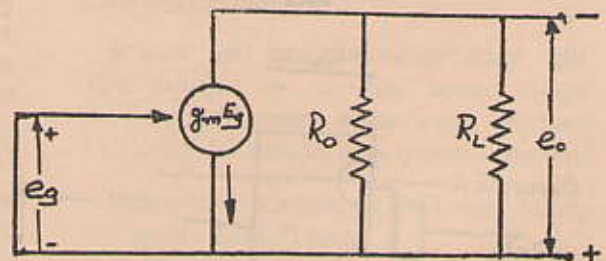


FIG-4

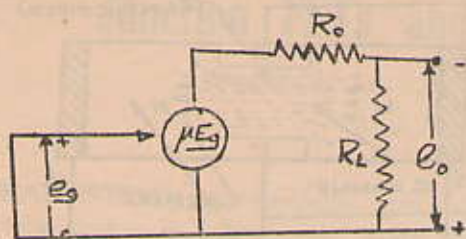


FIG-5

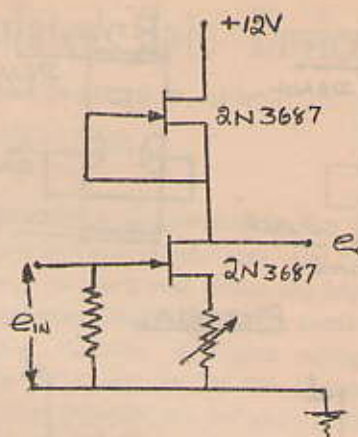


FIG-6

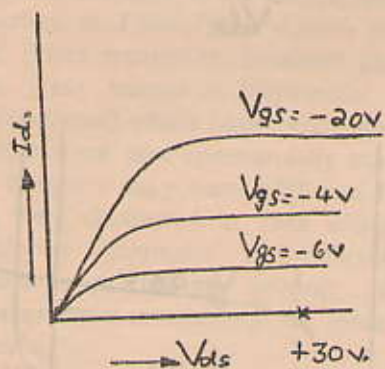


FIG-8

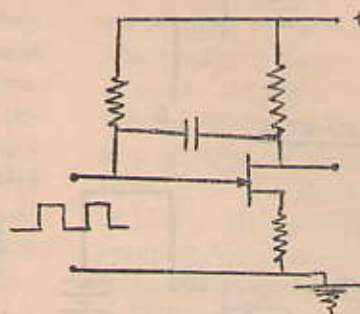


FIG-7

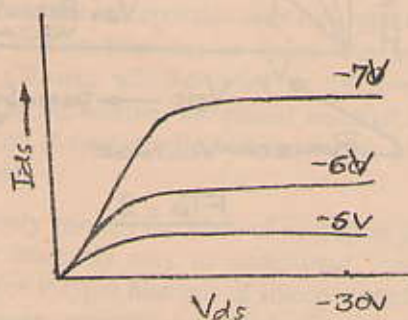


FIG-9

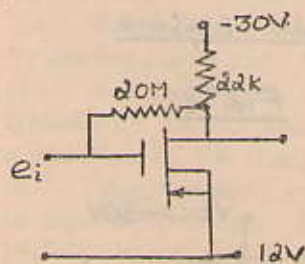
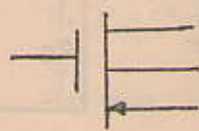
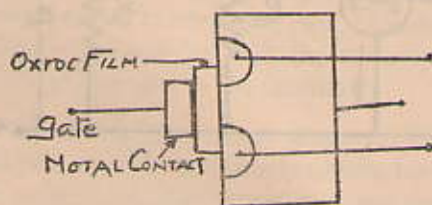
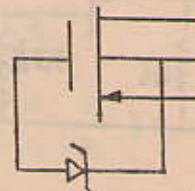


FIG-11



P TYPE MOS

FIG-10



MOS WITH BUILT IN ZENER

Thevenin's equivalent of FET is given in Fig 5.

Here $A = U R_L / R_o + R_L$

where $U = \text{amplification factor} = g_m R_o$

For large voltage gain the drain resistor is replaced by another FET giving a constant current mode of operation as in fig. 6.

The feed back in FETs are classified into significant feed back and adequate feed back.

In the expression $A' = A / (1 - BA)$

where $A' = \text{Amplification with feed back}$

$A = \text{,, without feed back}$

If BA is much greater than one, this is

termed as adequate feed back and $A' = \frac{R_L}{R_s}$

FET displays a good frequency response. Upto 10Mhz, it works reasonably well. It has high gain bandwidth product which can be realized only by reduction in high impedance level.

One of the important uses of FET is that it can be employed to form Miller Integrator (fig. 7) which gives substantially linear sawtooth wave. With bipolar transistors elaborate arrangement should be made to compensate for the inherent low input impedance. Input impedance of FET being of the order of 10^{18} Ohms. (greater than that for the tubes), this problem is solved easily.

Insulated Gate FET

In IG devices, the diode formed by the gate and source as in the case of junction FET is eliminated. The gate is insulated from the parent substrate by a thin film of metal oxide coating. The coupling between gate and source is therefore by means of high quality small capacitance formed by the metal oxide. Hence Metal Oxide semiconductor devices acronymed as MOS devices represent IG devices. The capacitor must

have low breakdown voltage about 30 volts. Since the gate capacitance is low and the leakage resistance very high, the capacitor can very easily be charged beyond breakdown voltage. Static charges from the soldering iron or from the body may accidentally damage the IG device by harmful electrical discharges. Hence reasonable precaution should be taken, when handling IG devices.

MOS devices are characterised by two distinct mode of operation viz. depletion mode and enhancement mode.

Depletion mode: In this mode the current normally flows in the conduction channel and application of gate voltage decreases or cuts off the drain current. The characteristics are given in fig. 8.

Enhancement mode: In this mode of operation the channel does not conduct normally and application of gate voltage biases it into conduction. Characteristics are given in fig. 9 (for P-type).

Enhancement MOS structure is given in fig. 10.

To protect MOS devices a Zener diode is incorporated in it. A typical enhancement MOS amplifier is given in fig. 11.

Insulated gate devices offer high frequency response (200 Mhz). But they have high noise levels and are less reliable than junction FETs. But its attractive high input impedance makes it extremely useful in electrometer circuitry.

Science and research never stand still. The struggle is on for better things. A time will come when even junctions FETs and IG devices may become obsolete!

Reference: Laurence G. Cowles, Malmstadt, Enke, Toren,

INDUSTRIAL DISPUTES CAUSES & REMEDIES

M. S. QURAISHI,
B.E. (Mech.) class

(Prize winning Article of BEEMA Essay Competition)

INTRODUCTION

“GO forth and multiply”. These were the orders given by God the Almighty, and we multiplied and multiplied and today we call ourselves civilised being wearing a garment of refined manners on the crude barbarious life. In this civilised world of ours, we have industrial relation geared to our wheel of life.

“We eat to live, and not live to eat”, the doctrine of Socrates has lost its essence and has been forgotten altogether. Now a new gospel created by the working class is, “*We do not live to work, we work to live*”, has been adopted.

“This is mine”,—“I am rich”,—“I am greater than you”—are the windings of the human motor. To be in the superlative degree always, to be more comfortable than the fellow workers, and the workers in other industries; is today's goal. To be rich one requires money and money is the main cause of disputes in this civilised world of industries. We call ourselves civilised, or running after money is called civilisation.

MAIN BODY

Satisfaction of human wants is the principle aim of all economic enterprise. Whenever this principle is ignored industrial relations lend to be strained ending up in industrial unrest and strife. Frustration occurs the moment when the workers fail to achieve their active attempt towards satisfying their wants and needs. The consequences of unchecked frustration cultivate display of aggressiveness, childish and unreasonable behaviour making for destructive rather than constructive activities, “fixation” to the state

of frustration and so sinking into apathy. This creates a vicious circle. The workers demand more wages, but still remain frustrated. They demand to satisfy their wants and needs which every man has (as we are not divine).

“My belief is that to have no wants is divine, to have as few as possible comes next to the divine” says Socrates.

The management creates its own personnel problems and then it asserts that the only incentive to work is wages. The demand for higher wages is really an attempt to get over the feeling of frustration. This frustration is regarded by some as the root cause of industrial unrest. But it is not so simple as that. There are two categories of causes of industrial strife one intangible and the other tangible.

INTANGIBLE

Man is not a machine so as to have one constant nature. His nature changes from time to time for him as the proverb goes. “Variety is the spices of life”. Man seeks to satisfy his wants; but the path that he follows in his search for satisfaction is a complex one, governed by reason, emotion and instinct. Very often the path may appear to be irrational and illogical to the outsider but to the person himself it is perfectly rational and logical. It is both interesting and instructive to note the difference between facts and sentiments. The facts are important but the person's attitude towards them is what must be taken into consideration. Therefore, when dealing with human behaviour management must recognise that it is sentiments that are being dealt with.

TANGIBLE

The possible causes of industrial disputes may be:

1. Demand for increase in wages either on the plea of prosperity in the industry or on account of rise in cost of living.
2. Demand for reduction in hours of work and increase in holidays.
3. Demand for increase in over time allowance.
4. Demand for the reinstatement of any dismissed worker.
5. Demand for greater facilities in leave rules.
6. Demand for representation of labour on management.
7. Demand for the recognition of a trade union.
8. Desire of the workers to share in profits of industry or to be provided with greater facilities of welfare in and outside the factory.
9. Sympathy for strikers in other concerns or industries.
10. Political courses leading to general agitation or discontent.

The individual employee is characterised by his wants, likes, dislikes, temperament and ability. Important surveys do not exhibit uniformity in their results as employees are composed of segments of different cultures and backgrounds. Further, time and economic conditions prevailing at different periods exert a profound influence on the results of such surveys.

A recent survey suggests that management still cannot quite believe, the Workers' own evaluation of the factors which makes them tick.

The survey showed:

Supervisors guess:

1. Good wages.
2. Job Security.

3. Promotion and growth in company.
4. Good working conditions.
5. Work that keeps you interested.
6. Personal Loyalty to workers.
7. Tactful disciplining.
8. Full appreciation of work done.
9. Sympathetic help on personal problems.
10. Feeling in on thing.

Employees say:

1. Full appreciation of work done.
2. Feeling in on things.
3. Sympathetic help on personal problems.
4. Job Security.
5. Good wages.
6. Work that keeps you interested.
7. Promotion and growth in Company.
8. Personal Loyalty to workers.
9. Good working conditions.
10. Tactful disciplining.

Thus we see that it is a very difficult problem which the management faces. Facts and sentiments should be carefully studied before taking any step. "Think before you leap" should be the motto.

More and more the days of merely doing as told, because told is passing, there is less and less difference between leaders and those led. Position is largely a matter of circumstances, opportunity, luck and taking advantage of them when available.

Management must not blindly put Mr. A in some position unless and until a good selection has been made.

"Who is the new shop foreman going to be?" "They decided to give it to Mohan Singh". "Why didn't they give it to Ashok Saxena? Isn't he a better man for it?"

"Well, he might have been better in some ways, but he would have blown the organisation apart if he had been put in charge. He has much nervous energy, that he can't even sit still during a conversation with you".

"He usually gets a lot done through". "You would think so if you watched him. He charges ahead from one thing to another all day, but he does not necessarily keep his objective in mind. He just charges".

"What job did they give him?"

"He is in a line job where there is a lot of details and where he can push people around without upsetting the entire organisation. He will get the job done too".

In this hypothetical case we have an example of the adjustment pattern of a man in an industrial position. Ashok Saxena "has a lot of nervous energy" and "pushes people around". He may be competent though he does not always keep his objectives in mind. And, most important of all he did not get the position of shop foreman, because of some of his personal characteristics.

The personal characteristics of a mother affect the atmosphere of the home and the way in which the children develop. So, too, the personal characteristics of an instructor affect the atmosphere of the class-room. In the same way the personal characteristics of the man in industry, both the manager and the worker affect the atmosphere of the plant or the office.

Before grasping the functions of industrial relations—work, it must be remembered that industrial relation is "a part and parcel of the human relationship at large and not as something entraneous to it. One of the main social and political thoughts in the modern community is the establishment and maintenance of harmonious relations in industry. And it is in this background that the functions of industrial relations work should be studied and evaluated.

To solve this burning problem of industrial disputes all the three sectors should jointly shoulder the cart's wheel and help to achieve a harmonious relationship. The three sectors as I have mentioned above are the government, management and labourers.

The government has taken various steps to see that the disputes between the workers and employers are settled amicably and that the outstanding questions are discussed in a spirit of give and take. For this purpose, the government has constituted "Tripartite conferences" for various industries. In such conferences employers, employees and the government are represented.

The Industrial Disputes Act of 1947 as amended upto 1957 provides for a three-tier machinery consisting of Labour Courts, Industrial Tribunals and National Tribunals, for the adjudication of industrial disputes.

LABOUR COURTS

Are constituted so that points of dispute can be taken to them and authoritative verdicts obtained. The following matters can be raised before a labour court.

- (i) the propriety or legality of an order passed by an employer under the standing orders;
- (ii) the application and interpretation of standing orders;
- (iii) discharge or dismissal of workmen;
- (iv) withdrawal of any customary concession or privilege;
- (v) illegality or otherwise of a strike or lockout and
- (vi) matters other than those reserved for industrial tribunals.

INDUSTRIAL TRIBUNALS

An industrial tribunal may consist of a present or a previous High Court Judge. In addition, two assessors may also be appointed to assist him. The matters that may be

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D. G. Kelshikar
 Best Batsman



Mr. R. L. D'Souza
 Captain—Football



Mr. A. R. Nene
 Best Student

PRIZE DISTRIBUTION



Mr. M. B. Rao
Kulapati's Merit Medal



Mr. V. P. Dhumale
Elocution



Mr. T. C. Fernandes
Best Athlete

raised before the Tribunal, besides those mentioned above include the following:

- (i) wage;
- (ii) compensatory or other allowances;
- (iii) hours of work and rest intervals;
- (iv) leave with wages and holidays;
- (v) bonus, profit sharing, provident fund, gratuity;
- (vi) shift working;
- (vii) classification by grades;
- (viii) rules of discipline;
- (ix) rationalisation;
- (x) retrenchment and closure of establishments and
- (xi) any other matters that may be prescribed.

NATIONAL TRIBUNALS

The government may appoint a National Tribunal when a question of national importance arises or when industrial establishments located in more than one state are involved.

For higher productivity and sound industrial relations, it is extremely important to give the workers the place of partners in industry. The workers must be increasingly associated with the management of industrial undertakings so that they develop an awareness of the problems of industry and begin to feel that they have a positive contribution to make to the operation of their units. Such association with management should gradually give place to labour participation

in management. The principle of participation seeks to meet the psychological needs of the workers, brings them closer to the management, promotes their interest in self education, gives them an insight into the economic and technical conditions and the purposes of the undertaking where they work and serve to bridge the gulf between the management and the workers. "For the peaceful evolution of the economic system on a democratic basis it is essential that workers' participation in management should be accepted as a fundamental principle and an urgent need".

CONCLUSION:

In our ever bulging dictionary of gaps, which includes such items as credibility gap (often an emphamism for contending falsehoods) the generation gap, the most woeful is the industrial relations gap. When trouble breaks up in all industrial establishments old fashioned people would say "let us sit down and talk things over". Who would listen, to them these days? Instead suggest that we should keep the channels of communication open, as also options and endeavour to initiate a meaningful dialogue. The situation may not improve through the vertiage, but tempers will be soothed.

Men in the industry and labour, should learn to be at home in the new idiom of commitment, involvement, alienation, charisma, dichotomy, the autonomy of persons, topics, institutions and things and always and every-where the socio-economic objectives. With such equipment they will go far.



Reflections On Some Structural Aspects of Our Educational System

Contributed by **S. N. DESAI**, Physics Dept.

LET us begin by saying that, in this article, readers should not expect to find an exhaustive, analytical description of the structure of our educational system. And since it would be a folly to recommend changes without fully expounding the structure, we have not proposed any recommendations to remedy the ills of the System of Education.

Having admitted the shortcomings of this article, we should consider it a success if we score a point or two, by the reflections contained herein.

To begin with, let us consider the Inflationary tendency in the number of students seeking admission to Engineering Colleges. During the midfifties—and to this day—the number of students aspiring for admission in the Engineering Colleges shot up by thousands. Couple this fact with the reality that tens of thousands of Engineers in India are at present, unemployed. Clearly, something is wrong somewhere; but where exactly?

Quite a number of answers come to our minds.

First, the structure of the Educational system itself, must be held responsible to a certain extent, for it has failed to control or plan the Engineering Education.

Secondly, the Social organization, of which Educational system is but one part, is to a great extent responsible.

Finally, the mania of rapid Industrialization that was to take place because of the First and Second Five Year Plans, is a responsible factor in that it has driven "Career minded" students to seek admission to En-

gineering Courses irrespective of their aptitudes or capacities for such courses.

The answers mentioned above, are of course, not independent of each other. On the contrary they are closely interrelated. We begin by hypothetical explanation. Let us draw a Parallel between the crisis of overproduction and unemployment in a Business Cycle, and, crisis of Inflationary tendency and resulting unemployment of Engineers. The explanation of the Business Cycle is well known, and hence, will not be given here. The pertinent point would be whether or not the Parallel drawn is valid? The contention of this article is to point out that, this Parallel rests on solid empirical ground (the Inflationary tendency and the thousands of unemployed Engineers are stark realities).

If we admit the validity of the Parallel drawn, then, it is clear that a sort of Business Cycle operates in the Educational System too, and this reflects the structural defect inherent in it.

The Educational System has failed to protect itself against Agencies which have entered the field solely to exploit the opportunities created by the fact that more and more students are desirous of becoming Engineers. Institutions which charge Capitation Fees (we all know of their existence) are one category of such Agencies. Another category of such Agencies, which play an indirect role, are private coaching classes, which generally "Coach" science students—especially, F.Y. and Intermediate science students.

If we examine the role played by the Agencies mentioned above, their contribution to the Inflationary tendency and the consequently huge turn-out of Engineers, we see that it is by no means insignificant. The education of Engineers by the Agencies referred to from the point of view of a market has a Parallel to production in a Social Organization where agencies (whichever they be), undertaking production, produce solely from the point of view of Market. The logical conclusion is, that, the Structure of the Educational System reflects—it has to, it cannot be otherwise—the structure of the Social Organization, of which it is but one part. The third of the reasons mentioned above is a Social problem arising out of the first two, and hence no elaboration is needed to show its correlation to the first two.

The problem of Engineers is not, of course, the only problem facing our Educa-

tional System, but this problem has been dealt with at length here because of its scale and magnitude, and also because of its significance for underdeveloped country like ours.

It would not be out of place to point out here, that, from our point of view, any partial attempt to remedy the ills of the Educational System will not be a very fruitful attempt unless the correlation between the structure of Educational System and that of the Social Organization is clearly understood.

For those who accept this point of view the need of the day, we feel, is to start thinking about the problems posed here from this angle and to find out ways and means of solving them. The young generation must be made aware of the problems we have discussed above, and this calls for a firm rapport between the teachers and students, for they are the vehicles of social advance.



Mathematics of Eternity

PRADEEP D. PRADHAN,

T.E. (Elec.) class

*She appeared from a zero,
He also appeared from a zero,
Both sat in a zero!
The outer world,
Plus and minus,
Multiplication and division,
The surrounding zeros,
They forgot them all!
While swimming in ecstasy of sublime love
And floating on ethereal stupefaction,
They experienced eternity and nothingness.
And outside that zero
Dry hearted clever scientists
Through a question mark
Are searching for the
Route of Eternity!*

Birth-Day Greetings To Our First Principal

1st November, 1969.

Respected Kaka and Fellow Engineers,

I must first apologise to you for not being personally present on this pleasant occasion to celebrate the 75th birthday of our beloved Principal S.B. Junnarkar. As I had written earlier I would have been present but unfortunately as I have another important duty I could not be present today and would therefore request to be excused. I am requesting Prof. Dighe and my son Shashi to give my message to the brother engineers.

Principal Junnarkar has been responsible for building up not one Engineering College but four Engineering Colleges, NED, BVM, MSU faculty of Engineering and S.P. College and has trained thousands of Engineers who are occupying positions of power and very high position both in industry and department. Through his books on Mechanics of Structures he has struck an impact on the hearts of lakhs of student through-out the country.

Principal Junnarkar has built very healthy traditions in rearing up the young generation and we in the teaching line (the second generation reared by him) remember him and feel inspired when we face the problems of students discipline. There has been a very common talk among almost all persons in high positions and principals of colleges about the indiscipline among students. Principal Junnarkar taught us to treat students as members of our family and behave with them as such, giving fatherly treatment. This advice we sincerely follow and I can say with confidence that the very foundation of indiscipline is shattered to pieces. We do not have such problems.

There has been a common talk among all University authorities that the Engineering Education given to the students in this country is very much outdated and graduates coming out with Engineering Degrees are absolutely unsuitable to meet the needs of the departments and industries.

I remember very well the oft repeated statement of Principal Junnarkar that in Engineering Colleges we give only the basic fundamentals of Engineering Science and its application. The development of these young men as professional ones is the job of the department and industries by training them for a particular and specific job. For the last fifty years or more the Engineers trained at these colleges have won laurels for the country. They have acquired higher knowledge in the foreign country and have shown that they are in no way inferior to their colleagues in foreign countries.

Times have changed. In the post independence era after 1947, the country has been faced with innumerable problems, problems of professions and development and problems of education. The various universities have been undertaking reforms in education and systems of examination. Principal Junnarkar although he is 75, his counsels would be worth millions of rupees and save the country in the costly and adventurous experiments. I and my wife join with you all in wishing that he and Kaki live long for many more years in sound health to give his most valuable advice in the turbulent times ahead. Long live Kaka and Kaki.

R. H. CHOKHAVATIA

ELECTRONIC COMPUTERS

S. A. GADAG, B.E. (Elec.) Class



ON 28th February 1970, Dr. H. C. Voigt, a West German cancer expert who was visiting India said, "It will ultimately be the electronic computer which will find a cure for the various types of cancer." Speaking to newsmen in Bombay, Dr. H. C. Voigt went on saying that it was necessary since the main problem was that of assembling and processing the data—spread all over the world—in one place. In modern civilization computers, like other machines are indispensable.

For many centuries man has used various devices, both physical and symbolic, to help him in carrying out computations. Today high-speed electronic computers are revolutionizing man's approaches to problem solving. A broad variety of computers now exist that allow computations to be carried out several thousand to several million times as rapidly as was possible with the most elaborate devices in use as recently as 1940. The problems which were never before attacked because of their size have now been brought within the scope of practicability and can be attacked with genuine hope of success.

A good example of the change that has occurred in problem solving techniques is found in the aircraft industry. In the 1930s and early 1940s, each new aircraft design was first constructed and then evaluated by

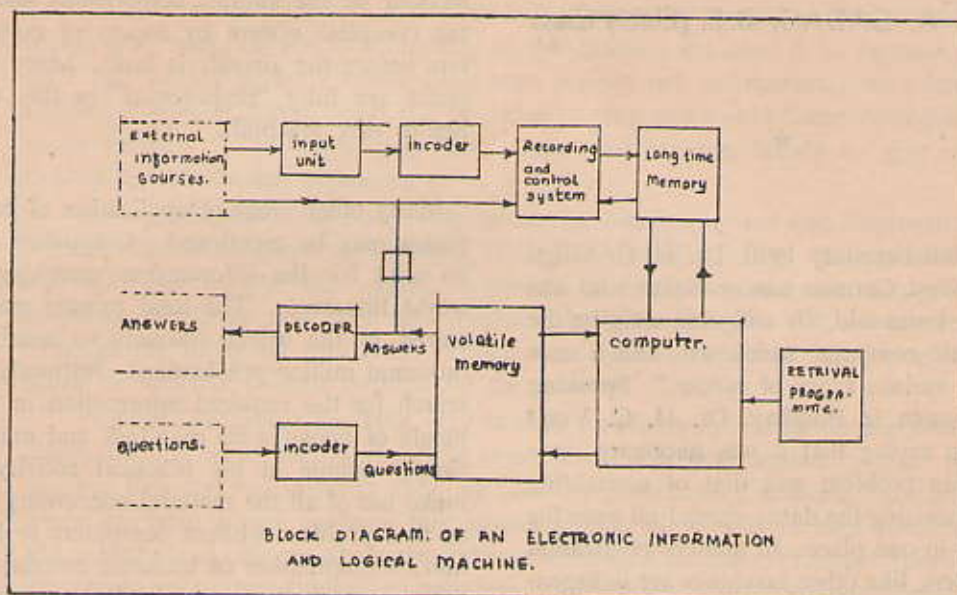
being put through an elaborate sequence of ground tests, followed by an equally elaborate series of flight tests. This procedure was slow, inefficient, and often risky. The modern procedure consists in simulating the behaviour of the aircraft components and of the complete system by means of computers before the aircraft is built. Many aircrafts are fully "flight-tested" in this way before they are built.

Many other areas of application of computers may be mentioned. Computers can be used for the information searching in world literature. The total printed matter stored in the world amounts to nearly a thousand million publications. Naturally, to search for the required information in this jungle of books is no easy task and man is simply unable in his practical activity to make use of all the material concerning this or that problem without computers to help him. Manipulation of immense amounts of data, such as those obtained from radar trackings of earth satellites, can now be performed quickly enough to provide significant data before the problem has changed. In addition to this, computers can be designed to run chemical plants, to solve problems of inventory control, to translate languages and even to play games like chess etc.

Computers can be divided mainly in two broad classes of analog computers and digital computers. The digital computer is one which does arithmetic. It manipulates numbers and the individual digits that constitute these numbers and executes such basic processes as addition, subtraction, multiplication, and division in a surprisingly short time as compared to human brain. The analog computer is a device in which the variables are analogous to those of the problem to be solved and behave in the same way, permitting the measurement of the problem variables.

The principle of operation of the information and logical machine can be explained as follows. The information is fed into the machine via input and encoding units from various information sources: a type writer

key-board, punched cards, perforated tapes or microcards, magnetic tapes, image translators, which directly "read" printed texts from the books, magazines, films and micro-cards.



In the coding unit information is converted into a binary code, and then is recorded in the long time memory system as electrical signals with the help of a recording and checking systems.

The long-time memory system comprises a number of units in which all the information introduced into the machine is stored. These units are combined into a common address system of information retrieval and constitute the machine's long time memory.

The machine memory can be enlarged by introducing fresh information. The machine's answers which are specially valuable can be introduced into its long-time memory via the special internal coupling K as new information worked out by the machine itself.

Encoded questions with the programmes indicated for retrieving the answers arrive

at the volatile memory unit in which all volatile information is electrically recorded and stored temporarily. The volatile information is stored only as long as the immediate problem is being solved and is then erased electrically. After that the volatile memory is ready to receive fresh information. The scope of the problems that can be tackled by the machine is enlarged by Retrieval programme unit.

The computer coupled with long-time and volatile memory comprises information reproduction units, comparison, logical and arithmetical units.

As electrical machines are gifted with more and more abilities, there is a growing feeling that the process might result in a race of lifeless machines with better than human brains (robots). Dr. Frank Rosenblatt, who is a research worker at the Cor-



A. M. Kapnadak
I Class T.E. (E)
Kulapati's Silver Medal



A. R. Nene
I Class T.E. (C)
Kulapati's Gold Medal



S. J. Kothari
I Class B.E. (C)
Kulapati's Silver Medal



P. A. Salunke
S.E. (M)
Kulapati's Merit Medal



A. B. Kulkarni
S.E. (E)
Kulapati's Merit Medal



R. K. Kapadia
T.E. (C)
Kulapati's Merit Medal



G. D. Morparia
S.E. (M)
Kulapati's Merit Medal



A. K. Kamat
National Merit
Scholarship



P. R. Pitale
F.E.
Kulapati's Merit Medal



P. D. Rege
National Merit
Scholarship

ROLL OF HONOURS 1969-70

FIRST CLASS STUDENTS, APRIL 1969 EXAMINATION



J. K. Gada S.E. (E)



A. K. Syed S.E. (E)



V. V. Paranjpe S.E. (E)



A. K. Yogi S.E. (M)



C. B. Dhamankar
S.E. (M)



M. J. Chhapra S.E. (E)



Jayant Kamat
S.E. (E)



Ari Joginder Singh
S.E. (M)



M. R. Gandhi
S.E. (E)



A. J. Devani
S.E. (M)



G. H. Shah T.E. (E)



R. R. Kishnani T.E. (M)



V. S. Kojekar T.E. (M)



D. K. Darooka T.E. (M)



S. A. Gadag T.E. (E)



D. J. Telang T.E. (M)



N. P. Eklahare
S.E. (M)



V. B. Sachania
S.E. (E)



A. S. Parchure
T.E. (M)



S. B. Vagal T.E. (M)



N. P. Vora S.E. (M)



S. V. Chavan S.E. (M)



T. Toscano S.E. (E)



G. P. Joshi S.E. (M)



N. R. Shankar
F.E.



Y. M. Dhorajiwala
S.E. (E)



D. S. Jain
S.E. (M)



K. S. Kothare
S.E. (M)



P. K. Nagle F.E.



H. M. Desai F.E.



S. A. Lahorewala
F.E.



V. N. Desai
F.E.

**FIRST CLASS
STUDENTS—APRIL 1969**



S. K. Gala
F.E.



H. S. Pundle
F.E.



Sam Bhadha
Elocution



Deepak Chandvadkar
Elocution



well Aeronautical Labs., New York, has designed a machine called Perceptron. This machine is the first non living object able to perceive, recognize, and identify its surroundings, without human training or control.

Later machines are expected to be able to recognize people and call out their names. They will be able to read and give speech. An international conference on "The mechanization of thought processes," which took place at the National Physical Labs., at U.K., brought forth some interesting ideas. A delegate spoke of machine "doctor" that will sew up cuts while automatically watching the patients's blood pressure and breathing. Another spoke of an electronic 'judge', which could revolutionize the practice of law by searching countless law books to find the

special laws and former decisions that apply to each case, examining this material and then arriving at a decision.

A late addition to the list of computer applications is the computerized film "fight" between the undefeated heavy weight champions, Rocky Marciano and Mohammad Ali, which was shown on television and cinema screens in countries around the world. Murray Woroner, the man who directed and promoted the venture, was quoted to say, "our computer handled 4 million statistics per round and had available to it every thing each man did, every punch he threw in the prime fine years of his career. These were 129 variables per fighter and those ranged from 'killer instinct' to speed of hands. So it was a very complex programme for the computer. But we're ready to stand by it."

★

*The ladies inhabiting VENUS
Have signalled us saying they've seen US.
They add, "There's a yen here
For getting some men here.
And nothing but space is between us."*

*A thrifty young fellow of Shoreham.
Made brown paper trousers and woreham.
He looked nice and neat
Till he bent in the street
To pick up a pin; then he toreham.*

*There was a young lady named Bright
Whose speed was faster than light,
She went out one day,
In a relative way,
And returned on the previous night.*

Contributed
by S.D. Kesarkar

The master key to self-control

By ROMERO L. D'SOUZA, B.Sc., B.E.(E) Class

TO-DAY'S hot topic in India is population control. With the due consideration of the facts I fully sympathize with both the sides (Government and people). But I am sure it is not at all that easy. What we definitely heed and sadly lack is self-control.

I am reproducing below the recipe for self-control from the book, "You are not the target" by Laura Huxley. The theory behind the idea is omitted (you are free to invent one). No, I am not a salesman for Laura Huxley's ideas; but if you get hold of that book, do not forget to read it. Here it goes.

"Choose a comfortable place where you can be alone and undisturbed. Read the directions several times until you feel that you have thoroughly assimilated them. Become aware of the fundamental energy that is inside your body and all around it. Think of the pure energy of the sun, of the ocean, of air, waters of the earth itself. Imagine the enormous amount of pure energy concentrated in one small flower, in one piece of fruit, in a single seed which can become a forest. What is your favourite form of beauty? The mountains? The sea? The graceful movements of a dolphin or some other animal in its natural state? Think of this form. Let this image fill your mind. Think of the pure impersonal energy contained in it.

"Feel the great life-force flowing within and all around you. Feel it in your muscles, in the coursing of your blood, in your entire organism. Let it fill you. Blend with it, until you and energy are one.

"In this first step, the aim is not to understand but to feel energy. You may get this feeling immediately, or it may take a little practice. This one step alone is a wonderful

energiser. Now turn this experience of energy into a specific personal form.

"Relive a moment when you were filled with an awareness of energy, vitality, life-force, in a good and happy personal experience.

"Recall a moment of great joy and harmony, of strength, or powerful creative energy. It may have been when you were walking freely in a forest or on a beach or when you were winning a contest; when you are humble but arduous chore unrecognised by many. It could be the moment when your first bite into a fresh fruit, ..., aware of the ongoing miracle energy flowing in you.

"Relive your own experience, that moment when your whole being was swept and your vitality intensified by a wave of fluid, creative energy.

"Relive it completely.

"Now turn quickly to a moment when energy was destructive to you.

"This may have been when your loved one died, or you fought with your best friend. . .

"Choose one such incident.

"Relive it. Feel it. Do not just remember it. Feel the impact of this destructive energy. Let this feeling rise slowly in you. Or, if this comes more natural to you, let yourself be engulfed by it, in an instant. Relive the incident from its very beginning to the final climatic moment of its destructive fulfillment.

"When you have felt, completely and separately these three forms of energy: impersonal, creative personal and destructive personal energy—you are ready for the fourth step.

"Now you are going to alternate step two and step three. Once more, let yourself feel that moment of personal creative energy.

"Let yourself into a happy emotion; then switch into the bad one. Feel each of these experiences completely. Do not merely recall the events; but feel them totally, all the emotions, all the physical sensation.

"For practice, it may help to visualize sharply contrasting colours: black and white, or red and green. Visualize white totally. Then quickly replace in your mind's eye with black. Do the same exercise with sound, filling your ears with an imagined high, thin note; then replacing with a deep, full, base note.

"Now alternate your two opposite experiences of energy: the happy personal creative moment—feel it completely then the unhappy, destructive moment—feel that also, totally, in mind and body.

"Practice until you can swing back and forth between these two extremes in the experience of personal energy. The important thing is to learn to alternate quickly these opposite sensations, the total feeling of good with the total feeling of the bad, not the mere recollection of the events.

"Repeat the preceeding step. Swing back and forth once more between the two opposites of energy: creative and destructive, good and bad. Now, quickly, by a conscious direction of your whole being, extract the good feelings from the creative experience and the bad feelings from the destructive experience—and float into the experience of pure impersonal energy you did in the first step.

"With full awareness, know that you are drawing out the good and the bad, the personal elements of each experience, and that you are letting yourself be engulfed by the impersonal flow of fundamental energy.

"In daily living you have often to control your emotions: it may be dangerous, impractical or cruel to express all you feel in your social or family situation. But when you are alone and doing the recipe—feel. Feel it to the limit."

Rather big isn't it? It's because it is meant for more than just self-control achievement. If you read between the lines with a philosophic and psychological outlook, you will find it a big remedy for many ills.

Incidentally in the book afore mentioned it is titled, "The Art converting energy". It is an excellent idea to energise one self when deenergized.

Reliving (or re-experiencing) used in the above recipe means: we live, we experience that event again. Not only we remember what was said; we actually hear it... We do not remember that we felt elated; we are elated.

The following are the essential requirements

- (i) Perseverance: stick-to-it iveness till the desired results are obtained.
- (ii) Ability to recall in the mind's eye past experiences. This is a matter of practice.
- (iii) Privacy in the crowding world of today

Precaution: Do not substitute the recipe for the actual.

Results: I have not attained as yet so I cannot say. Amongst other things mentioned above here are more of them: improves alertness, removes depression and nervousness, etc. When you achieve all these please inform if you feel like it, I shall be very much interested of course, if you do succeed you will be a rare and exceptional and individual.

In Delirium |

Contributed by:

A. VIJAYAKUMAR, B. E. (Electrical).

(Associate Lecturer in Electrical Engineering)

MUSTY dingy atmosphere of the examination hall induced nausea into me, the kind of one which a dank atmosphere of a remote marshy beach will introduce into any one. The bell sprang into animation and set off a nervous reverberation through my entire body with effect of a death-knell. University stationery spread the warmth of a familiar pleasant aroma which I have been experiencing for the past ten years.

Uneasy silence deluged the whole place. The blank ceiling spat incoherent thoughts which drifted in the idle mind, in a random fashion. Rippling of paper and sonorous peel of drawing instruments sliced the slab of uneasy silence into precarious serrations: Precariousness was throbbing in every fibre. At last the question paper has come to me sending, high voltage pulses into certain brain centre, which set off untouched chords of mind, pulsing unfamiliar notes, personifying into fear, frustration, and flippant sadness.

Electronic Instruments Paper I

Attempt not more than.....

Black figures to the right.....

Q. 1. Explain the theory of Hall effect isolators employed in cascaded tunnel diode amplifiers.

Oh God! Have mercy on me! How am I to get through the M.E. Examination? How is that Hall effect associated with isolation and tunnel diodes? How tunnel diode can be used as an amplifier? It is a one port device. Crashing comets! I am caught in a deluge of confusion, from which there is no escape. I am an expert in electronics. Tunnel diodes tunnel tetrodes, FETs, MOS devices, Magic Tees, magic eye—these are all dissolved into my system. Some thing is

wrong somewhere. What is wrong? The warning bell has released a chaos into my brain centre.

Things won't trigger properly. Synchronisation is improper due to wrong signal level. Something snapped somewhere. Motor messages and sensory messages clashed, tumbled and vanished before reaching the brain. Spinal column ceased to function. No reflux action!....

The love for electronics has emptied all other emotions from vital channels of life. At last my beloved electronics is also leaving me. Question paper has turned up as an absolute stranger to me. The thinking machinery has gone out of gear, violently with a bang. Sanity gets diluted slowly, with the element of uncertainty. Am I imagining things? A series of unconnected and unaccountable thoughts remotely connected with electronics, started precipitating into the mind with the speed of tornado—Magnetron, taperecorder, Drumsticks, Helical gear, feminine anatomy, Cyclotron, Fanny Hill, Induction motor, milkmaid, Miller Integrator, Synecdoche, Fountainhead, cufflinks... Oh Good God! I cannot bear this torture. Electrons are flowing through my arteries. My heart is a roller pump. I am paralysed. I am the very incarnation of weakness. Who will volunteer for a blood transfusion. The girl I love does not know that I do that! (Poor me). Lady electronics cannot take part in blood transfusion, because she has got electrons in her surging interior. Electromyograph recordings look like cardiograph of an ant or an antelope! Where is the ant? Resolving power of the electron microscope is very poor. The first warning bell catapulted me into the sad reality of the examination hall. When I surveyed I found that I had written a good many para-

graphs on the first question. It must have been correctly answered, I am a genius, you see! Only my thinking and hand controls are not in time and space synchronisation. Pen does the work, spitting Royal blue information on to the sheer white expanse of the paper.

Q 2. Give a schematic representation of Electronic Motor control employing silicon controlled rectifiers. Also explain switching mode transistor Motor control....

Another bombshell has exploded. I must be an expert in Psychoanalysis, Dream analysis, Women's Psychology, but definitely not in electronics! How motor can be controlled using transistors? Transistors are radios that work without electric supply leads! I must be a layman when it comes to electronics! Something is wrong somewhere. I used to draw electronic motor control circuits with the ease of a cartoonist's expert strokes and deft sweeps. Vigilant subconscious mind passed a modulated signal to the brain receiver, which after mixing and demodulation, revealed an embarrassing and unfortunate fact that I have written about generator voltage control circuit as an answer to the motor problem! God! What a problem! Hallucinations of temporarily delinquent mind set up spurts of conflagration of rampant emotions and feelings unconnected with reality. I wanted to do IAS with psychology as my optional subject. Circumstances forced me into a shell inaccessible to any one. I am an introvert. Excruciating mental agony resurrecting out of the monotony made me turn to take a deep plunge into the innards of human psychology. Some detached fragments were flashing with the speed of lightning. Male ego is a fragile thing—it is to be sustained-not put down. In woman, feelings mix together—sex and intellectual judgement.....Strident tintinabulation of the bell amplified low frequency sensations which damped the excursions of mind with the speed of a comet.

Q. 5. Derive the field equation for a Trochotron. Give a brief account on Digital read out systems....

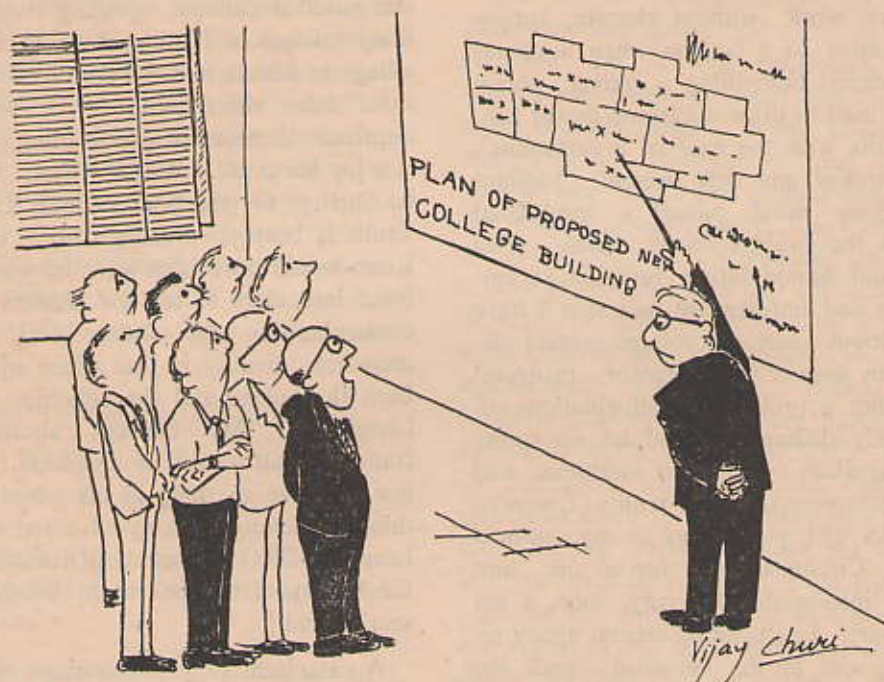
This question I can handle with ease. The digital readouts pushes into my mind, the sensuous looking (more sensual than sensuous) panel of counter units with numbers flashing over its face. That is what I call peak of beauty. My flashing beauties—the Nixie indicators. I am a worshipper of beauty. Even traffic lights have beauty. Looking at the red and yellow lights winking at the young night is a thrilling experience which injects into me a fast spurt of jealousy. Thinking of beauty—Keats, Monalisa, Cathode ray oscilloscope, the star studded canopy, gurgling rivulets and shiny foliages of familiar tress in a remote village in Kerala and a score of other things swim into vision with some self-turned sequence. Somebody said "a thing of beauty is a joy for ever". Was it Keats? Or must be Shelley. Or the poet in me? Keats said Truth is beauty, Beauty truth. (Alas! if Keats would have been alive he would have burst into tears to see the modern beauty, contaminated with science and its fast answers). Beauty is that which intoxicates both the holder and the beholder! Was it Longfellow? My concept about beauty transcends all earthly imagination. I could not achieve anything in life. Not even a thing of beauty—beauty of a red rose, the beauty of CRO the beauty of feminine form, the beauty of multivibrator, the beauty of scarlet Sun!!

A cataclasm of pandemonium of peeling bell jerked me back to solid reality of examination hall. The sweet fabric of vision faded and vanished into unpleasant reality, which I always try to shrink away from. Seated at the shaky desk is Shree. Me manouvering over an unpleasant reality of life, namely, solving the problems of Electronic Instruments Paper I. Black figures to the right indicated a blank and gloomy future. Three hours sped away like a satel-

lite. Here comes the supervisor to collect my paper (my future). Element of pessimism disintegrates into sheer frustration. Frenzy-fancy drives the soul to a point where life loses its meaning. This realization

comes slowly but surely with sharp and bleak edge.

But, I being young and spirited, a little frustration will bring good to the soul!



"I suggest that, there should be an emergency escape staircase through the staff room"

WHY "SPEAKERS' FORUM"

By ROMERO L. D'SOUZA, B.Sc., B.E., (E) Class

22nd July 1969, Sardar Patel College of Engineering, saw the birth of a new association in its venue christened in toto, "Speakers Forum". And ever since that I have been faced with more questions than ever. They came more from the students with a potential dislike for anything termed extra curricular. To give a typical example (a friend of mine told it to me): One student was heard questioning another: "Hey Mr. X! what's all this about the Speakers' Forum, public speaking and leadership training? Is that D'Souza gone crazy?" Maybe I had. But why Speakers' Forum.

It was in May last year that this idea struck me. It was the profound realization that to-day's Indian student suffers from two definite setbacks in a sharp contrast with his western counterpart. No. 1. Lack of proper self-expression. He has a store of ideas within himself he is unable to give vent to. No. 2. His utter inadequacy in the leadership techniques.

With these aims in view a ten-session course was planned out and Speakers' Forum started functioning immediately thereafter. Not that we had expert trainers. But that we could achieve with our mutual help. All that the participants had to do was to follow certain instructions. The sessions were where these could be put into practice.

But then something went wrong. In the second term with three sessions at hand the participants started losing their interest. It was then that I sat down to analyse what had gone wrong. There were many reasons. But any within my bound? Yes, for like a bolt from the blue it hit me. I had gone wrong. I realized that if I ever wanted potential speakers and dynamic leaders for tomorrow's world, at the helm of affairs

(i.e. in my place) was needed a superpotential speaker and super dynamic leader. In short, a fantastic personality capable of inspiring the members to the desired level by a single speech. I knew I sadly lacked these super qualities. I did not get discouraged, but continued with renewed enthusiasm. I knew in the result of giving my best to the Speakers' Forum I had made a mess of my studies during the best of my years. But the experience gained is the one thing I shall never forget.

Perhaps by now you are ready to ask me: "Public speaking, alright. But what leadership techniques. What is the use?"

To-day we marvel at the progress made by the Japanese people after being reduced to mere ashes during the World War II. In fact, in view of our economists, India would take at least 150 years to catch up with Japan's progress at the present rate of growth and by that time they might outrun us by another 200 years or more considering their rate of growth. What made this tremendous difference? There were many factors, but the main one follows. In the aftermath that followed Japan's destruction, the Japanese Government took adequate precautions to educate the people the leadership technique lines.

Maybe our Government is not meant for that. I suppose that our educational institutions are only meant for giving a smattering knowledge in the disciplines concerned. Is it any wonder then, that we are reaping the results of what we have sown?

Along these lines Speakers' Forum was but a drop in an ocean. May be it succeeded. May be it did not. Time alone will determine that.

AU REVOIR

By T. C. FERNANDES

B. E., (Elec.) Class

FOUR years rolled by so quickly that my memory is bound to relapse into a limbo of forgetfulness. It is because, Engineering being the last phase of our student life, we have been excitedly too ambitious to be extruded into the realms of practical life; or it is perhaps the challenge of life so imminent that has been alluring us. In such a "haste" our life in the college tends to be routine, snappy and the whole process of training, a passing phase.

All of us remember and cherish nostalgically our school, the Alma Mater. Eleven years in a school have quite a big impact, more so those being the formative years.

But S.P.C.E. is another memory to be cherished, another alma mater to be honoured. It is within the four walls of S.P.C.E., that we have been made, the professional men we are, for ever.

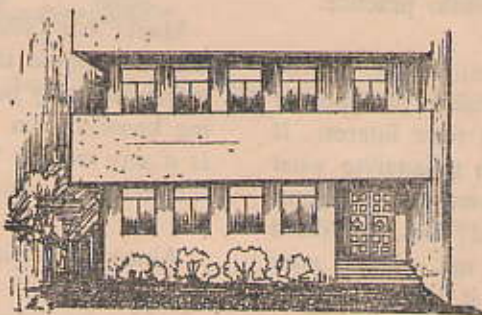
But engineering is a continuous process and so it is imperative on our part to keep ties with the college. It is happy to note that Principal Chokavatia has rightly put forward, the idea of Alumni. A continuous link with our Alma Mater, will go a long way to fill the void that will result once we are out of the college.

My heart saddens, when I think I'm leaving this institution; that particular joy and buoyancy of student life is coming to an end for most of us. It is a painful departure.

Living amidst a mosaic of students of various communities, views, aptitudes and attitudes, has been a magnificent pleasure. This mosaic has been a laboratory for human experience.

Whatever might have been our faults, fears, views and misgivings, the professors were always co-operative and friendly. We cannot forget Principal Chokavatia, the giant man, who always fought a one man battle, for the cause of students and various constructive reforms specially for this four years course.

Fare thee well, alma mater! and if for ever
Still for ever, fare thee well.



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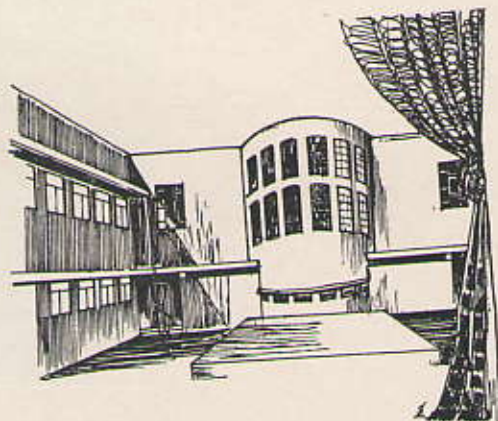
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N. Masketker
 Best Bowler



'Qawali'
 by R. S. Contractor



VARIETY ENTERTAINMENT



"Garba"—by Guest
Artistes



A Scene from Hindi Drama



Fun Fair

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Adios Amigo

By ROMERO L. D'SOUZA, B.Sc., B.E. (E) Class

ADIOS Amigo! It's good-bye, my friend. The way we have travelled has come to an end.... The four years that we spent together on this beautiful campus, the joys we shared, the mutual misunderstandings we suffered, the lively part of our life we lived,...., are now at an end.

It has been a long time. Four years back when I landed here, I was different. Steeped in pride having no meaning, far into the prejudices, delighting in humiliating others, ..., but now that holds no significance for me. Maybe I have grown up faster, anyway, for the better.

I have learnt to be grateful. I had to: for the constant help I received over many

hurdles be it academic, social, linguistic or some other, so gladly bestowed! These cherished memories cannot be forgotten.

I have learnt to respect. I know you know better and it is always for the good. It is the rare chance: we may ever compare. But let us always share the good and the beautiful.

If we ever meet again, forget-me-not. There will always be a share of love for you. That love that cures the giver as well as the receiver. Let us part with love and respect towards each other for then only can we hope for a better world. Till then!

So long!



You fool! It is not 30 cms. India, it is 30 cms. in dia.

SHE

Contributed by VASANT P. DAVE, F.E. Class

SHE looked down at her child. It was sleeping one of its short sleeps after many a day. She and her child had been hungry for two days. Today she had managed to steal a banana from the market. It was devoured by the child. There was nothing left for her except its yellow skin.

And yet she was happy. A glint of satisfaction could be traced behind the look of misery in those hollow eyes. Her darling, her little darling had something to eat today. Hunger of that tiny stomach was partly satisfied today. What did it matter whether she herself was hungry or not? She could face death. She could not afford to let her child die. That was one thing she could not do.

She was a woman of about thirty, but she looked much older. She was slim and dark. Her hair was in a mess. She wore a dirty 'Khadi' blouse and a white sari. Her face was innocent and it made one think that she had gone through many hardships during her stay on this earth so far.

Then she started visibly. On the far end of the compartment a form in khaki uniform was seen. The ticket-checker had come. What should she do? How was she expected to pay for the ticket when she had nothing to buy food with?

"O God, O Father of the Poor, O Saviour of the Doomed, have mercy on your child

this once...." She prayed with a heavy heart.

The ticket-checker had drawn nearer. And at last he spotted the wretched woman, trying to hide behind some luggage.

"You there. Where's your ticket?"

No answer.

"Don't you hear?" The authoritative voice once again pierced the silence.

This time he got a frightened look from her. She seemed to be begging for forgiveness without using her tongue. Her expressions were enough to prove it.

A sharp whistle shrilled through the morning air. The noise of engine lessened. The train suddenly came to a stop. It was a minor station and the train was to leave it within a matter of seconds.

But that time was enough for the punishment. Without speaking anything more, the ticket-checker caught hold of the miserable woman and shoved her out of the compartment. The action was rough and prompt. The next moment another whistle sounded. The train started as suddenly as it had stopped.

"My child, my Ramu...." A hysterical cry went forth. A sob followed.

The train had taken her child with it.



*There was a young man with HERNIA
Who said to his doctor, "Goldernia
When improving my middle,
Be sure you don't fiddle
With matters that do not Concernia."*

(S.D. Kesarkar)

A Visit to Koyna

RAO M. B., B.E. (E) Class

THE news, that a visit to Koyna has been arranged, was received, as usual with a lot of enthusiasm among the students of the B.E. (E) class. Although it was the middle of January and the examinations were fast approaching, the students seemed anxious that the visit should materialize. But previous experience had shown us that it did not take long for this initial enthusiasm to damp down to zero. But no, not this time. Deprived of a tour to north India, most of the students felt that a visit, although upto Koyna only, was some compensation.

Accordingly, arrangements were begun, with the collection of deposit money (to discourage the students from changing their minds). After much deliberation, it was decided to go to Poona by train; travel to Koyna and back in a bus and return to Bombay once again by train. The date was fixed as 13th of February. The night of 13th February saw all of us grouped together at V.T. station, talking to each other in hushed whispers, lest the rest of the world should come to know of our visit.

At 10.35 p.m., to everybody's surprise, the train moved out of V.T. station, only 11 minutes late. That was the signal for everyone to unburden himself of the collection of jokes, stories and even to show his musical talents. After what seemed only a few minutes, but was actually six hours, we reached Shivajinagar station. A quick wash at the Bus Stand and a hot cup of tea soon had everyone in good spirits.

At 6.30 a.m. on Saturday, we left for Koyna in a special State Transport bus. It needed only half an hour for us to realize that there indeed was something special about our bus—it just would not travel at

more than 15 m.p.h. Some of us told the driver to drive faster, but for all the good that it did, we might as well have asked the road to move backwards at a faster rate. Lunch was had at Satara and we continued on our crawl, for it was indeed no better than that, towards Koyna.

Late in the afternoon, a great shout went up from those sitting in front. We had all but given up hopes of reaching Koyna that day, and those of us who were not actually sleeping were wondering what we had done to receive this punishment. Soon we were looking out of the windows and heaving a sigh of relief that we had made it. Those who were asleep rubbed their eyes in disbelief at the sight of the Koyna Dam. Others looked at their watches to see if they had stopped.

The necessary preliminaries over, we were taken to the dam. Two of the officials were good enough to explain to us the important features of the dam and we rounded up our visit by going right down to the base of the dam. Even now, we could see the reminders of that fateful day, two years ago, when that dreadful earthquake had taken place. As we stood there now, we could only marvel at the courage and determination of all those persons who had toiled day and night to undertake whatever repairs that were needed to make the dam as strong as before.

Towards 6 o'clock in the evening, we reached Pophali, where we were scheduled to spend the night. After being cramped for several hours in the bus, the chance to stretch ourselves was very welcome. After a hearty meal, we went to sleep, as we had to get up early next morning. On Sunday

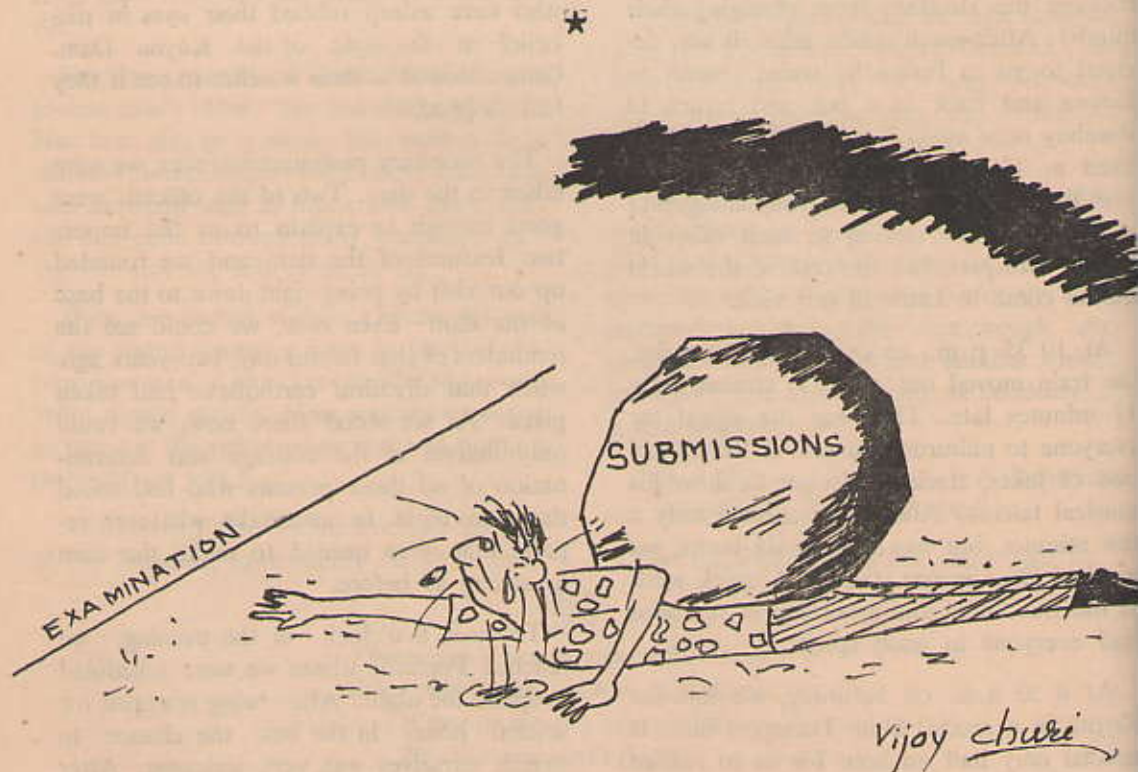
morning, we had a quick breakfast and then went to see the Power House.

We were explained how the water was brought to the Power House, by means of four huge pipes, which had been laid underground for several reasons. On reaching the Power House, each pipe bifurcated into two parts, each part supplying water to one Turbine. There were in all eight Turbines and coupled to these were eight Generators. We were also told how, the quantity of water entering the Turbine could be adjusted depending upon the load. Lastly we were shown the control room with its various panels for indicating as well as recording the various quantities at different points in the Power House.

After seeing all the places of interest in the Power House, we were taken to the

switchyard. Here we were explained how the power generated in the Power House was transmitted to the different places. As we stood there, with those transmitting towers rising high on all sides, against the background of mountains, we could but be amazed at the tremendous achievements made by man in science and technology.

After having provided food for the mind, what was now left was to provide food for the stomach, which we proceeded to do with a lot of enthusiasm. After an extremely satisfactory meal, we began our return journey (sorry, return crawl) back to Poona. We reached Poona at 10 o'clock on Sunday night. At 5 o'clock on Monday morning, it was a weary and sleepy-eyed group of students and teachers, who bade each other goodbye at Dadar station, before each one left for his home.



THE DEAD LOAD!

SOUL: Physicist's View

By V. R. DOIPHODE

D ICTIONARY defines it, as the immortal part of the Beings. Ancient *RISHIS* of Bharat propounded the idea of soul through presonal experiences gained through meditation. In the present scientific world, no idea is acceptable without theoretical proof or experimental observation.

It is described in the Bhagavadgita as,

अव्यक्तोऽयमचिन्त्योऽयमविकार्योऽयमुच्यते ।

नित्यः सर्वगतः स्थाणुरचलोऽयं सनातनः ॥

नैनं छिदन्ती शस्त्राणि नैनं दहती पावकः ।

न चैनं क्लेदयन्त्याणे न शोषयति मासुतः ॥

This soul is unmanifested, it is unthinkable and it is spoken of as immutable.

This soul is eternal, omnipresent, immovable, constant and everlasting.

Weapons cannot cut it, nor can fire burn it, water cannot drench it, nor can wind make it dry.

The perceptible universe around us is full of only two things, Matter and Energy. Till the end of 19th century physics was governed by two fundamental laws: conservation of energy and conservation of matter. Neither energy nor matter could be created or destroyed; and the total amounts were separately conserved.

In 1924 De Broglie put forward the idea of dual nature of matter (i.e. matter and energy). Davisson and Germer in 1927 experimentally established the wave nature of matter. The advent of the 'Theory of Relativity' brought about a profound change in old ideas in physics. Einstein's matter-energy relation ($E=mc^2$) showed that matter could be created out of energy and matter could again be 'destroyed' and transformed into energy, but the total amount of energy in all forms always remained the same. Thus the whole creation is built up out of indestructible energy.

The description in "The Bhagavadgita" just fits into Energy and certainly not to matter. At present energy is understood in the form of potential energy, kinetic energy, sound, light, heat, electricity and nuclear energy.

Now the question is 'why don't we perceive soul as energy'?

Heat was not thought of as energy until 1798. Electricity was not known at all till 1805, and the nature of nuclear energy was known only in 1939. Even to-day we are short of advanced logical methods to prove the scientific existence of soul; and there is no sophisticated single instrument for the detection of energy, irrespective of its form. Secondly no one is interested in measurement part of (soul as) energy. And even if one is interested his efforts are restricted, since it is not possible to know, with unlimited accuracy, the values of all the dynamical variables of any physical system at one and the same time. The limiting factor is Planck's constant (6.625×10^{-27} ergs/sec.). This is known as Heisenberg's uncertainty Principle. The success of the uncertainty principle is the convincing idea of how and why it is possible for radiant energy and material particle to have dual nature.

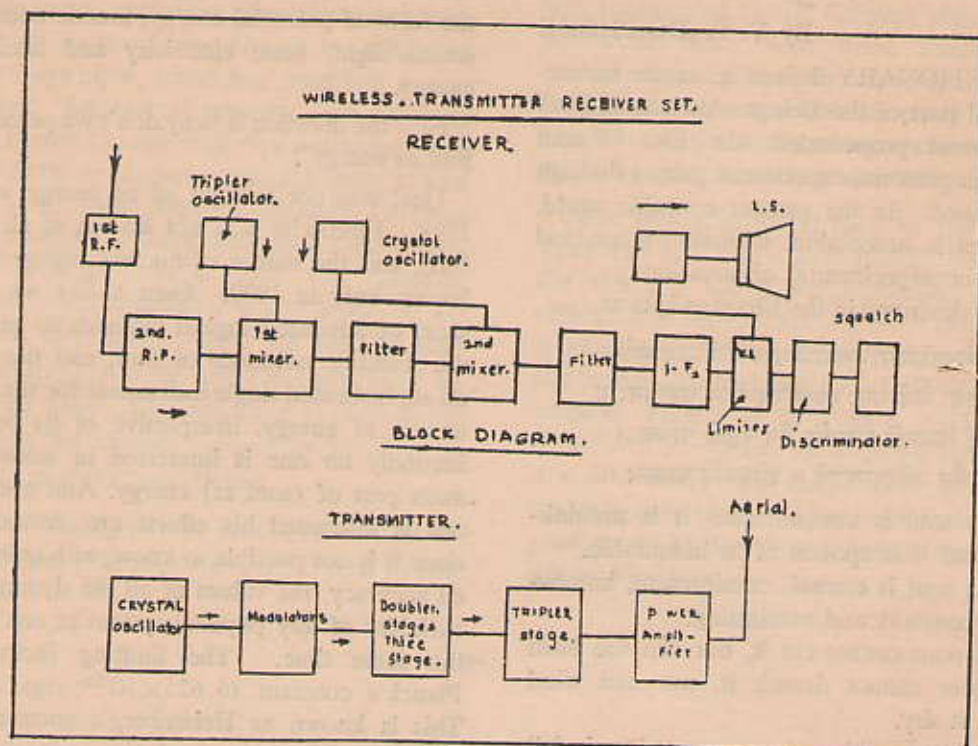
At present it is clear to physicists that radiant energy and matter both having dual nature and still opposite to each other, can never be brought face to face in the same experimental situation. So each entity has to be known with separate experiment. This is similar to doctrines of Hindu philosophy, that body and soul can never be experienced at a time. The former can be understood by the physical senses, while the latter can only be apprehended with the spiritual meditation.

Now you may ask, 'have you realized it' then?

Even with my assertion, no one will be convinced about its reality. Each one has to experience it.

WIRELESS-TRANSMITTER RECEIVER SET:

By P. K. MODY., B.E. (ELEC.) 1969-70



Use:

Transreceiver can be supplied for use in simplex or for Interconnection to a telephone exchange with exchange/subscriber signalling units. Also the set can be supplied with either 12 v D.C. Battery or 230 v A.C. supply.

Receiver:

The output of this stage employs two tuned circuits coupled together capacitively.

Local Oscillator stage:

The Local Oscillator stage is nothing but the crystal oscillator circuit.

Mixer stages:

The mixing of the incoming signal and the local oscillator output frequency is done at the grid of the first mixer valve.

The second stage employs double triode. One triode functions as a crystal oscillator;

the other triode acts as a mixer, which produces the secondary IF frequency. At the output of this stage is a filter tuned to the same frequency. Following them there are IF₂ three stages, which are nothing but RC coupled amplifiers. These stages are followed by two limiter stages.

Discriminator:

This stage uses a double diode valve and has a filter circuit to eliminate harmonics of the limiter stages.

A.F. Amplifier and output stages:

The audio output of the discriminator stage is fed to the grid of A.F. pre-amplifier stages through volume control device.

Squeleh Device:

The Squeleh device is of the noise detector type. The noise is detected by crystal diode. This device can be switched IN or OUT by means of the switch on the Control Box.

ET:

Transmitter:—

Oscillator stage:

The basic oscillator is crystal controlled and traffic frequency is stabilised with great accuracy. For frequency synchronisation trimmer condensers are used.

Modulated stage:

Modulator stage has a variable anode reactance. Frequency deviation is not much more than 10%. The small amount of amplitude modulation inherent in the product is eliminated in the saturated stages through an Audio amplifier and Limiter device.

Double stage and Tripler stages:

In the 1st stage crystal frequency is dou-

bled in the transmitter which has both primary and secondary tuned to the second harmonics. Actually there are three doubler stages. Then it passes through a tripler stage. The frequency after these stages is '24 times' the crystal frequency. The coupling of the tripler stage to the final power amplifier is in push pull. This final symmetrical device ensures correct excitation of the power amplifier which thereby maintains good stability.

Power amplifier stage:

This stage is equipped with double tetrode valve and delivers the output power to the Aerial.

IMPALA HERD

Contributed by VASANT P. DAVE (F.E.I.)

Far away a huge tree stands—

A greyish trunk and a greenish crown—

Upon a mattress of fresh grass blades

Here and there with tints dark brown.

Under this tree so stately and old

Graze countless swift and cautious forms,

Their brownish frames blended with gold

And most of them having no horns.

Such 'Disney's Bambi' as many call

Have ears turning every way

And thin legs seemingly with no role

Than of strolling all the day.

This wild beauty as one nears,

A sudden terror creeps within

Big and small all creatures

For a danger yet unseen.

Ears prick up and necks elongate

Nothing moves save the breeze around

Inquiringly they look on straight

"Was there something? Was it a sound?"

These Nature's children have their fear

And used though to a dreadful life

Their bright black eyes do show it clear

The innocent deer hate the strife.

A second later they fly in fright,

Leaping with grace away and away,

Speeding on like lightning bright,

To keep always strangers at bay.

DIGITAL VOLTMETER

Contributed by: A. VIJAYAKUMAR, B.E. (Electrical)

(Associate Lecturer in Electrical Engineering)

THE world of Electronics has all the charm, magic, beauty and fascination, human imagination can ever conceive. Further more digital techniques are in vogue in the modern electronics field. Digital methods introduce sophistication and high degree of accuracy into the systems concerned. It involves intricate circuitry critical designs deep knowledge in pulse techniques and heavy expenses. Digital instrumentation is recommended, only in cases where the cost is justified.

Analog to digital conversion has been developed very recently. Various systems are available for the purpose.

A typical system is explained here. The unknown voltage to be measured is applied at the input terminals of the digital voltmeter. The system converts (encodes) the voltage analog to equivalent digital form, which is read out on a digital decade counter. Block diagram (Fig. A) makes the explanation easy.

The programmer is the heart of the digital voltmeter. It has controls which can control the gate-width, scale, resetting of the counter stage, timers etc. The controls are brought out on the face of the instrument panel.

Let us sequence events in the operation of the digital voltmeter. The unknown voltage is applied to the input terminals of the voltage comparator circuit (Multiplier). The programmer sends out a start-pulse to the start-stop circuit (Flip-flop) and the time-base generator, simultaneously, at time t_0 . The pulse changes the state of flip-flop from 0 to 1 and remains in that state. The pulse given to the timebase generator produces

one cycle of sawtooth wave. This linear sawtooth is applied to the reference input terminals of voltage comparator. When the amplitude of the sawtooth passes through the voltage level of the unknown input voltage the voltage comparator gives out a pulse at time t_1 . This pulse is coupled to the flip-flop, whereby it changes its state to 0. The net result is that the flip-flop generates a positive step wave with a pulse width of $(t_1 - t_0)$ seconds which can be made to open the electronic gate preceding the counter stage. The crystal oscillator is on. When the gate opens the signals will pass through and is counted in the decade counter. This count is proportional to the gate width which is in turn proportional to the amplitude of the unknown input D.C. voltage. By proper scale and gatewidth adjustment, the count can be made to appear as decade multiples of the input voltage.

Now each block will be explained in detail.

Crystal Oscillator; Fig. 1

The crystal-controlled oscillator gives highly stable frequency output. Drift in frequency will affect the accuracy of the instrument. Heat control of the crystal element can give very high stability of frequency. A typical circuit is given below. Stabilisation is achieved by piezoelectric property of the crystal.

Normal frequencies employed are about a Hundred Kilocycles, extending into several Megacycles per second.

Electronic Gate; Fig. 2

A pentode amplifier with its suppressor biased to a sufficiently negative voltage will



Tug of War—Inter Class
(Winners—S.E.)



Athletics Group



Cricket—Inter Class
(Winners—S.E.)



Tug of War—Inter Class
(Winners—S.E.)



Athletics Group



Cricket—Inter Class
(Winners—S.E.)

**Marathi Dramatic Team
(Youth Festival)**



**Gujarathi Play
(Youth Festival)**

Elocution and Debate



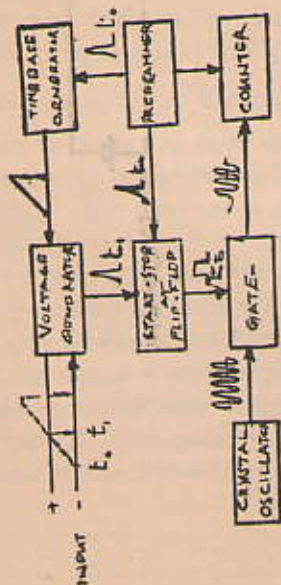


Fig. A.

BLOCK DIAGRAM OF DIGITAL VOLTMETER.

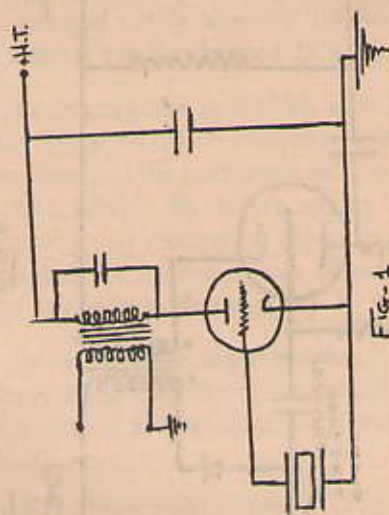


Fig. 1

CRYSTAL OSCILLATOR.

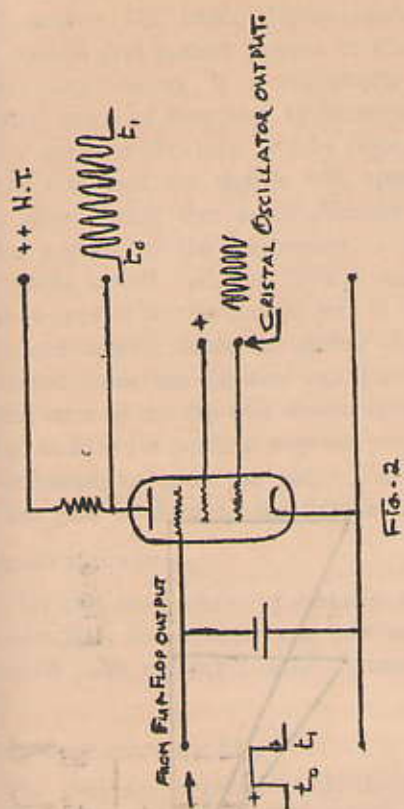


Fig. 2

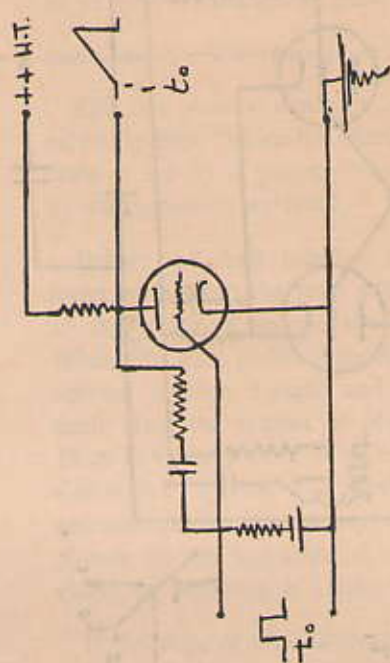
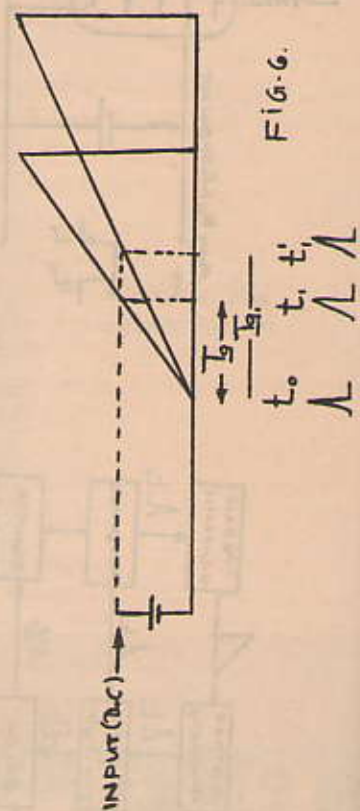
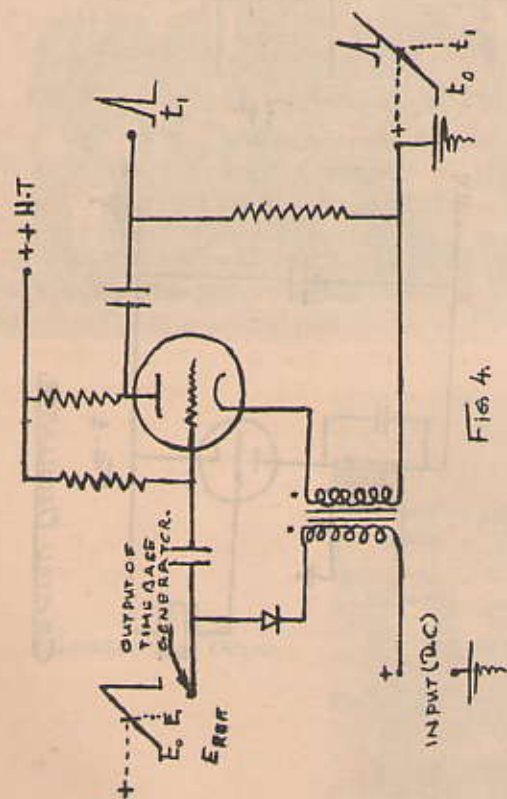
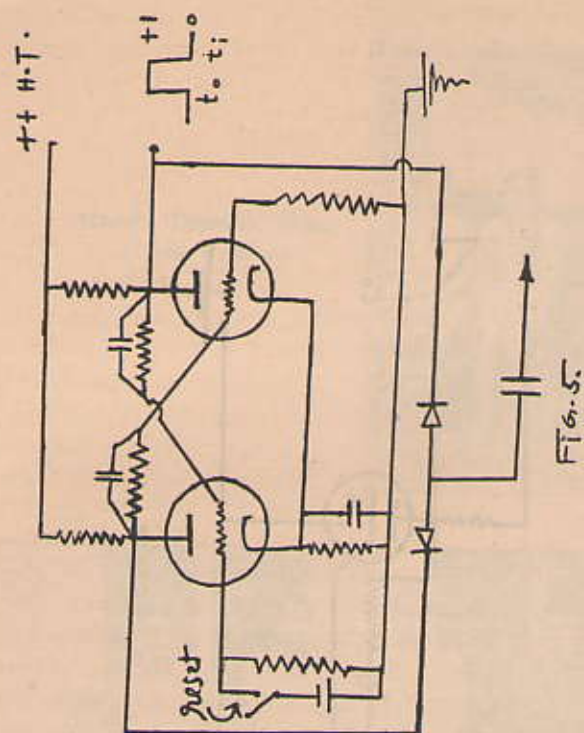


Fig. 3.



not conduct and hence signals applied to the control grid cannot appear at the plate after amplification. If a sufficiently large positive pulse of duration T_g is applied to the suppressor the tube will be biased into conduction and the signals will appear at the plate during that much duration. The pulse applied to the suppressor is known as gating signal and the crystal oscillator output applied to the control grid is termed as gated signals. Here the gating signal is obtained from the flip-flop output. The initial state of the flip-flop should be adjusted so as to get a positive step output which is required to open the gate. The output of the gate is given to the decade counter.

Decade Counter

This can be a chain of bistable multivibrators or a dekatron counter tube or a trochotron tube equipped with decimal read out.

Time-base generator Fig. 3

The timebase must be highly linear. This calls for a miller Integrator which gives a substantially linear sawtooth wave. Here we require an up going Miller Sweep. The generation of sweep is initiated by a switching pulse of proper polarity, to be derived from the output pulse from the programmer. A typical miller integrator is as in Fig. 3.

Voltage comparator circuit (Multiar) Fig. 4

Resistance R biases the tube into clamp. The unknown d.c. voltage is applied to the input terminal. The timebase is applied to the other terminal. Initially at time t_0 the diode will be reverse biased. When the sawtooth voltage reaches the level of input signal the diode gets forward biased and a surge of current introduces a positive potential at the cathode by transformer action and the tube gets cut off. The polarity and number of turns of the transformer windings

must be designed for proportion action. The change in voltage at the plate is differentiated by C and R_2 to get a sharp pulse. When the input sawtooth wave ends the circuit reverts to the original state. This pulse is given to the flip-flop to change its state, so as to get a rectangular pulse.

Start-stop Circuit (Flip-flop) Fig. 5

This is a bistable multivibrator often termed as flip-flop. Before the operation, its initial state is set by a proper bias applied to it by the programmer block.

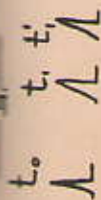
Before the start pulse is applied to the input of flip-flop the reset switch is adjusted so that plate of second tube is at state 0. When the start pulse is applied to the plate voltage reaches 1-state and remains there until after the output of Multiar develops. Then at t_1 the 0-state is attained. This positive step is applied to control the gate. The gatewidth is linearly proportional to the amplitude of the unknown d.c. voltage provided the sawtooth is highly linear.

If the slope of the sawtooth wave is changed, then for the same input level gatewidth is changed to T_g whereby the scale of the voltmeter can be changed (Fig. 6).

Decreasing the gatewidth and increasing the crystal oscillator frequency accuracy and resolution of the instrument can be increased considerably. By incorporating timers for opening and closing of the gate at correct intervals the instrument can be used to monitor the voltage fluctuations.

In addition to sophistication, versatility involved in this Digital Voltmeter, it has an element of sensual beauty ground on to its face!

Ref. Malmstadt, Enke, Toren. Millman, Taub.



In a Humorous Vein

How To Reach Top Management Without Deserving

By A. V. DESHMANE

EVERY manager is convinced of two facts.

No. 1.—His own promotion came too late, even though he deserved it much earlier, in fact he knew how to howl and grab since his childhood.

No. 2.—Others got their promotions without deserving.

I was therefore very much amused when I read what Sir Owen Jenkins, Managing Director of Balmer Lawrie, said at the Administrative Staff College at Hyderabad.

"It is typical of the man at the top that—like me—he is seldom really fitted for the post. I am not just echoing the view of the Angry Young Man in the middle stratum to whom the boss always appears as a superannuated nincompoop. Quite a long time ago, I formed the conclusion that only a small proportion, certainly not more than 10 per cent and nearer to 5 of the people in any organisation have what it takes to run it".

Certainly Sir Owen Jenkins is unjust to himself. He is one of the 5 per cent minority who do have what it takes to run the organisation.

The point is: how did the remaining 95 per cent or 90 per cent people reach the top?

I started an extensive research to find out all about techniques, means and methods employed by them. It was quite a job, you know but certainly most interesting. I shall

now present my findings for the betterment of that most abused and harassed category of mankind—the executives, who get fired during the office hours for doing too little and fired at home for working too hard and coming home with a bagful of files and a pocketful of aspirins.

By the way, this reminds me of the gentleman who wanted to take out a fire-insurance policy as a protection against getting fired by the boss in the office or in the home. Pity, no insurance company sells such a policy.

The first significant fact I discovered is that the world has changed a lot since the time of Shakespeare. He had said centuries ago that all that glitters is not gold. This bit of homely advice might have suited Portia in choosing a good husband at that time. But oh! How the times have changed now!

The girls don't have caskets of gold or silver or lead. They have typewriters now. Every time the bell of the Typewriter rings, they think it's a tea break and go to the canteen! Every girl believes that God must have made her on Saturday night when he was too tired to do a good job. So she makes up another face for herself. She knows that Colgate opens the gates of the young man's heart and Ponds leads to the matrimonial bonds.

Similarly every young executive must remember that a good appearance is the first step towards success. The world has no time to think or stare. It accepts you at

The author is a well known writer and is at present working as Director O. & M. Division Reserve Bank of India. Reprinted from Industrial Times with the author's kind permission.—Ed.

the face value. If you appear to be flourishing, the people will conclude that you must be a very capable man. If you look like a 'down-and-out type', you will be deemed as a failure. You may get their sympathy but you will not get promotion. Therefore the first rule to remember is this—"All that glitters is gold".

The second fact which I discovered is that the sweetness of tongue is far more important than the sharpness of brain. I have seen countless brilliant men who have ruined their careers because they were most indiscreet and tactless. The way they speak makes me think that every morning when they brush their teeth they also sharpen their tongues with a whetstone. Their tongues are so sharp that every time they use it they cut the bonds of friendship and sever good relations. Such men seldom succeed.

On the other hand there are some people who speak so sweetly that if you even listen to them, you will get diabetes. They can even sell you a ticket to hell and make it look like the most exciting holiday you can look forward to. One of such sweet-tongued executives had not paid his tailor's bill for one year. When the tailor sent the bill again, he wrote in bold red letters on the bill—"This bill is exactly one year old today". The man just wrote a little remark "Happy Birthday" and sent it back.

If you develop this priceless ability to speak sweetly and tactfully you will climb up the ladder of success very rapidly, even if you do not have a long string of degrees or any other ability.

The third fact which I discovered is really so simple but profound that I wondered why no one expressed it before. It is the golden key to success. Just two magic words. They are written on every door—"Pull and Push" That's all you need to do to open it.

The door to top management can also be opened by "Pull and Push."

I have mentioned the three rules to make sure that you do not start on the wrong foot with wrong ideas in the head.

Let me now enumerate the three basic techniques which I observed in the course of my research.

No. 1—"I know every-one" technique.

No. 2—"I know everything" technique.

No. 3—"I can get anything done" technique.

'I KNOW EVERYONE' TECHNIQUE:-

Your success in business depends on knowing the right people. If your company comes to know that you have a very large circle of influential friends you will start climbing up.

How can one build up such a circle? The first step is to join as many associations and clubs and societies as you can afford. A friend of mine has joined the Indo-American Society, the Indo-Arab Society, the Indo-Soviet Society, and the Indo-Israel Society. It does not matter in the least whether you agree with their aims and objectives. His heart is overflowing with friendship and goodwill for every country and every cause. You will find him deeply engrossed in the activities of the Mountaineering Clubs and Swimming Pools. He was elected a Vice-president of an "Association For The Prevention of Cruelty of Husbands!"—I am not sure whether it is Cruelty of Husbands or Cruelty To Husbands—but that does not matter. It's amazing to see the number of friends he has!

If you cannot develop personal contacts with distinguished people write to them letters. My friend regularly sends letters on birthdays to a large number of dignitaries. That is rather commonplace.

What is unusual is that he writes to them on the unusual incidents in their lives. I will give you a classic example. He wrote to President Kennedy a letter so as to reach

him on the anniversary of the date when his ship PT 109 was sunk.

He said—"I thank the Lord Almighty for saving your life on this day, Mr. President and pray to God that may He give you many more years of life to make this world a better place to live in." President Kennedy was so touched to get a letter on this crucial event in his life that he took the trouble to reply him. President Kennedy's letter is now his most priceless treasure.

An equally useful tip is to keep the telephone numbers of all the important people on a card which can be easily seen by anyone who walks into your office or home.

There are countless ways really. I have indicated just a few. You can invent many more once you start thinking on these lines. If you build up a reputation as the one person who knows everyone worth knowing, is there any doubt that your prospects will improve?

'I KNOW EVERYTHING' TECHNIQUE:—First of all,

- (1) You must be able to talk on any subject and make it complicated.
- (2) Secondly, you must be able to impress by quoting authorities.
- (3) Thirdly you must know when to stop and avoid the risk of being exposed.

Let me give you a few examples.

Make the subject frightfully complicated. Whether you are talking or writing, beware of simplicity. If people understand you they will evaluate you. If they can't even make out what you are saying, they feel inferior and 99 per cent of them nod their heads in appreciation just to create an impression that they do understand.

I will quote one example of how simple matters can be made terribly confusing—

"Separate Departments in the same premises are treated as separate premises for this purpose where separate branches of

work which are commonly carried on as separate businesses in separate premises are carried on in separate departments in the same premises".

Don't ask me the meaning.

Having made the subject sufficiently complicated and confused the person, display your wisdom to impress others. Don't forget your aim to reach Top Management. You should therefore talk about scientific management and its latest tools and techniques. You know, next to women or perhaps even more than women, management is conscious of fashions. Women will wear anything from the 'Sack' to 'Miniskirt' to keep an up-to-date appearance. So will management. Talk of PERT and CPM, Ergonomics, Cybernetics, Queuing Theory, Linear Programming, Peter Drucker or Rensis Likert, Group Dynamics or XY theories of McGregor.

You should be able to say with an air of confidence and authority something like this—"I don't think much of Fayol. Actually his contribution to scientific management isn't much compared to what Monsieur Pierre or even Mr. Yomohoto has done. Pierre shunned publicity. A real great man, you know! I read some of his papers, translated into English in the Quebec Management Association's journal. His analysis of subliminal motivation and group Socio-histronics is most penetrating".

See how much you have achieved by saying a few sentences like these—

- (a) You have shown that you are a voracious reader, covering publications from all over the world.
- (b) You know all about Fayol, Pierre or Yomohoto.
- (c) You are mature and competent enough to judge their relative merits and worth.
- (d) Lastly, you have made sure that no one can contradict you as it's unlikely

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that anyone will get hold of Quebec Management Association Journal.

'I CAN GET ANYTHING DONE'—TECHNIQUE:—If you practise the three rules and two techniques mentioned so far. You will create great expectations about yourself. The most difficult task is to fulfil these hopes.

Most of the people fail in life mainly because they are afraid of failure. They fear the un-known, the untried, the unattempted task and responsibilities and challenges. They are terribly worried about the consequences. They intensely dislike changes, new methods, new ideas, new techniques. Excessive caution is the true and only cause of their downfall. They risk nothing. They gain nothing. Such people remind me of the fellow who looked all over the town to find a lip-stick with penicillin in it for his wife.

A young fellow once asked a successful

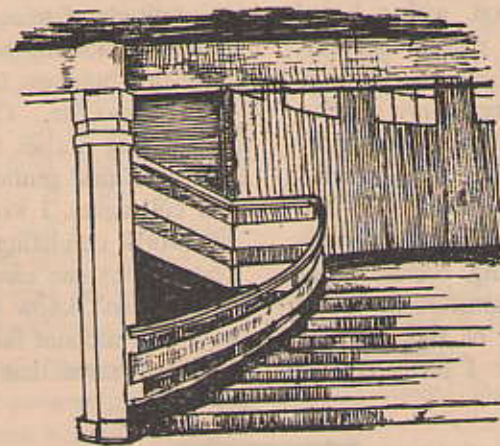
business magnate the secret of his success. "Very simple my boy" he said with a disarming smile. "I just jump at the opportunity and rise with the tide."

"How do you know that it's the right opportunity?" The young fellow persisted with doubtfulness.

"Ah! That's why I keep on jumping", said the business man. "That's exactly what one has to do. Keep on jumping!"

Fifty per cent of the things which you try may go wrong but by the same law of averages you will be right on the remaining 50 per cent times. Even if you fail, at least everyone will applaud your guts and your fighting spirit.

If you never try, never take a chance, never risk your neck, you are not much better than the guy who wrote in his will that he should be buried by the side of a physician.



HE WAS MY COMPANION

By T. C. FERNANDES B. E. (Elec.)

STRANGE are the ways of human relations! We have heard and read a lot of stories and adventures of two friends and their magnificent co-operative fruits.

But here I was linked with a man, whose relation with me is a psychological case which Freud, would interpret, in what way, I know not.

He was humble, good natured, morally sound and had a goodness much above average. But my attitude towards him was of a satirical type. Combined with that goodness, was in him a particular tinge of shyness, reserve and a recoiled attitude. But he had a clean slate of life, and this made not only me, but many of his friends to poke fun at him, to instill in him a shrewdness, which they say is necessary to carry on with this world.

But I went beyond that. Every minute and hour, I was with him, I would shower on him a battery of satirical notes, but he would gracefully laugh it off, with a broad philosophical smile. Years passed this way, but never did he revolt or behave aggressively. I was deeply wondering at my slander, at my, this unsavoury attitude; but more wonderful, and more pensive was I, when I reflected why he didn't backfire. He had read profusely from the books of psychology, philosophy, art of living, social behaviour and all that good literature necessary for a responsible member of the society. With the passage of time I formed two

ideas; First, that he had that, "Magnificent obsession of tolerance", which that profound philosophy had infringed on him; secondly I thought it was the real way to live, a magnificent example of good relationship. Something like "Love your critic too". He lived in letter and spirit of this saying. Later on I realised, that this man had made his psychological specimen, on whom he tried to experiment the great philosophical axioms. I was a specimen in his psychological laboratory. I was glad, that I was a blessing in disguise to him. I would satisfy his psychological ego and therein he would find an answer to the enigma of life.

My satire became a necessary part of our relations. Our conversation would be dull and drab without it and that he is really to enjoy, as I was his specimen.

Many times, I thought I would burst out, break that unholy reserve, pour out to him my sincere apologies and confessions, and this attitude of mine, was simply a mischief, mind you nothing beyond that. But I didn't have that boldness for fear of being dubbed as a hypocrite. Outside his company, I would sing praises to him, and rate him a first class first gentleman, when we weighed our colleagues. I would point out his was a life worth emulating. He is one of the rare companions one can chance to encounter in life. I don't know where he will be, but if ever this account falls in his hands, let him be rest assured that I was his best admirer.

Everytime a little boy went to his playmate's house he found that the friend's grandmother deeply engrossed in her Bible. Finally, the curiosity got the better of him. "Why does your grandmother read the Bible so much?" he asked. "I am not sure," said his friend, "but I think she's cramming for her finals."

Countdown

By KIRAN WALIMBE, (FE III)

LIKE Caligula, we have been trying to catch the moon for the last ten hectic years; and it now seems that we have made it. The grand success of Apollo series is just the indication of it. The credit for it does not go to the Americans only. It goes to the scientists like Ziolkovsky, Godard, Newton; it goes to various Germans, Russians, Americans, Italians;—to all mankind.

The science of Rocketry is fairly old. In China, pyrotechnists had made much progress. But it was just for the sake of amusement. The idea of the modern rocket was put forward by a Russian school teacher, Konstantine E. Ziolkovsky (1837-1935) in the last decade of 19th century. But much of the spade work in this field was done by an American physicist Dr. Robert H. Godard (1882-1945). In 1919, he made a bold statement in his revolutionary paper "Methods to reach extreme altitudes" that a rocket could land on Moon.

Although Russia and America were the first countries to start the research in this field, they were far behind the Germans by the time of World War II. But after the war was over, U.S.A. and U.S.S.R. captured most of the secrets of V-II rockets and also the scientists, amongst whom were the scientists like Walter Dornberger.

Many of us are under the wrong impression that the Russian cosmonaut Yuri Gagarin was the first human being to fly a rocket. Actually it is not so. A German pilot, Stemer, was the first one to fly a rocket powered machine. It was a sort of a glider. The flight, however, ended in a disaster. This happened in June 1928. In 1929, one Fritze

Von O'pel made similar flight. But the first pure rocket-flight was made in 1944 by a German pilot. The rocket was a manned missile. It took off properly but when it reached a height of about 500 feet the ceiling of the cockpit blew off and the pilot died. The rocket reached a height of 5000 ft. and then dived towards the earth. But an American pilot Maj. Charles E. Yeager flew a rocket with supersonic speed in 1947. He landed safely on the earth. We can call Yuri Gagarin as the first one to fly round the earth. On April 12, 1961 the spaceship "Vostok" piloted by him was put into orbit and after completing a revolution around the planet, it made a successful landing in the pre-set area.

The first Sputnik was launched in October 1957, followed by the Sputnik-II—the carrier of the dog "Laika". The Russians chose dogs rather than apes for their space testings, because being domesticated, they were easy to handle. Dogs were trained as cosmonauts—to lie down, to become accustomed to acceleration, vibrations and noise. They were taught to eat special food when delivered automatically. Also like human cosmonauts, they were carefully selected. They essentially were white, weighing less than 14 lbs, between 2 to 6 years old and mainly female. Laika completed 54 revolutions around the planet and then she was offered a painless death. On 31st January 1958, the Explorer or 1958- α was launched by US which set off a stiff competition between the US and USSR.

A rocket flies on the well known principle of Newton's third law of motion. But the

importance of Newton's first law is not understood by all. When Apollo 8 was on its path, someone from Houston space centre radioed a question to the astronauts "Who is driving up there?" He couldn't have expected the answer he received. "I think Sir Isaac Newton is doing most of the driving right now." And indeed it was very true. The whole 205 million dollars project covered the expense of hardly one per cent of the total journey. Remaining 99 per cent was a free ride. The reason behind it is the phenomenon of inertia.

A rocket motor operates by subjecting its propellant to rapid combustion and then exhausting the gaseous product at a high velocity through a "convergent divergent de laval nozzle."

The term propellant is used to describe both, the fuel which undergoes combustion and the oxidiser which supports combustion of the fuel. They can either be liquids or solids. A rocket carries with it, its own oxidiser—unlike the jet engine—hence it can operate under near vacuum conditions of space. Highly electro +ve elements like hydrogen are most suitable for fuels while highly electro negative elements like fluorine are suitable for oxidisers. In order to obtain a high specific impulse, the mean molecular weight of the exhaust gas should be as low as possible. The lighter molecules move at a greater velocity, the velocity being inversely proportional to the square root of the molecular weight. Hence hydrogen rich compounds like dibotane, ammonia, hydrazine etc. are preferred as fuels. From this point of view, liquid propellents are preferable to solid propellents, because the solid propellant contains heavy atoms which give an exhaust of high mean molecular weight. It is desirable to have a high pressure in the combustion chamber and low pressure at the exit end of the nozzle. Liquid propellant motors have a disadvantage that the propellents are to be fed against the high chamber pressure. This problem never

arises in the case of solid propellant motors, as the storage container serves as the combustion chamber. It is also desirable to have a propellant with high bulk density so that the volume becomes less and the vehicle becomes compact and less costly.

Rocket propulsion has played a remarkable role in expanding the frontiers of human knowledge on astonishingly diverse fronts. Dr. Walter Dornberger once said, "We have led our generation to the threshold of space; the roads to the stars are now open."

We often hear about the manned space probes. But the question which often arises in our minds is "Why should a man be spent into space?" We have developed many automatic devices, varieties of computers. They can send more accurate information than a human being. Then why Man?

Here is the answer given by a Soviet Scientist Anatoly Blagonravov. He says, "Even the most ingenious automatic devices can act according to a given programme or at the best, improve this programme in the course of operation. But in compiling the programme for such machines, it is essential to have a certain initial data on the phenomenon studied so far. Yet we often come across a phenomenon—space mysteries—which is completely unknown to us. How can an automatic machine tackle such problems? It cannot explore what is unknown in principle. But man alone is in a position to study effectively the unknown; to take correct decisions in unforeseen circumstances and to make full use of opportunities for study."

"Since at the present stage of space exploration one of the main tasks consists of gaining ever more profound knowledge of nature; man's direct participation in space flights is absolutely essential. This is why the first journey of the Soviet cosmonaut Yuri Gagarin, was not just another step into outer space—it was the beginning of a new epoch in the exploration of the universe."

But again this answer, being controversial, is contradicted by many prominent personalities which include another top Russian Scientist Georgy Petrov. According to him, in the manned space probes, major attention is to be given to the question of welfare of human astronauts. Hence the service module occupies so much space that it becomes impossible to accommodate all the required scientific instruments. Moreover in most of the cases, the presence of a human being is not absolutely essential. In these cases, it is a mere waste of money and precious space to accommodate an astronaut. This is the reason, why Russians send more unmanned spacecrafts.

Luna-I was sent towards the moon on 2nd January 1959. Then onwards, all the Luna series & other space missions as the Zond series, the Apollo series, have brought back very valuable information of the outer space, mainly about the moon.

One of the main purposes of the geological studies of the moon is to cognize the past of this celestial body and the solar system. The thing is that those remains of earth's initial structures were destroyed as a result of the active formation of the mountains, sedimentary rocks, etc. Hardly anything concrete is known about the first billion years of our planets existence. It is thought that the geological processes changing the Lunar surface act slower than those on the earth. Hence the studies of moon's origin will throw light on the question of the community of the history of moon and earth. Georgy Petrov says, "The studies of moon are inseparable from the task of studying earth as a planet of the solar system."

Professor Samuel Tolansky of the London University says that we may get diamonds on Lunar surface. This is something sensational. Outer space can become an indispensable source of industrial raw material and a power base for mankind. Many production processes, for instance the thin film industries, can be organised with a

rather high degree of effectiveness. The high vacuum there, 0 to 10^{-14} torr can be very useful. Hence the space exploration, in the long run, is very useful for us.

From among several alternatives USA has chosen the plan called "Lunar Orbital Rendezvous." It involves lifting a giant rocket like Saturn V to take the Apollo manned craft to the lunar orbit, which then releases a lunar module to land on the moon. On the return trip the module rendezvous with the mother ship to allow the transit of astronauts. Then the mother ship begins its journey back home.

The Rendezvous is only one of the operations among many which took men to moon and brought back safely. To eliminate rendezvous and to travel directly to the moon would require building a super duper rocket that would consume many more years. For the time being, LOR is the only way it is going to be done.

It is too easy to talk about the space travel but the travel is not as easy as that. Now we will consider the dangers of it.

Before landing, the lunar bug will be flying too low. It is believed that there are huge rock masses below the lunar surface which increase the pull of gravity. They can alter the speed of the space ship resulting in the failure of the mission. More or less the same situation had arisen, if you remember; while "Eagle" was about to land.

Thousands of meteorites bombard the Lunar surface daily. They are just tiny dust particles having power enough to puncture holes in the space suits. The selenonauts will be subjected to all kinds of radiation hazards which is too fatal for them. The Cosmic radiation is the most dangerous foe. Even when the space ship is shielded behind the moon or earth and the radiation intensity is decreased, it is still dangerously high. How then is, one to get over this hazard. There are two ways of doing it. One of them is spaceship sheathing and other is a complicated biological process.

While moving over the Lunar surface, the astronaut will have to be careful to avoid plunging into the dust covered craters. The most dangerous of all the operations is the re entry. Although it has been done skillfully for several times, it still is very risky. It is like a motorist coming straight off a highway at 120 m.p.h. and passing through two gate poles, seven feet apart without slowing down. If the reentry angle is changed even slightly, the astronaut will either be burnt to ashes or he will be thrown back in the space on the path of no return.

While the big powers are taking spectacular giant strides in space, India is making it's own modest contribution towards space study. India decided to enter this field in early 1962 and created in the department of Atomic Energy, "Indian National Committee for space Research" (INCOSPAR). The aim was to study the atmosphere with the help of sounding rockets. Before establishing the Thumba Equatorial Rocket Launching Station (TERLS), there were major gaps in the world coverage of sounding rocket sites, especially in the equatorial region. TERLS was helped by France, USA and USSR. On 21st November 1963, the First Nike-Apache rocket carrying sodi-

um vapour pay load, was fited from TERLS. In December 1965, TERLS was accorded UN sponsorship and on 2nd February 1968, India performed the dedication ceremony of International Thumba Equatorial Launching Station.

The rockets so far launched from TERLS were foreign gifts. To support this programme, India is establishing her own capability for fabricating centaur rockets, under an agreement with Sud Aviation of France. India has designed and built it's own rockets also like Rohini RH 75.

Dr. Vikram Sarabhai, Chairman of INCOSPAR recently declared that another rocket base for four stage rockets is being set up on the east coast near the Puliat lake area and within next five years we will launch our own satellites.

Well! So far we have had a glance at the efforts made in the space research field. We have seen the basic principles on which a rocket flies, we know the priliminary things about astronautics. This branch of science is developing rapidly. Todays engineer should be having the answers, atleast to some basic questions. From that point of view, I hope, this article would be useful.

*There was once an old man of Lyme,
Who married three wives at a time,
When asked, "Why a third?"
He replied, "One's absurd!
And bigamy, sir is a crime."*

*Husband: My Wife's a magician.
She turns everything into an argument.*

A smile is a perfection of a laugh.

[S. D. KESARKAR—From his collections]

OCCULT WORLD

By J. G. PANJI

MAN by nature is inquisitive and this inquisitiveness of man has always kindled a lot of interest in knowing not only about the present but also his future. The past events play a role in analysing the events of the present and the future. There are many things which in the ordinary sense of the word, would appear to be strange and curious and many a time, we consider them as due to an invisible hand and regard them as inevitable. But it is the experience of almost everyone that the so called events considered as inevitable can at times be perceived, and there are people who are gifted with the ability of knowing not only the past, the present but also the future of men, and do certain things which ordinary men regard as miracles. The science of this special knowledge we may call as Occult Science.

Occult Science is perhaps the most controversial subject. By and large every man, whether out of curiosity or out of genuine interest would be inclined to know the events that are in store for him. This science is commonly referred to as astrology and is based on astronomy to some extent. The regular features such as 'Know Thy Star'; 'What the Stars Foretell'; 'You and Your Stars' and such similar features in magazines, daily newspapers and periodicals force us to infer that people at times have more faith in astrology and they derive satisfaction in knowing the future events. There have been incidents where people have taken the help of forecasts in averting critical situations. The people have developed such a belief in this branch of Occult Science that even marriage and job finding problems are now a days solved by computers. This evidently shows that

astrology is based on certain basic concepts which are dependent on the science of astronomy.

One may wonder how the stars, situated at several light years' distance and the planets moving around the Sun in their orbits like our mother earth, could influence our lives. But several observations in the past show that the planets and their movements do have tremendous influence on the objects on this planet. The earth is surrounded by ether. It is the ether referred to as space—that is responsible for the twinkling of stars. The ether is considered as one of the five major elements according to our ancient Indian seers. Whatever they expressed in the *Shrutis*, *Upanishads* and *Epics* in the form of philosophical-lore and metaphysics, contain some scientific facts which reveal that our ancestors had a greater insight of this branch of science also.

The atom is the tiniest particle of any element. An atom consists of a central nucleus which is made up of protons and neutrons. The electrons in an atom revolve around the nucleus in certain orbits of definite energy. The structure of an atom is compared with our solar system. The energy associated with an atom is characteristic of itself. This energy of the atom may be liberated when it undergoes a change by say, the process of fission. Also a new element can be formed in this process. The energy thus liberated gets mixed up with the universal energy only to be recrystallised into some other form in future. This recrystallised energy depends on the mass difference between the new element appearing and the old one undergoing change. So atoms liberate energy. The Zodiac also with a galaxy of stars and planets emits some kind of energy which propagate through space and perhaps sets up vibrations. So the whole Cosmos or material Universe including human-beings is affected by these vibrations. Also, each material

body and even the mind of the individuals has its own characteristic vibrations. The vibrations, both characteristic and acquired are mainly responsible for giving form and character to all parts of the Cosmos, and all individual mentalities and varied ways of life, we observe on earth.

Astrology regards the planets as spiritual embodiment of power, love and wisdom which carry out the will of God. They are the centres of energy in cosmic vibrations. These vibrations are manifested all over the earth through Zodiac. These electronic emissions of waves from Zodiac are very much like the system of waves of certain wave lengths associated with moving electrons. It is a fact that human body also emits electronic particles or vibrations. These electronic discharges operate as receiving or transmitting base. As and when our body is attuned to cosmic vibrations of planets and constellations, both the good and the bad effects can be noticed on the human mind. Human body can thoroughly sense the feelings of these cosmic rays and their effects on the mind and body guide the events in life. These events at times appear as inevitable on one's life, and we regard them at times as the Will of God or our own **Karma** of past and try to derive solace.

It is said that Swami Vivekanand used to receive telepathic messages from his master Ramkrishna Paramhauns while he was away in U.S.A. This is also one kind of cosmic vibration. Similarly several instances can be quoted. It was experimented in early twenties by Dr. Bryant, a British scientist that moonlight had more effect in the decaying process of organic substances than ordinary light. And he proved that rays from the moon are nothing but consist of polarised light, which produce the decaying effect. This was further collaborated by Prof. Wood of John Hopkins (U.S.A.)

that moonlight exerts a peculiar influence upon not only certain chemicals but also on living things—both animal and vegetable. Moonlight has a far reaching effect on human mind especially when it is full-moon. Certain mental aberrations and hysterical diseases are more pronounced during the full-moon. It is also a known fact that tides are due to pull of moon. If moon can cause water to be lifted over hundreds of feet, we cannot deny that moon exercises its cosmic vibrations on the living being also. In astrology, moon is considered specially to govern the mind of the people. Today, man has produced his footprints on the surface of moon. But the effect of the moon has none the less diminished because these effects are due to cosmic forces, which were noticed, are being noticed and will continue to be noticed in the future as long as this satellite of earth continues to exist.

Similarly, solar vibrations affect the whole universe. Sunspots or upheaval on the solar surfaces produce auroral disturbances, in the form of magnetic storms which interrupt communication system round the world. It also affects weather and living bodies. Interplanetary effects can also be similarly studied. The advancement of science has helped to some extent to conclude that certain effects of the planets and the stars observed from experience and careful analysis by our ancient seers and astrologers are no longer to be treated as mere prophesies but to be considered as forewarners of the events that are likely to take place.

It is as good a science as weather forecasting by the observatories all around the world. The astrology is a science based on astronomy and it needs a greater attention and deeper research to make this a helping tool in man's progress by avoiding some of the odds in life hitherto considered as the act of destiny, fate or Will of God.

SOLAR ENERGY

L. E. THAILAMANI, Dept. of Physics

WE, the inhabitants of the earth enjoy a piece of good fortune of having a transparent atmosphere. Through this transparent atmosphere, we are able to look at the sky above us. The night sky studded with countless stars, has been a source of all inspirations and intellectual excitement to man. Had we been born on the Venus or Jupiter, conditions would have been much different. These planets have a thick cloud covering them. So remaining on these planets, one cannot talk of looking at the sky.

Eversince, man looked at the sky, his thoughts left the earth on which he exists and travelled out. He watched the sky through his telescope and gave a scientific picture for the structure of the universe. Today he has stepped on the moon, his nearest neighbour in the sky.

Our earth belongs to the Sun, which appears as the brightest object in the sky. However, the Sun is just one of the billions of stars scattered in the sky. Sirius is one such star, which is at a distance of about half million times the distance of the sun from the earth. Light rays from Sirius take eight years to reach the earth. Compare this with the sun's rays which reach the earth in eight minutes. Sirius is a very powerful star. If it were to take the position of the Sun as the centre of the solar system, our oceans would start boiling.

The sun appears to us like a fire ball. The temperature at the surface of the sun is $10,000^{\circ}\text{F}$ and in the interior of the sun, it is 20 million degrees F. It supplies power, to the earth at a rate of five million horse power per square mile. If we were to pay for this power at the rate of 8 p. per KWH, (a very cheap rate), the earth's bill for the

sun would be 1/6 billion rupees per second! However our tiny earth takes only half billionth of all the energy radiated by the Sun.

The sun is continuously pouring out its radiant energy. We know that radiation has weight. Calculations show that the total radiation which pours out from the sun every second has a weight of 4 million tons. This in other words means that the Sun is losing its weight constantly.

The question that puzzles us is, how this enormous amount of energy is created in the Sun. No satisfactory reply was available until, Einstein gave his well-known relation $E=mc^2$. This relation of Einstein has come as a big boon to mankind. It reveals the possibility of the generation of energy by the conversion of mass.

'c' in Einstein's relation, represents the speed of light, and has a value 3×10^8 m/s. If we start with 1 gm of sun's mass, the energy it can liberate is equal to $10^{-3} \times 9 \times 10^{16}$ Joules, i.e. 9×10^{13} Joules. This corresponds to 33 million horse power hour of energy. So we conclude that the mass of the sun is continuously undergoing conversion to liberate the energy supplied to the earth.

Let us analyse the process of conversion of mass to energy. Sun has a large amount of hydrogen apart from other elements. Further at the high temperatures prevailing on the sun, one can come across ionized atoms, electrons etc., moving at tremendous speeds. These fast moving particles, react with the hydrogen content of the sun. As a consequence of this interaction, the hydrogen is converted into helium. This process of conversion is termed as atomic fusion.

Formation of one helium atom requires four hydrogen atoms.

Mass of one
hydrogen atom = 1.008145 a.m.u.
Mass of four
hydrogen atoms = 4.032580 a.m.u.
Mass one helium
atom formed = 4.003874 a.m.u.
Mass difference = 0.028706 a.m.u.

So we see that there is a loss of mass of 0.028701 a.m.u., whenever four hydrogen atoms fuse together to form one helium atom. It is this mass which is, converted into energy as per Einstein's relation.

1 atomic Mass

Unit (a.m.u.) = 931 Mev of energy.

So the energy liberated in the process of formation of one helium atom is 26.7 Mev. Thus billions of hydrogen atoms will be transformed into helium atoms accompanied with the liberation of enormous amount of energy.

So far we talked about the conversion of hydrogen to helium, as though it is a simple and straight-forward process. But it is not so.

By 1939 enough was known about the nuclear reactions and Bethe had proposed a set of reactions by which hydrogen might be converted to helium in the sun. He described what is known as a solar carbon

cycle. High energy thermal protons available in plenty in the sun are responsible for starting and carrying out this carbon cycle.

In this cycle, the atom to start with is carbon-12 which reacts with a high energy proton. At the end of the cycle we again have a carbon-12 atom but along with a helium atom and energy. (We have omitted the intermediate stages of the cycle). So it appears that the carbon-12 atom has played an important role in the formation of helium. But itself is not consumed, in the process. In the language of a chemist, we say that carbon-12 acts as a catalyst. It may take millions of years to go through this cycle once, with a particular atom. Ultimately, the cycle results in the conversion of four hydrogen atoms to a helium atom with the liberation of 26.7 Mev of energy.

Now we are confronted with another question. When the sun has exhausted all its hydrogen, how can it liberate energy by the process of fusion? It is too early for us to worry about such a problem. The sun is so big that only 0.1% of its hydrogen is utilised in 150 billion years.

We talked about what happens on the sun. Like sun all stars are nuclear furnaces of one sort or another.



OCCUPATION BIRTHSTONE :

ARCHITECTS: Cornerstone.... BURGLARS: Keystone.... MOTORIST: Milestone.... PEDESTRIANS: Tombstone.... ASTRONAUTS: Moonstone.... DOCTOR: Gallstone.... OPTICIAN Grindstone.... STUDENT: Bookstone.....

* * *

A boy brought home his school report and explained to his father why his marks were so poor: "Remember Dad, I'm just an ordinary son of an ordinary parents, and this is an ordinary report."

[S. D. KESARKAR—From his collections]



S. R. Marathe—on the right.
Winner—Men's Single, Inter Collegiate T. T. Tournament



Mr. R. L. D'Souza
Chairman—Speaker's
Forum



Speakers Forum

NEW METHOD IN SLIDE RULE

S. B. PANDIT, S. E. (Elec.) Class

Friends, in this article, I desire to discuss about the use of slide rule for logarithms. Here is an easier method for finding out the logarithm of any number less than one or greater than one, any positive fraction or any positive integer, when base is less than one or greater than one.

I may state that the method given below is an alternative method to that suggested by manufacturers of slide rules. I feel that this method is easier for students to work out and remember than the method suggested by manufacturers. The method is explained below:—

Referring to ARISTO STUDIO DUPLEX SLIDE RULE, we have six scales.

- (1) when the base is on LL_3 scale
- (2) when the base is on LL_2 scale
- (3) when the base is on LL_1 scale
- (4) when the base is on LL_{03} scale
- (5) when the base is on LL_{02} scale
- (6) when the base is on LL_{01} scale

Case 1.

We will consider the bases which are on LL_3 Scale.

(A) Consider the base 'Seven'.

When the hair line is on the base 'seven' of LL_3 scale then for finding logarithm of any number to base 'seven'.

(i) Lying to L.H.S. of hair line on LL_1 and LL_{01} scale i. e. numbers lying in A and A' range.

(refer to fig. No. 1.)

Put two zeros after the decimal point and ahead of it put answer from C scale and get the accurate answer. e. g.

log	Reading on 'C' Scale (without decimal)	Accurate ans.
$\log_7 1.019$	968	0.00968
$\log_7 1.015$	766	0.00766

$\log_7 0.985$	775	-0.00775
$\log_7 0.99$	516	-0.00516

(ii) Lying on R.H.S. of the hairline on LL_1 and LL_{01} and L. H. S. of hairline on LL_2 and LL_{02} scales i.e. numbers lying in B and B' range—

(Refer fig. No. 1)—

Put one zero after decimal point and ahead of it put answer from C scale to get accurate answer. e. g.

Number lying in 'Single naught Range'

log	Reading on 'C' scale (Without decimal)	Accurate ans.
$\log_7 1.2$	936	0.09360
$\log_7 1.02$	1018	0.01018
$\log_7 0.98$	1037	-0.01037
$\log_7 0.85$	834	-0.08340

(iii) lying on R. H. S. of hair line on LL_2 and LL_{02} and L. H. S. of hair line on LL_3 and LL_{03} scales i.e. numbers from C and C' range.

Put the answer from C scale after the decimal point and get accurate answer e.g.

Numbers lying in 'Point Range'

log	on 'C' scale Reading	Accurate ans.
$\log_7 1.4$	1729	0.1729
$\log_7 6.0$	92	0.9200
$\log_7 0.7$	1829	-0.1829
$\log_7 0.2$	825	-0.8250

(iv) Lying on R. H. S. of hair line on LL_3 and LL_{03} scales i.e. numbers from D and D' range—

In this case we get final accurate answer on C scale itself e. g.

Numbers lying in 'Direct Answer Range'.

log	Reading on 'C' scale	Accurate ans.
$\log_7 40$	1895	1.895
$\log_7 20000$	5089	5.089
$\log_7 0.06$	1443	-1.443
$\log_7 0.04$	1652	-1.652

We have called so far

(1) A and A' range as Double Naught Range.

(2) B and B' range as Single Naught Range.

(3) C and C' range as Point Range.

(4) D and D' range as Direct Answer Range.

Thus we have observed that as long as the base is on LL_3 scale above method for finding logarithm remains the same but the lengths of ranges A, A', B, B', C, C', D, D' change as the base changes which is clear from the figures one to four.

(B) When the base is 'Ten' (Refer fig. No. 2)

Numbers lying in A and A' range

(i) i.e. in Double Naught Range.

log	Reading on 'C' scale (without decimal)	Accurate ans.
$\log_{10} 1.015$	647	0.00647
$\log_{10} 1.02$	86	0.00860
$\log_{10} 0.99$	437	-0.00437
$\log_{10} 0.98$	876	-0.00876

(ii) Numbers lying in B and B' range i.e. 'Single Naught Range.'

log	Reading on 'C' scale (without decimal)	Accurate ans.
$\log_{10} 1.025$	1072	0.01072
$\log_{10} 1.06$	253	0.02530
$\log_{10} 0.95$	223	-0.02230
$\log_{10} 0.85$	704	-0.07040

(iii) Numbers lying in C and C' range i.e. lying in point range

log	Ans. on 'C' scale (without decimal)	Accurate ans.
$\log_{10} 1.6$	204	0.204
$\log_{10} 4.0$	602	0.602
$\log_{10} 0.55$	259	-0.259
$\log_{10} 0.30$	522	-0.522

(iv) Numbers lying in D and D' range i.e. in Direct Answers.

log	Ans. on C scale (without decimal)	Accurate ans.
$\log_{10} 25$	1398	1.398
$\log_{10} 5500$	3740	3.740
$\log_{10} 0.04$	1396	-1.396
$\log_{10} 0.005$	23	-2.300

(C) When the base is e (refer fig. No. 3)

For A range there is only one number i.e. $\log_e 1.01 = 0.00996$

For A' range there is no number at all — For remaining numbers procedure is identical with the previous one.

(D) Similar is the case when the base is 'Five' which is clear from fig. no. 4

When the bases are on LL_{03} scale apply the above rules in reverse direction i.e.

A and A' range will change to A' and A
B and B' range will change to B' and B
C and C' range will change to C' and C
D and D' range will change to D' and D respectively.

CASE (2)

When the base is on LL_2 scale. Consider the base 'Two'.

When the base is on LL_2 scale there is slight change in above stated rules.

(1) A and A' range i.e. 'Double Naught Range' vanishes. When the hairline is on base 'Two' on LL_2 scale then for finding logarithm of any number to base 'Two'.

(Refer fig. no. 5)

(i) lying to L.H.S. of hair line on LL_1 and LL_{01} scales i.e. in numbers lying in B and B' range—

Accurate
ans.

0.204
0.602
-0.259
-0.522

D' range

Accurate
ans.

1.398
3.740
-1.396
-2.300

No. 3)

number

number at all
scale is

the base
4

scale ap-
on i. e.

A and A

B' and B

C and C

D and D

Con-

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Two'.

on LL₁

ing in B

Put one zero after decimal point and put ahead of it answers from C scale to get accurate answer, e.g.

Numbers lying in 'Single Naught Range'

log	Ans on 'C' scale (without decimal)	Accurate ans.
$\log_2 1.01$	1438	0.01438
$\log_2 1.05$	704	0.07040
$\log_2 0.99$	1449	-0.01449
$\log_2 0.945$	814	-0.08140

(ii) lying to R.H. S_D of hairline on LL₁ and LL₀₁ scales and to L.H.S. of hairline on LL₂ and LL₀₂ scales, i.e. Numbers lying in C and C' range—

Put answer from C scale after decimal point and get accurate answer, e. g.

Numbers lying in Point Range

log	Ans. on 'C' scale (without decimal)	Accurate ans.
$\log_2 1.08$	111	0.1110
$\log_2 1.90$	926	0.9260
$\log_2 0.93$	1043	-0.1043
$\log_2 0.51$	9699	-0.9699

(iii) Lying to R. H. S. of hairline on LL₂ and LL₀₂ scales and L. H. S. of hairline on LL₃ and LL₀₃ scales i.e. Numbers lying in $\frac{D}{1-10}$ and $\frac{D'}{1-10}$ range. (Refer fig. no. 5.)

In such case we get the direct final answer on C scale which is less than ten (hence $\frac{D}{1-10}$ or $\frac{D'}{1-10}$ (max) value of $\frac{D}{1-10}$ is 10

(iv) lying to R. H. S. of hairline on LL₃ and LL₀₃ scales i. e. Numbers from $\frac{D}{10}$ onwards and $\frac{D'}{10}$ onwards)

In such cases we get direct final answer on C scale which is greater than ten and less than hundred.

log

Ans. on 'C'
scale (without
decimal)

Accurate
ans.

$\frac{D}{1-10}$ & $\frac{D'}{1-10}$ range

$\log_2 2.1$	107	+1.07
$\log_2 1000$	997	9.97
$\log_2 0.45$	115	-1.15
$\log_2 0.06$	406	-4.06

D & D' range
10-onwards 10-onwards

$\log_2 1500$	1055	10.55
$\log_2 5 \times 10^{-4}$	1094	-10.94

In short at 2 on LL₂ scale $\log_2 2$ is one. Just above Two it is ten on LL₃ scale Just below Two (of LL₂ scale) on LL₁ scale answer changes to 0.1

When the +base is 1.15 same procedure should be adopted only the lengths of ranges B, B', C, C', $\frac{D}{1-10}$ $\frac{D'}{1-10}$

$\frac{D}{10}$ onwards $\frac{D'}{10}$ onwards

will change which is clear from fig. No. 6 When the base is on LLO₂ scale—apply rules in reverse direction which are true when the base is on LL₂ scale

CASE (3) : Base on LL₁ scale. When the base is on LL₁ scale 1) A and A' range i.e. Double Naught Range vanishes. (2) B and B' range i.e. Single Naught Range vanishes. and we are left only with Point Range and Direct Answer Range.

Consider base 1.02. When the hairline is on base 1.02 of LL₁ scale then for finding logarithm of any number C to base 1.02

(i) Lying to L. H. S. of hairline on LL₁ and LL₀₁ scale i.e. numbers lying in C and C' range (Refer fig. No 7)——

Put answer from C scale after decimal point and get accurate answer e.g.

Numbers lying in Point Range

log		Ans. on 'C' scale (without decimal)	Accurate ans.
$\log_{1.02}$	1.01	503	0.5030
$\log_{1.02}$	1.015	7525	0.7525
$\log_{1.02}$	0.99	506	-0.5060
$\log_{1.02}$	0.985	762	-0.7620

(ii) lying to R. H. S. of hairline on LL_1 and LL_{01} and to L. H. S. of hairline on LL_2 and LL_{02} scale. i.e. Numbers lying in $\frac{D}{1-10}$ and $\frac{D'}{1-10}$ range—

We get direct final answer on C scale which is less than ten

(ii) lying to R.H. S. of hair line on LL_2 and LL_{02} scales and L.H.S. of hairline on LL_3 and LL_{03} scales. i.e. Numbers lying in $\frac{D}{10-100}$ and $\frac{D'}{10-100}$ range—

We get direct final answer on C scale which is greater than ten but less than hundred.

(iii) lying to R. H. S. of hairline on LL_3 and LL_{03} scales i.e.

Number lying $\frac{D}{100 \text{ onwards}}$ and $\frac{D'}{100 \text{ onwards}}$ range—

We get direct final answer on C scale which is greater than hundred but less than one thousand.

log		Ans on 'C' Scale (without decimal)	Accurate ans.
$\log_{1.02}$	1.025	1248	1.248
$\log_{1.02}$	1.18	834	8.340
$\log_{1.02}$	0.98	1019	-1.019
$\log_{1.02}$	0.90	532	-5.320

Range	D_{10-100}	D'_{10-100}
$\log_{1.02}$ 1.3	1325	13.25
$\log_{1.02}$ 2.5	463	46.30
$\log_{1.02}$ 6.0	904	90.40
$\log_{1.02}$ 0.40	462	-46.20
$\log_{1.02}$ 0.15	956	-95.60

Range	$D_{100 \text{ onwards}}$	$D'_{100 \text{ onwards}}$
$\log_{1.02}$ 50	1975	197.50
$\log_{1.02}$ 1000	349	349.00
$\log_{1.02}$ 20,000	500	500.00
$\log_{1.02}$ 0.04	1621	-162.1
$\log_{1.02}$ 0.002	313	-313

When the base is on LL_{01} scale apply above rules which suit for the base on LL_1 in reverse direction.



FIG 1 BASE 7 ON LL_3 SCALE



FIG 2 BASE 10 ON LL3 SCALE

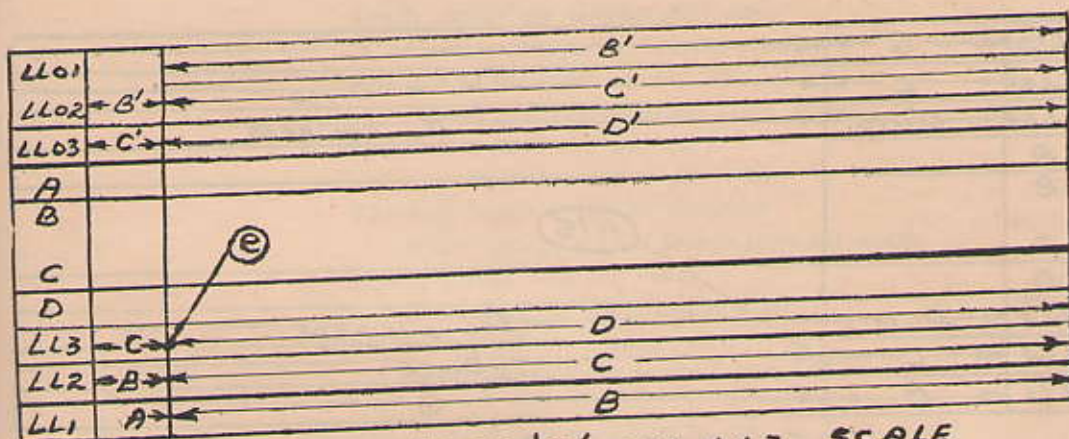


FIG 3 BASE 'e' ON LL3 SCALE

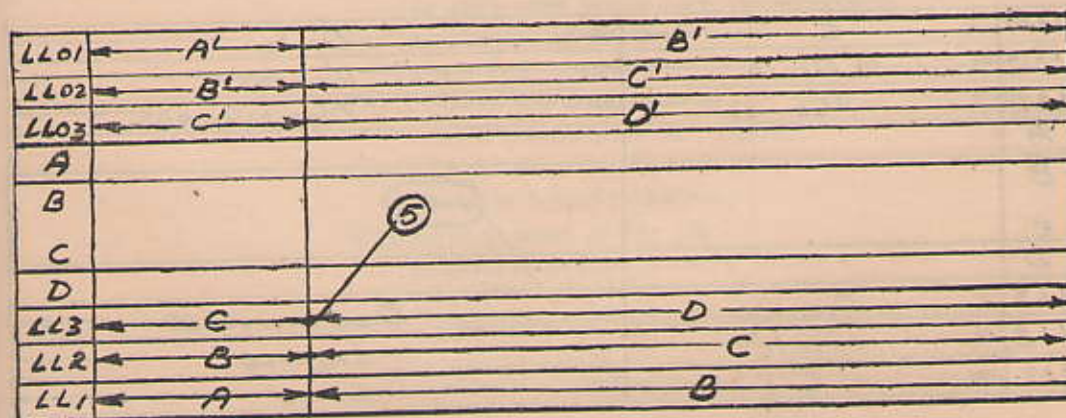


FIG 4 BASE 5 ON LL3 SCALE

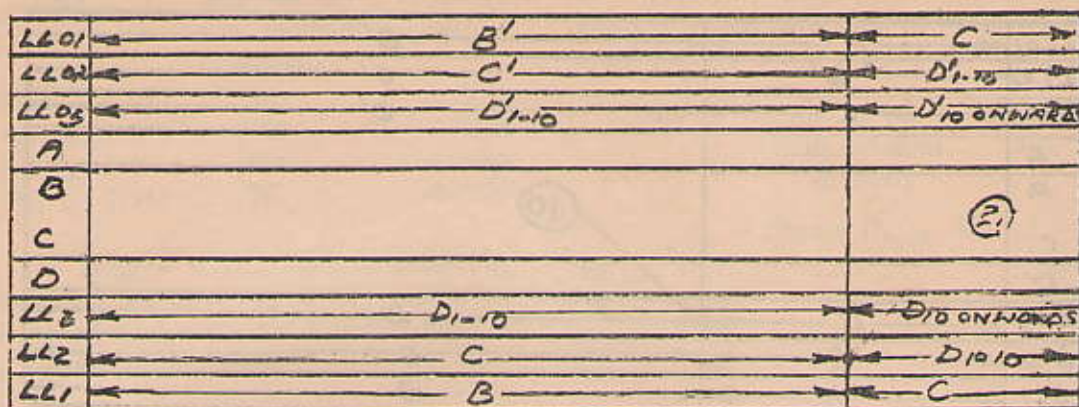


FIG 5 BASE 2 ON LL2 SCALE

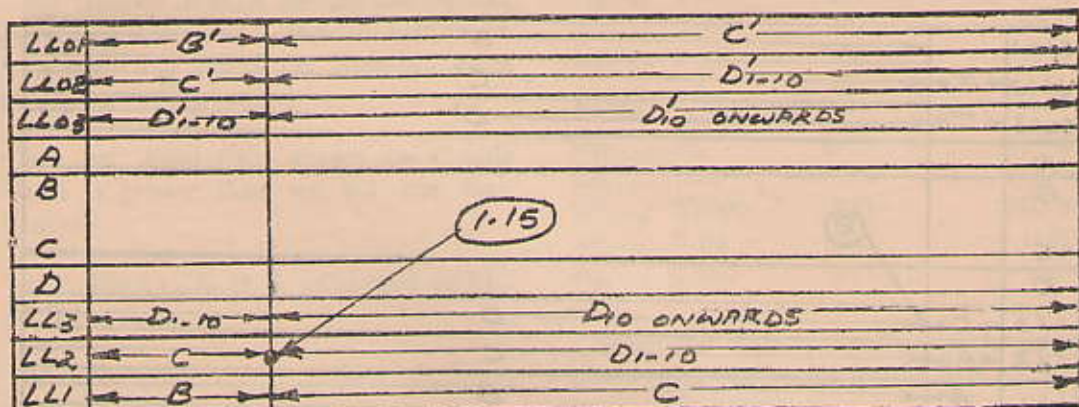


FIG 6 BASE 1.15 ON LL2 SCALE



FIG 7 BASE 1.02 ON LL1 SCALE

Sunset in the Serengeti Plains

(on the wild life of Africa)

Slowly slowly the Golden Ball sinks
Lighting pink the heavens around;
The horizon forms some darker tints
But still darker is the grazing ground.
Facing West, the tiny human frame
Can spot a pack of horned wild beast—
Popular among the Serengeti game—
Preparing for a peaceful feast.
The tall acacia shading the gnu
Seems sternly to warn anyone—
Wondering what here is but new—
With "Use-not-that-thing-called-a-gun."

Slowly slowly the Golden Ball sinks
Lighting orange the heavens around;
One gnu to the other blinks,
"There's a four-wheeled brute about."
Tails wave, and wave and wave,
A grunt or two are as put forth;
The ugly snouts in the air do heave
When springs a cool breeze from the north.
Racing across with the wind,
Resembling to some sailing boat,
On and on with increasing speed
Small white clouds in the heavens float.

Slowly slowly the Golden Ball sinks,
Lighting flame-red the heavens around,
"And now back home," as one thinks
The car's purr brings back the city-sound.
The usual twitter of gay birds
Like a beat, goes along;
The wildbeest slip away in herds
As to a nomad tribe they belong.
Sunset in the Serengeti Plains
Should be beheld to believe,
Nothing is so much as one gains
As much as in this "Nature's Sieve."

Contributed by VASANT DAVE, F. E. CLASS.

THE TRUE EXECUTIVE

D. K. DAROOKA, B.E. (Mech.) class

*From what I have read in magazines
And seen in sundry movie scenes,
The true executive is he
Who delegates authority
Who resolutely, firmly acts,
But only when he has the facts.*

*Who speaks well, writes a splendid letter,
But also listens even better.*

*Who cares about his men, their wives,
But doesn't meddle in their lives.*

*Who knows details, yet keeps his eye,
On goals beyond minutiae.*

*Who works as long as anyone.
And leaves his desk clear, tasks all done.*

Who keeps his word, although it hurts.

Who never drinks too much or flirts.

*Who even on the darkest days,
Can summon up a word of praise
And bravely smiles amidst disaster.*

*Who goes to church and knows the pastor
Who, hale and hearty, needs no rest,
But is, ofcourse, a sportsman too
Top notch with golf club, gun, canoe.*

*The true executive, in short
Is good at work and good at sport
Resourceful, charming, man of talents
Possessed of perfect poise and balance
His words and deeds and aims all mesh. . . .*

I'd like to see one in the flesh.

* * *

COLLEGE NEWS BULLETIN

General Secretary's : Report for the year 1969-70

THE current academic year has once again shown that the College Students' Council plays a very valuable and important role in channalising students activities in our college, and also helps in giving students, opportunities of exercising and developing qualities of leadership and organising ability.

It was with reluctance that I agreed to contest for the post of the General Secretary at the beginning of this year, but was overwhelmed with joy when my fellow-students elected me the G.S., they being earlier elected to the Students' Gymkhana Committee as class representatives. The Gymkhana Committee worked as a wonderful team, and we encountered absolutely no difficulties in executing our jobs. This, therefore, gives me an opportunity to acknowledge the tremendous help and co-operation we have had from our Revered Principal R. H. Chokhavatia, Vice-Principal S. S. Dighe, Heads of various Departments, respected members of the staff and friends.

After the elections for the class representatives and the G.S., which I must admit were held in the "most Democratic" fashion, without any violence and little disturbances, we settled down to appoint secretaries for the various sub-committees. The following appointments were made:

1. Joint Secretary and secretary for Dramatics: A. B. Gandhi.
2. Athletics: and Gymnastics: U. J. Badkar.
3. Debating and Elocution: H. B. Bharucha.
4. Football and Volleyball: J. Patel.
5. College Magazine: N. K. Sabnis and V. V. Goel.

6. Hockey and Tennis: R. S. Uttamsingh.
7. Badminton and Table-Tennis: D. D. Naik and Ghugare.
8. Cricket: V. V. Paranjpe.
9. Cultural Activities and Students Aid Committee: R. S. Contractor.
10. Library: M. B. Rao.
11. Outdoor Games: V. D. Kamat and Parab.

The Budget Estimates for the year 1969-70 was then discussed and finally approved by the President of the Gymkhana Committee, Principal Chokhavatia, and the General Secretary. Thereafter, the Gymkhana Committee regularly met under the guidance of the Principal, who took every care to see that all meetings were not as dull as the Budget sessions, and to foster a spirit of unity, brotherhood and co-operation among the students. Amongst the most interesting matters, connected with student interest that were discussed, were the need for a better and hygienic canteen and a Men's Common Room. I have especially mentioned "Men's Common Room", because the Ladies already have a beautiful room. A common room is not a place for recreation, like the Gymkhana Room, or even the canteen, but is simply a room where all students can come and discuss their scholastic problems, and read magazines and papers in the proper atmosphere. No College or institution is complete without a common room; a college without a common room is like a car without seats. If one can imagine the importance of seats in a car, though the latter can be driven without the former, one will be able to realise the need for a common room in a college.

Soon after the Gymkhana committee elections, early last term, a new association was

inaugurated by the Principal of the Bhavans' Arts and Science College, and was named the Bhavan's Engineering Economics and Management Association, (Beema). Prof. K.K. Chawla was appointed its Chairman, and one student from each of the Third year and Fourth year (Civil, Electrical and Mechanical) classes, was elected to the executive committee of the association. Two members were nominated to the executive council. A.A. Merchant was elected the Secretary. The association started with a "bang", arranging visits to various industrial units, which were well patronized, indicating that we students always like to see and learn things of interest. Thereafter, an essay competition was held—the subject being "Industrial Disputes—their causes and remedies". Following this, was a visit by Mr. K. Mehan, Deputy Director, Small Industries Service Institute, who gave us a talk on "Gulf between Technology and Management, and how it should be bridged". This was a very convincing talk, and should help many of us in the future. I sincerely hope the association continues to arrange such talks by prominent industrialists and conduct leadership training programmes, so as to push out leaders from amongst us, who in turn will be able to execute correctly, the plans in the Engineering Industry, with which we are concerned.

After the completion of the Part I examinations in Oct '69, we came back to the college after a small vacation to prepare ourselves for the College Day celebrations. The Annual Day started with the Prize distribution function, at which the Vice-Chancellor of the Bombay University, Dr. P.B. Gajendragadkar was the Chief Guest. Mrs. Gajendragadkar gave away the prizes. This was followed by a dinner for the students and Staff of the college, on the terrace of the college building, and a light entertainment programme by the students. On the following morning a film show was organised, followed by Fun-Fair and variety entertainment

programme by the Zankar Music Circle, in the evening. The credit for the success of the entire College Day celebrations goes to Shri A.B. Gandhi, without whose help, I am sure, I would have found myself in trouble.

The results of the Part I examination came as a rude shock to most of us. The results were generally poor, not because the students had fared badly, but probably because there is something radically wrong with the examination system. Otherwise, why should all of us feel discontented? And in the case of papers in which the students have passed, the average percentage is not more than 45, with most of the students individually averaging just 40% i.e. the minimum required for passing; these are not mere figures but true statistics. If this state of affairs continues, then there is no doubt that at the end of every academic year, the University of Bombay will send out only 'Pass Class Engineers'. This, of-course, will only be meant for the records, as every Engineering student of the Bombay University knows that he is a better engineer than his fellow-students of other engineering colleges in various universities. But then why should he be deprived of getting proper justice?

And now to matters of academic interest: After a very keen competition, the Best Student Award for the year 1969-70 was awarded to Shri Anand R. Nene of B.E. Civil. Shri Arun M. Kapnadak was adjudged the Second Best Student of the year. In the Youth Festival of Bombay University, this year, our college Marathi play was awarded the Certificate of Merit, and Shri Pradeep Pradhan, of T.E. Electrical, was adjudged the Second Best Actor. Congratulations.

Speakers' Forum was yet another association formally inaugurated early this year. A handful of students did take advantage of this forum and organised numerous training sessions. Speakers' forum, under Shri R. D'Souza as its secretary did make a

sincere effort to acquaint its members in the essentialities of Public speaking. My hats off to D'Souza.

There were three different educational tours organised by the final year students—B.E. Mechanical class visited the industrial units in the north and east of the country, B.E. Civil class had the Kalka Cement Works as its main object for their visit to North India, and the B.E. Electrical class

went on a short visit to the Koyna Power Station.

Now as the year approaches to an end, and with all eyes on the Part II examinations, I would like to thank the Principal, Vice-Principal, all members of the staff and friends, for enabling to bring about a wonderful end to this eventful year.

—R. S. Uttamsingh, G. S.

Bhavan's Engineering Economics and Management Assocn.

(B E E M A)

General Secretary's Report For The Year 1969-70.

THE college strode into a new era of extra-curricular activities with the perseverance and hard work of Prof. K.K. Chawla (Professor of Economics and Business Administration) when his efforts bore fruit with the launching of his plans to start an economics & management association. The sole purpose of starting such an association is to develop the qualities of leadership and promote the practical managerial skills among young engineering graduates of our college. This would enable them to combine their technical skill with practical administration tact in their profession in industry or elsewhere after they leave the portals of the college. This is proposed to be done by arranging talks by prominent men of economics and management of big industrial and administrative units, which would, in course of time, benefit our students when they would venture into their profession. It is also constituted to arrange industrial visits, conduct essay competitions, elocution competitions, debates, group discussions and distribution of information on these subjects.

The inaugural meeting of the Association was held on the 7th of July 1969 where Principal Nayak of the Bhavan's Arts and Science College was the Chief Guest. Thereafter the activities were on with the election of the class representatives for the Association. The following were elected after a keen contest: A. R. NENE (B.E. Civil), J. K. UNWALA (B.E. Mech.), A. A. MERCHANT (B.E. Elect.), V. V. GOEL (T.E. Civil), J. M. PATEL (T.E. Mech.), R. K. KAUL (T.E. Elect.). Further, A. C. KARNIK (B.E. Elect.) and K. N. DOCTOR (B.E. Mech.) were nominated to the remaining two posts.

At the first meeting of the elected members of the Association, A. A. MERCHANT (B.E. Elect.) was unanimously elected the General Secretary of the executive committee under the able guidance of the President, Principal R. H. Chokhavatia and Chairman, Prof. K. K. Chawla. Among the very first activities of the Association was a visit for the B.E. students to Auto

Repowering Works, Kandivali on 26th July 1969 which was very well patronised. The students were taken round the works for an interesting morning session by Sarabjit T. Singh (B.E. Elect.) to whom our sincere thanks are due.

An essay competition with the subject "Industrial Disputes—Causes and Remedies" was conducted for which the response was not very encouraging but the standard and quality of the entries received were high. We wish to congratulate the winners and at the same time wish all the best to the others and hope that more entries are received in future.

Thereafter, on 12th August 1969, Mr. K. K. MEHAN, Deputy Director, Small Industries Service Institute, delivered a talk and enlightened our students on the "Gulf between Technology and Management" and how it should be bridged. It was a very interesting lecture with Mr. Mehan illustrating his subject with the help of slides. Our sincere thanks are due to him. The following week, on the 19th of August 1969, Mr. M. R. PAI, Secretary, Forum of Free Enterprise, lectured on "Engineers and Management Practices". He gave the large gathering the benefit of his vast experience and practical knowledge and also distributed very informative material on Corporate Management. We also wish to express our thanks and gratitude to him for sparing us his valuable time from his tight schedule.

In between, the B.E. students were distributed interesting and relevant notes in thirteen instalments which helped them in their examinations and also provided an invaluable treasure of knowledge. After the talks, was the count-down on 21st August 1969 when the Association arranged the screening of "Apollo-11-Man on the Moon" at the Patkar Hall for the Staff and members.

It was largely attended. As a sequence to this, the United States Information Service donated a large number of informative books on economics and management to the Association which were duly handed over to the College library for the benefit of all students. We wish to thank USIS for the interest taken and for encouraging the activities of the Association.

Further activities were not possible in the first term for paucity of time and the ensuing First Semester Examination. The Small Industries Service Institute was prepared to conduct a week-long training programme on "How to start a Small-Scale Industry" under the auspices of the Association. However, this opportunity was also handed over to the college authorities so that the students of the whole college could benefit from it.

The second term began with the arranging of industrial visits to the renowned Larsen and Toubro Ltd., Powai on 22nd Nov. 1969, and 29th Nov. 1969, Gabriel India Ltd., Mulund on 29th Nov. 1969 and Globe Auto Electricals Ltd., Mulund on 6th Dec. 1969. The response for these visits by the Association was over-enthusiastic and we are sure the experience was rewarding.

It is pleasing to note that the students of the entire college are availing of these rare opportunities to visit some of the major industrial places arranged by the Association and encouraging its progress with a solid foundation. Last of all, we would like to thank all the executive committee members who have spared no pains in the execution of their duties and have done their utmost to make whatever activities we have had so far a complete success.

A. A. MERCHANT
General Secretary.

Speakers' Forum

Chairman, R. L. D'SOUZA

"**S**PEAKERS' FORUM" was inaugurated on 22nd July 1969 by Principal Adatia, of M.V. College, Andheri East. This was also taken as the First session of the public speaking and leadership training. About 12 of the 17 participants introduced themselves over the mike and gave a short speech of 1 minute.

Later the ten-session course planned was immediately put into effect. And thus we began.

How public speaking training was given: The members were given a lecture on "public speaking in general" at the very outset by Mr. Girish Vaidya (diploma holder of the Indo-American public speaking course). The topic being announced before hand, the members had to prepare accordingly. The books on public speaking in the Library facilitated this. The defects were pointed out individually by the chairman of the day. Undoubtedly there were cases when the chairman of the day was not well versed with public speaking himself. But the experience gained benefited him.

And the leadership training:—The Chairman of the day elected by lots gets the lion's share. He welcomes the guest, usually a student speaker from out, and comments on each and every speech. The comments are to be such as to bring the best out of the speakers. Besides keeping the audience interested he has to maintain a sense of discipline. He is free to conduct the session in any manner he is pleased to. This brings out his originality and puts his sense of organisation and leadership to test. The chairman of the day is given the directions before hand.

In the sessions that ensued a variety of lively topics were discussed. To name a few: What's wrong with the education in India; the problem of beggars in Bombay;

developing self-confidence; The task ahead; etc. However due to some organisational difficulties one of the most interesting sessions had to be postponed indefinitely. The one in which a lecture on "Is God dead" by Mr. Claude Alvares (St. Xaviers' College, Bombay) followed by workshop discussion to test the degree the leadership achieved.

In my opinion only two sessions were a great success. The III session during which the topic on education in India was discussed. With possibly the largest audience in the class-room, they were kept interested up to the end and more. The IX session was another event. It was an extempore session. Every participant got his topic just three minutes before he had to speak. With the topic ranging from political, sports to general (e.g. count on your blessings) the participants displayed their art of speaking on the spot. This session was aimed to train the ability to think on the spot.

Nothing illustrates better than an example. So here comes one session with a very brief outline of some of the speeches.

The following was the VII session held on the 9th December at 4.15 p.m. in room no. 68 of our college. The topic of the day was, "What India needs most to-day". The guest speaker was Principal R.H. Chokhavatia, this being the only session in the class-room presided over by other than a student speaker.

Mr. D'Souza R.L. gave the speech of welcome and introduced the topic and its importance. That unless we know what India needs most to-day we cannot move towards achieving it.

The chairman of the day Mr. Girish Vaidya then took over. He did a real splendid job of commenting on the speeches and was at his best in the leadership part.

Mr. Vasant Dave illustrated the need of unity and the lack of proper education. He proposed interstate marriages as one of his solutions.

Mr. Deepak Chandvadkar gave a brilliant speech with facts and figures from the man Adolf Hitler to the country France and proved in his own way how badly India needs most a dictator to-day.

Mr. Lalka Z.J. showed how self-discipline and honest citizenship was the need of the day.

Mr. Quairashi M. S. said that an industrial revolution was what India needed most to-day. He showed how our country is lagging because of lagging progress in the Industrial front.

Mr. Jain V.C. brought out the need of the daily essentials e.g. food and clothing. He gave the reason: population explosion. And the cure: family planning.

Mr. Gadag S.A. highlighted on our growing dependance on others, even to the extent of design work in Engineering. And how thus we are losing our originality. He stressed on the need of improving our own design work.

Mr. Kale R.V. talked on the need of honesty of thought and action. He illustrated by a humorous example of Aya Rams and Gaya Rams.

Mr. Arar K.K. illustrated the need of an honest and spiritual youth with examples from Pakistan, Parliamentary situation, to Maharashtra youth.

Mr. Kaul R. exhorted the intelligentsia to take part in politics and called for the determination of the people that made Japan rise from the ashes.

Mr. Lewis Urban talked on the need of consolidation of the Presidents office in order to give him more powers.

Vice-Principal Dighe gave an example to show how the present leadership was a last hope. He gave the example from the movie, "Agony and Ecstasy". How Michelangelo after an incident in a pub destroys his painting and begins a new. Similarly he said the present leadership should be destroyed and a new one should be in the offing.

And then comes the speech of the guest. The Principal took his own time in saying how all the things spoken were needed. He said that we must never forget we are engineers first. . . . He wound up by saying that the thing most needed to-day was patriotism.

The chairman for the next session was then chosen and the topic decided by the Principal's view was the "Task ahead" i.e. knowing all these needs what was our part in achieving them.

The session was then wound up with a vote of thanks by Mr. Vaidya G.G.

The closing session of the speakers' Forum was held on the 24th of February 1970. In the absence of the chief guest, who felt indisposed, the Principal of our college was the chief guest. The members, after the session, were treated with a refreshment party sandwiched between fish ponds.

—R. L. D'Souza

★

★

S.P.C.E. SOCCER

Vice-Capt. CRISPIN NORONHA

AROUND about July our enthusiastic and pre-elected captain, D'souza, began his drudgery to form an S.P.C.E. foot-ball eleven. It was no easy task pulling out our studious engineering lot out of their hyper-nations for some serious practice.

We finally had a line-up, and played our first match against Golden-Tobacco. Keenly contested, we had the upper hand during the second half and slammed a 2-0 victory. Full of confidence our practice stepped up only to be hindered by our fast approaching first semester examinations.

At the inter-collegiate Tournament we got our first and last drubbing by the S.I.E.S. boys. This was mainly due to a defeatist attitude by most of our players. They realized with a victory in the first round harder practice would be the order of the day with excessive sleep and practically no study. Hence our unglorious exit from the tournament.

This year our training was based on Dr. Crammer's theory of dribbling. It consists of a player dribbling with the ball all by himself till he masters this movement. The next step would be two players running with one ball passing backwards and forwards till a precision is reached. The concept improves the muscles required for the game.

Dr. Crammer proved his theory showing how these muscles developed, are different from those of smooth running, showing there by long distance runners do not make

good foot-ball player and vice versa. This is obvious as in foot ball what is needed is ball—control, stopping, feinting, turning etc.

Many colleges in Bombay still adopt the traditional way of coaching, of making the players run-around the ground, then give them on the spot exercises. According to Dr. Richard A. Pohndorf of the university of Illinois this has an adverse effect. In his words "Exercises performed by foot-ball teams before a game are usually more 'show' than useful work, pre-game exercises are usually part of a mystified or pagan rites to help to set the stage for the game...." The Rocker exercise for example, causes a bruise to the breast bone."

Returning to the Inter-collegiate foot-ball tournament, its a sad thing to notice some colleges drafting professional footballers into their teams. I hope a move started by St. Xaviers will exterminate this practice. We congratulate the winners St. Xaviers for being the champions this year.

Now with ex-players of top notch teams like St-Vincents, N-Wadra (Poona), St Stanislaus St Xaviers in our midst. I sincerely hope S.P.C.E. would make its presence felt in the football tournament next-year.

Staff-Club

The first meeting of the members of the teaching staff was held on 29th Jan 1970. Dr. J. Topping, Vice-Chancellor, Brunel University, U.K. delivered a talk on 'Out lines of sandwich course in technical institutions in U.K.' All staff members enjoyed his intellectual and informative talk.

Secretary, V. R. DOIPHODE



ACADEMIC AWARDS, 1969-70

Kulapati's Gold Medals

- (1) The Best All-round student for the year—Shri A.R. Nene of B.E. Civil class.
- (2) Shri S.R. Desai, for securing First rank in the College and First Class Second rank in the University in B.E. (Civil) of April 1969.
- (3) Shri D.V. Tendulkar, for securing First rank in the University Examination with distinction—70% marks in B.E. (Mech.) Examination of October 1968.
- (4) Shri V.V. Jain, for securing First rank in First Class from this College in B.E. (Elect.) Examination of April 1969.
- (5) Shri B.K. Rupani, for securing "The Anandrao Ganesh Pandit Scholarship" for 1969, for having secured Second rank in the University Examination. The student who stood First from V.J.T.I. did not accept the scholarship.

Silver Medals

- (1) The Second Best all-round student for the year—Shri A.M. Kapnadak of B.E. (Elect.) class.
- (2) Shri S.J. Kothari, for securing Second rank in First Class from this College in B.E. (Civil) Examination of April 1969.
- (3) Shri K.M. Jhaveri, for securing Second rank in First Class in B.E. (Mech.) Examination from this College in April 1969.

- (4) Shri R. N. Jethani, for securing Second rank in First Class in B.E. (Mech.) Examination of April 1969.
- (5) Shri P.R. Bhagawati, for securing Second rank from this College in B.E. (Elect.) Examination of April 1968.

Shri Pruthvish Narayandas Killawala Prize

- (1) Shri A.B. Kulkarni, for being First student in S.E. (Elect.) class having passed F.E. Examination in First Class in April, 1969. Rs. 120/-.
- (2) Shri B.K. Rupani, for having secured highest marks in S.E. (Elect.) Examination in April, 1969 and joined T.E. (Elect.) class in this College. Rs. 120/-.
- (3) Shri V.V. Jain, for having secured First rank with First Class in B.E. (Elect.) Examination from this College in April, 1969. Rs. 150/-.

Shripadrao Dubhashi Prize: Rs. 75/-

- (1) Shri A.R. Nene, for securing highest marks in Design & Drawing in T.E. (Civil) Examination in April, 1969.

Kulapati's Merit Medal

[List of students awarded Merit Medal during the year 1969-70:—]

F.E.

Shri P.R. Pitale (I)
Shri K.D. Shah (II)

S.E. (Elect.)

Shri A.B. Kulkarni (I)
Shri B.R. Mehta (II)

69-70

for securing
Class in B.E.
of April 1969.

for securing
College in
of April

awala Prize

being First
class having
in First
Rs. 120/-.

having secured
(Elect.) Exa-
and joined
this College.

having secured
Class in B.E.
this Col-
Rs. 150/-

Rs. 75/-

having highest
in T.E.
April, 1969.

Merit Medal

BEEMA

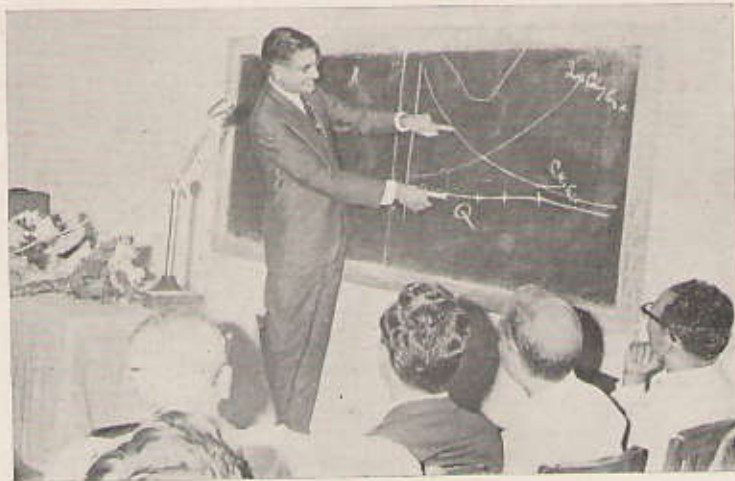
Principal Naik Inaugurating the Association



Chairman Introducing the Chief Guest, Mr. Mehan

Beema: Chief Guest's Address





Beema: Mr. Mehan,
explaining



Mr. Mehan showing
some slides



Principal Addressing
the students

Discus Throw:

- (1) V.L. Shah
- (2) W.F. Noronha
- (3) P.S. Pawar

Tug-of-War:

Winners: S.E. Team.
U.J. Badkar (Captain)
S.D. Kesarkar
R.B. Kanbarkar
H.M. Sawant
S.S. Rane
N.R. Shiam
P.D. Patil
S.P. Bhadha.

Best Athletic:

T.C. Fernandes.

Table Tennis:

Singles:

- (1) D.D. Naik
- (2) S.R. Marathe

Doubles:

- (1) D.D. Naik and
S.R. Marathe

- (2) J.B. Kamat and
V.V. Paranjape

Jumble & Doubles:

- (1) D.D. Naik and
J.B. Kamat
- (2) S.R. Marathe and
G.D. Morparia

Inter-Class Table Tennis :

Winners:

Kapadia
Korgaonkar
J.B. Kamat

Runners-up:

D.D. Naik
P.G. Parikh
Palani

Volley Ball: Inter Class:

Winner: F.E. Team.
Captain: Vinesh Shah

Best Volley Ball player:

A.M. Kapnadak.

*Gods plan made a hopeful beginning
But the man spoilt his chance by sinning!
We trust that the story
Will end in Gods glory
But, at present, the other sides winning!!*

*"A little nonsense now and then
Is relish'd by the best of men—Anon.*

List of Students who Have passed The Graduation In Engineering Examination

APRIL 1969

B.E. (Civil) I

1. Sri Desai S. R.
2. Sri Husein F. M.
3. Sri Kothari S. J.
4. Sri Sri Mehta C. V.
5. Sri Namjoshi D. G.
6. Sri Swamy S. R.

B.E. (Civil) II

1. Sri Doshi V. C.
2. Sri Mahadevia S. B.
3. Sri Viswanath P. S.
4. Sri Avarsekar K. K.
5. Sri Dagli P. P.
6. Sri Desai R. M.
7. Sri Doshi P. H.
8. Sri Fernandes M.
9. Sri Kamat U. A.
10. Sri Kapadia A. N.
11. Sri Kothari S. K.
12. Sri Mangalmurti A. M.
13. Sri Mehta P. I.
14. Sri Obheroi S. M.
15. Sri Patel N. P.
16. Sri Pathan A. A. L.
17. Sri Savla S. P.
18. Sri Shah K. H.
19. Sri Sheth K. B.
20. Sri Vaishnav K. K.
21. Sri Ved R. D.

B.E. (Civil) Pass

1. Sri Mehta B. I.
2. Sri Shah H. H.

3. Sri Wagh M. P.
4. Sri Avarsekar A. K.
5. Sri Choksi P. E.
6. Sri Hemrajani S. J.
7. Sri Kamble B. T.
8. Sri Meishei J. G.
9. Sri Sarlashkar N. B.
10. Sri Subramanian K. V.
11. Sri Barbhaya J. T.

B.E. (Mech.) I

1. Sri Agashe M. M.
2. Sri Chibade A. M.
3. Sri Dalal M. C.
4. Sri Jethani R. N.
5. (Miss) Kolhatkar A. K.
6. Sri Patil P. K.
7. Sri Borkar S. S.

B.E. (Mech.) II

1. Sri Asrani P. S.
2. Sri Baikerikar A. G.
3. Sri Chowdhury J. S.
4. Sri Doshi K. A.
5. Sri Gore D. V.
6. Sri Iyer N. T. S.
7. Sri Jamdar M. A.
8. Sri Khanolkar R. R.
9. Sri Narasimhan S.
10. Sri Shah P. V.
11. (Miss.) Thakur U. L. S.
12. Sri Bakare A. B.
13. Sri Akileshwaran V.
14. Sri Dalal S. N.

15. Sri Jayaram B.
16. Sri Kanorwala H. J.
17. Sri Krishnan K. R.
18. Sri Mehta G. V.
19. Sri Mehta P. N.
20. Sri Prajapati K. S.
21. Sri Samant M. D.
22. Sri Sanghvi A. T.
23. Sri Sanghavi B. L.
24. Sri Shah J. B.
25. Sri Shah K. H.
26. Sri Shah K. C.
27. Sri Shah M. N.
28. Sri Shah S. K.
29. Sri Shroff N. R.
30. Sri Singh J. B.
31. Sri Thakker V. G.

B.E. (Mech.) Pass Class

1. Sri Sheth P. M.
2. Sri Paranjpe H. K.
3. Sri Mistry K. B.
4. Sri Thadani B. D.
5. Sri Kothari B. N.

B.E. (Elec.) I

1. Sri Jain V. V.

B.E. (Elec.) II

1. Sri Shah K. N.
2. Sri Bhagwati P. R.
3. Sri Bhangale R. A.
4. Sri Chavan D. L.
5. Sri Chugh V. L.
6. Sri Deodhar S. B.
7. Sri Diwanji R. J.
8. Sri Gupta B. G.
9. Sri Hinge A. K.
10. Sri Irani N. A.
11. Sri Jhaveri P. D.
12. Sri Kamat V. G.
13. Sri Kulkarni S. D.
14. Sri Maneckshana K. B.
15. Sri Shreeram M. N.
16. Sri Motwani M. P.
17. Sri Nadkarni A. B.
18. Sri Sapre A. G.
19. Sri Shah P. H.
20. Sri Soni A. M.
21. Sri Wadivkar V. D.
22. Sri Dewoolkar P. B.

B.E. (Elec.) Pass Class

1. Sri Mehta M. B.
2. Sri Karnik K. J.
3. Sri Thakker M. M.

OCTOBER 1969

B.E. (Civil) II

1. Sri Choksi S. C.
2. Sri Dagia M. H.
3. Sri Morde A. A.
4. Sri Randive J. M.
5. Sri Sukthankar S. G.
6. Sri Tolani T. W.

3. Sri Bhagat A. I.
4. Sri Chowdry T. D.
5. Sri Dalvi A. S.
6. Sri Mehta B. J.
7. Sri Mota C. R.
8. Sri Shah J. H.

B.E. (Civil) Pass Class

1. Sri Virani S. A.
2. Sri Drute A. B.

B.E. (Mech.) II

1. Sri Advani S. J.
2. Sri Samant R. K.
3. Sri Shah P. D.

4. Sri Chhaya P. S.
5. Sri Chowdhary C. J.
6. Sri Mehta J. V.
7. Sri Sahotre A. R.
8. Sri Patel B. D.
9. Sri Varma K. J.

B.E. (Mech.) Pass Class

1. Sri Rao K. A.
2. Sri Ashar R. M.
3. Sri Parekh S. B.
4. Sri Pattani H. P.
5. Sri Ukidve S. V.
6. Sri Chhabriya A. L.
7. Sri Modi A. G.
8. Sri Patani A. J.
9. Sri Banan C. M.
10. Sri Patil V. S.

B.E. (Elec.) II

1. Sri Bheda N. R.
2. Sri Dave K. P.

3. Sri N. S. Krishnaswamy
4. Sri Shah C. N.
5. Sri Shah G. A.
6. Sri Agrawal R. R.
7. Sri Dhond R. J.
8. Sri D'Souza J. S.
9. Mudunuri B.
10. Sri Rao J. S.
11. Sri Sardesai R. M.
12. Sri Sheth K. P.
13. Sri Sule P. P.
14. Sri Yadav B. D.

B.E. (Elec.) Pass

1. Bhalavat H. M.
2. Sri Cherian C. K.
3. Sri Mehta C. S.
4. Sri Sadrangani P. H.
5. Sri Samson S. P.
6. Sri Shah J. K.
7. Sri Vimadalal R. V.



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E. (London).

Vice Principal:

Prof. S.S. Dighe, B.E., A.M.I.E.
(India).

Civil Engineering Department

1. Prof. L. L. Bhirud, B.E., A.M.I.E.
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2. Sri V.S. Chandrasekar, B.E., Asstt.
Prof. in Civil Engg. (on study leave).
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M.E., (I.I.Sc.), Asstt. Prof. in
Civil Engg.
4. Sri B. H. Pancholi, B.E., A.M.I.E.
(India), Lecturer in Civil Engg.
5. Sri K. N. Soni, B.E., A.M.I.E.
(India), A.M.ASCE., Lecturer in
Civil Engg.
6. Sri P. V. Parameswaran, B.E., M.E.,
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(India), Lecturer in Civil Engg.
8. Sri D. D. Desai, B.E., M.E., Lec-
turer in Civil Engg.
9. Sri R. H. Kulkarni, M. Tech. (App.
Geology), Lecturer in Geology.
10. Sri T. Narayan, B.Sc. (Engg.), Asso.
Lecturer in Civil Engg.
11. Sri R.M. Joshi, B.E., Asso. Lecturer
in Civil Engg.
12. Sri S. P. Savla, B.E., Asso. Lecturer
in Civil Engg.

13. Sri P. P. Dagli, B.E., Asso. Lecturer
in Civil Engg.
14. Sri S. L. Pendse, B. Arch., Asso.
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Electrical Engineering Department

1. Prof. Dr. J. G. Shah, B.E. (Bom.),
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cago), Prof. and Head of Elec. Engg.
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8. Sri Ansari Mohamed, Instructor.
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11. Sri R. J. Yadav, Boiler Attendent.
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3. Sri D. S. Joshi, B.E., M.E. (C.), Asstt. Prof. in Struct. Engg.
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5. Sri J. V. N. Rao, M. Tech., Lecturer in Struct. Engg.

6. Sri S. W. Marathe, D.C.E., Asso. Lecturer in Struct. Engg.
7. Sri U. A. Handikar, B.Sc. (Engg.), Asso. Lecturer in Struct. Engg.
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5. Mrs. S. Kanekar, M.A., Lecturer in Mathematics.

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6. Sri R. G. Bhatt, M.Sc., Lecturer in Chemistry.
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8. Sri A. V. Singh, Lab. Asstt.

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Mr. T. C. Fernandes
Athletic Championship
1969-'70



400 METRES
1. T. C. Fernandes
2. S. Rege
3. R. L. D'Souza



S. E. Relay Team
'Winners', Inter-Class Relay



Football Team

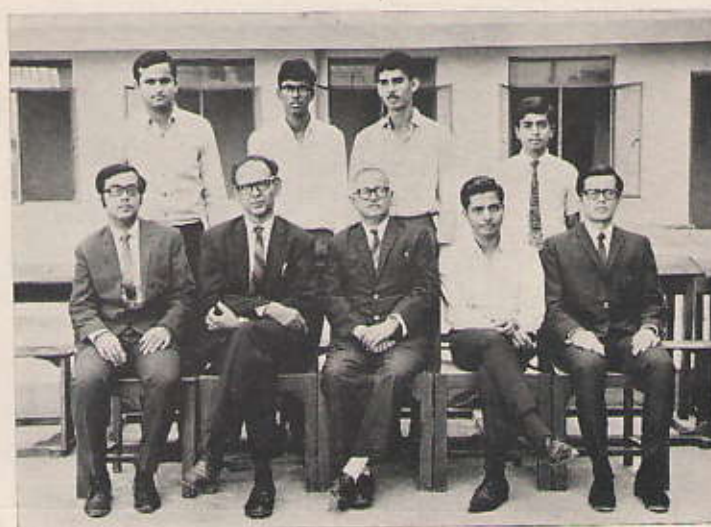
Cricket Team



Table Tennis

G
A
M
E
S

Badminton



मुंबई ते मसुरी-व्हाया सिमला

रमेश काळे अंतिम वर्ष (स्थापत्य)

‘अव दिल्ली दूर नहीं’ अस म्हणत असतानाच आम्ही दिल्लीत येऊन पोहोचलो. थेट बाबरापासून ते आजतागायत भारताचे बदलते रंग पाहिलेली व ल्यालेली हीच ती इतिहासप्रसिद्ध दिल्ली! नेहळ्या गुलाबी आठवणींची व लालवहादुरांच्या कणखर नेतृत्वाच्या लालीची साक्ष देणारी ही दिल्ली पाहताच मन पुलकित झाले. दिल्ली ही एक अतिशय संपन्न लावण्यलतिका आहे. कुतुबमिनारची बिंदी लेवून व लाल किल्ल्याची मेंदी लावून ती स्वागतास तयार आहे. तिचे अलंकार तरी किती सांगावेत ! लोकसभा, राज्यसभा, जंतर-मंतर, बिल्मंदिर आणि त्यात उठून दिसणारा तन्मणी म्हणजे राष्ट्रपतीभवन ! आमची तबियत तर एकदम खूप होऊन गेली.

गाडी आता लाल किल्ल्याच्या दिशेने धावत होती पण आमच्या नजरा तर गाडीपेक्षाहि जास्त वेगाने धावत होत्या. अखेर तो सुप्रसिद्ध लाल किल्ला आमच्या नजरे-समोर उभा ठाकला. चिरेबंदी लाल दगडांची ती भव्य वास्तु पाहताच मनांत विचार आला की, खरच कशाने वर हा एवढा लाल झाला असेल ? देशाची सध्याची परिस्थिति बघून रागाने, का पुढे येणाऱ्या गोड भवि-तव्याच्या घूसर जाणीवेच्या अनुरागाने ! छे कांहीच समजत नाही !!

दिल्ली सोडून आता आम्ही आमच्या पंढरीकडे चाललो होतो. ज्ञानधारेच्या दिंडीचे आम्ही वारकरी ज्या भाक्राच्या दर्शनासाठी अतिशय उतावीळ झालो होतो, तो अतिविशाल प्रकल्प ‘याचि नजरे याचि डोळा’ पाहून आम्ही मनोमन सुखावलो. संकल्प आणि सिद्धि यांच्यातले अंतर मानवी कर्तृत्वाने भरून काढले

होते त्याकडे पुन्हां पुन्हां डोळे भरून पाहत आम्ही त्याचा निरोप घेतला. आता आम्ही चंदीगडच्या दिशेने निघालो. चंदीगड म्हणजे सरदारजींचा बालेकिल्ला.

चंदीगड नगरी ही एका अत्याधुनिक रूपयौवने-सारखी भासली. सारे कांही आखीव आणि रेखीव ! ही नगरी अतिशय स्थितप्रज्ञ वाटते, ना जगाचा लोभ ना खेद ना खंत ! आपल्याच आगळ्या धुंदीत ती खडी आहे. सुखदुःखाच्या सीमेवरची पहारेदारच जणू ती !

आता गाडी सिमल्याच्या दिशेने धावू लागली. आतापर्यंत आम्ही मानवाची कमाल पाहिली पण आता निसर्गाने घमाल दाखवायला सुरुवात केली. अनेक वेळा सिनेमात पाहिल्यामुळे आपण येथे कधीतरी येऊन गेलो आहोत असे सिमल्याला उतरल्यावर वारंवार वाटत होते ! अर्थात् कागदी फुलात व खऱ्या फुलात जेवढा फरक असतो ना तेवढाच फरक सिनेमातील सिमल्यात व आम्ही अनुभवत असलेल्या सिमल्यात होता ! त्या उंच उंच आकाशाला गवसणी घालणाऱ्या सुरूच्या रांगा. ते खास शुभ्र वर्षाच्यादित हिमालयीन उतरते डोंगर व त्यांना एखाद्या अल्लड प्रेयसीप्रमाणे विळखा घालणारे ते सुरेख रस्ते आणि रस्त्यावरून ठुमकत जाणाऱ्या रसरशीत रूपसंपन्न यौवना ! एवढा ‘रंगीला मौसम’ असल्यावर कोणाचा ‘दिल’ बहलणार नाही ?

नव्या वर्षाची सुरुवात तर छानच झाली. १ जाने-वारीला आम्ही डेहराडूनला पोहोचलो. या बाजूचे प्रत्येक शहर एक एक नवीन लेणे ल्यालेले आहे. डोंगर-दऱ्यातून लपलेले हे अनुपम निसर्गसौंदर्य म्हणजे अलि-बाबाची गुहाच आहे. कुबेराने आपले सगळे ऐश्वर्य

येथे मुक्तहस्ते उधळून दिले आहे. मसुरीला तर आम्ही मंत्रमुग्धच झालो. गाणी-गप्पा-खाणे सर्व गोष्टी मंदावत चालल्या होत्या. साऱ्या पंचेंद्रियांची शक्ति डोळ्यांत एकवटून आम्ही ते अनुपम दृश्य पाहत होतो. समोवती चारी वाजूला दिमाखांत उभी असलेली शुभ्र हिमाच्छादित शिखरे व त्यांना आमच्यापासून वेगळे करणारा उफाळता धुक्याचा चंदेरी महासागर ! त्या घूसर वातावरणांत दूरवरून कोठून तरी गाईचा आवाज ऐकू येत होता 'वह दूरी पर दिखाई देता है वह है गंगोत्री और जम्नोत्री और ये वाजू रहा बद्रिकेदार !' सारे वातावरण कसे भासून गेले होते. एक दोन मिनिटेच असतील पण आम्ही 'आम्ही' राहिलो नव्हतो ! भूतभविष्याला अर्थ नसून सर्व काळ वर्तमानकाळच असल्याचे वाटत होते. वाटले असेच जावे आणि ह्या विशाल विश्वात विलीन व्हावे ! मोठ्या मुश्किलीने

त्या मोहमयी दुनियेचा आम्ही निरोप घेतला !

एखादा खेळाडू चौकारांची आतपवाजी करून गेल्यानंतर 'नवीन येणारा खेळाडू काय रडणार ?' असा विचार करत असतानाच नव्या खेळाडूने पहिल्याच चेंडूवर दणदणीत पट्टकार मारून रसिकांची उत्स्फूर्त दाद घ्यावी तसाच प्रकार 'ताज' च्या बाबतीत झाला. 'ताज' ची भव्य संगमरवरी वास्तु म्हणजे या वसुंधरेवरले एक रम्य स्वप्न आहे. पाहता पाहता आमचे आणि ताजचे एक अतूट नाते निर्माण झाले. नेहमी रक्ष दगडा-घोंड्याशी संबंध असणारे आम्हीहि अखेरीस हाडामांसाचे मानवच होतो ना ! 'ताज' शेवटी पाहण्यांत आम्ही खरोखरच Climax साधला होता !

खरच ही 'सफर' म्हणजे आमच्या आयुष्यातील एक गुलाबी स्वप्नच होय ! ! !

झूल

अशोक श्रीराम परचुरे

बी. ई. मेक.

पाण्याची खळखळ
पानांचे अलगुज
लाटांना हसवतो
अवखळ वारा
चन्द्राच्या कोरीशी
ढगांची कुजबुज
चमकून जातो
लहानसा तारा
आकाशी झूल
मनाला भूल
हव्याशा वाटणाऱ्या
टपोऱ्या गारा

शून्य

शशांक मराठे

द्वितीय वर्ष 'स्थापत्यशास्त्र'

धाव घेतली अशीच लाटेने
यौवनासम उफाळत्या अंगाने
तीराशी उभे होते ते फूल
पडली अनंताची अनामिक भूल
ओढिले पुष्पास बाहूत लाटेने
रोमांचली काया ओल्या मिठीने
सुमन लज्जेने जाहले चूर
नितळ स्पर्शात गवसले सूर
गंध प्रणयाची खळाळली सरिता
अजाणता झाला इशक झाला रिता
फुटली लाट घूसर अथांगात
हरपले फूल चक्राकार शून्यांत

.... झोप

अनिल र. बापट बी. ई. (मेक.)

खरंच झोपेचें रूप कसं? रंग कसा? आकार कसा? जाऊ दे! तो कसा कळणार? आपण तर झोपेंत असतो ना!

झोप ही एक नशा आहे! तिची स्वतःची एक अपूर्व अशी धुंदी असते... मस्ती असते! ती आपल्याला एका वेगळ्याच दुनियेंत नेते. जेथे आपण एकमेकांना, साऱ्या जगाला, एवढेच काय तर स्वतःलाही विसरतो!

प्रत्येक माणूस आपल्या झोपेशीं किती प्रामाणिक असतो! इतका तो इतर कुणाशीही नसतो! निद्रावर्त झोपल्यावर तो एकदम नरम पडतो. ह्या झोपेला खरंच कांही ठाऊक असतं! विरहाची तडफड... माची धुंदी... मद्याची बेहोशी... आईची ममता... दीन-दलितांचे अश्रू... दूर गेलेल्या पतिसाठी झळलेली मार्गप्रतिक्षा... बाजार-बसव्यांची गरळ... कवीचा रात्रीं सुरू होणारा आलाप... आई-वड्यांपासून दूर जाऊन राहणाऱ्या विद्यार्थ्यांची ती उडणारी मनं... सर्वकांही हिला ठाऊक आहे! तज्जुबादशांच्या रंगलेल्या रात्री हिला ठाऊक आहे! ताजमहालचं स्वप्न रंगतानाही हिनें पाहिलं आहे! 'जगीं हा खास वेड्यांचा पसारा' हें फक्त तीच शकते!

झोप म्हणजे जीवन आणि मृत्यु ह्यांच्यामधला फरक! ज्या काळांत जीवन आणि मृत्यु एकमेकांच्या बाजूवर डोकीं ठेवून चालतात... एकमेकांत विरून जातात! त्या काळांत त्यांना कशाचं भान नसतं! अस्तित्व असतंही वा नसतंही!

खरंच झोप म्हणजे जीवन आणि मृत्यु ह्यांच्या मधला करणारी विभागिनी! परंतु तिचं अस्तित्व

कोठें सुरू होतं... कोठें संपतं तें तिचं तिलाच समजत नाही! जणू कांही दिवस आणि रात्र ह्यांचा मेळ घालून देणारी ती रम्य संध्याकाळच! केवढी रम्य... विलोभनीय... पण तितकीच अनाकलनीय!

असं वाटतं, दिवसभर रात्रीचा प्रकाशाशी झालेला विरह तेथे संपतो... रातराणी शृंगार करून प्रियकराला भेटायला आलेली असते... आणि म्हणूनच की काय तिच्या तोंडावर संध्येची लाली फाकते! दिवस आणि रात्र दोघही नाजूक बंधनांत बांधली जातात! तो विश्वाचा प्रणय इतरांस दिसू नये म्हणून की काय रात्र काळा रंग घेते! आणि सूर्य उगवल्यावर तें प्रकाश आणि रात्रीचें मीलन इतरांना दिसल्यावर ती परत कावरी-वावरी होते! तिच्या मुखावर उषेची लाली फाकते आणि... ती एकदम पळून जाते! राहतां राहतो फक्त प्रकाश... त्रासलेला... वैतागलेला... भडकलेला!

थोडं वेगळं सांगायचं झालं तर असंही म्हणता येईल...

ऐलतीरिं जीवन पैलतिरिं मरण।

मधें लागते झोप हेच संसाराचें रूप ॥

एखाद्याच्या मद्य प्याल्यानंतर जड-जड होत जाणाऱ्या पापण्या पाहिल्या तर असं वाटतं... ही झोप एखाद्या हिंडवेसारखी असावी... काळी-कमिन्न... पहाडासारखी प्रचंड... अक्राळ-विक्राळ... जणू कांही आपल्या सहस्र जीव्हानी त्याला खायला उठलेली भयानक विकृतीच! पण तेच जर आपण दमून-भागून आल्यानंतर झोप घेत असलो तर तीच झोप एखाद्या युवतीसारखी भासते... नाचत-ठुमकत... गात गात येणारी! जणू कांही एखादी लावण्यलतिकाच... आपल्याभोवतीं कूजन करित हळूच आपल्या डोळ्यांवरून हात फिरवत असते! तेच जर लहान मुलाची झोप पाहिली तर असं वाटतं की झोप एखाद्या सुंदर परीसारखी असावी... अच-पळ... चंचल... आनंदी... उल्हासी! जणू कांही त्या मुलाला ती आपल्या पऱ्यांच्या दुनियेंत घेऊन जाते! तिथल्या मस्त धुंदीची कदाचित् त्या मुलाला सवय होत असावी! म्हणूनच की काय मुलाना जाग

केल्यावर ती रडायला लागतात !

झोप आणि स्वप्ने ह्यांचे कांही कल्पनातीत संबंध आहेत ! झोप म्हटल्यावर स्वप्न आठवतात आणि स्वप्न म्हटल्यावर झोप ! जी प्रत्यक्षांत जीवनांत उतरत नाहीत, तरीही पाहावीशी वाटतात ! म्हणूनच मोकळा वेळ म्हणून की काय स्वप्ने रात्रीच पडतात ! कांहीजण जागेपणींही स्वप्ने पाहतात ! ती दुसऱ्याच जगांत वावरत असतात ! म्हणूनच बहुधा अपघात होतात ! कारण ही दोन्ही जग अगदी भिन्न असतात !

जणू काही संकटांशी सामना देण्यासाठीच जीवन झोपेच्या मदतीने आयुष्याच्या पायघड्यांवरून चालत असतें ! कधी पराजय होतो ... कधी जय ! परंतु बहुतेकांच्या बाबतींत पराभवच निश्चित असतो ! परंतु एखादाच अभिमन्यू ... एखादाच वीर गायधनी ... एखादाच वीर सावरकर असतो ! ... जो संकटांमुळे कधीच दबत नाही ... खचत नाही ... पराजित होत नाही ! काळाने घातलेल्या कालमयदेवरून त्याची कीर्ति पलिकडे जाते ... एखाद्या उच्छृंखल झऱ्यासारखी ... इतरांना आनंद देत ... आनंद घेत ... स्वतःच्याच मस्तीत ... स्वतःच्याच धुंदीत !

झोप संपते तेव्हां मन स्वप्नसागरांतून तरंगत-तरंगत अलगद जीवनाच्या किनाऱ्यावर येतें ! स्वप्नाच्या सुवर्णनीकेंतून केलेला तो झोपरूपी सागराचा प्रवास किती सुखदायी असतो नाही !

रात्री झोपताना आपण दिवसभर काय केलं त्याचा हिशोब मांडतो ! आता आयुष्याची अखेरची झोप घेण्याची वेळ जवळ येत असते ! आयुष्यभर इतरांची आणि आपली फसवणूक करण्यासाठी आपण अविश्वांत झटत असतो ! आयुष्यभर झगडून-बागडून आठवणी साठवलेल्या असतात — विसरण्यासाठी ! सगळं काही मिळवलेलं असतं ... गमावण्यासाठी ! या इथेच उंबरठ्यावर उभं राहून आपण गत आयुष्याकडे मागे वळूनवळून पहात असतो ! येथेच लहानपण खेळलं ... तरुणपण रंगलं ... म्हातारपणही लोळलं ! सर्व कांही येथेच कमावलं ... सर्व कांही

येथेच गमावलं ! पण छे ! आता त्या निद्रादेवीला वेळच नाही ! आपले डोळे हळूहळू मिटायला लागले आहेत ! ... काळझोप लागतेय ना ?

ते मीलनाच्या वेळीं धुंद झालेल मालकांसाचे सूर-आठवत ... आठवत असतानाच ह्या आयुष्याची भैरवी सुरू होते ! एका आयुष्याची भैरवी दुसऱ्या आयुष्याची नांदी गात असते ! पूर्वीच्या आयुष्याची ती रंगलेली मैफल आपण कशी विसरणार ?

आठवणी

प्रदीप द्वा. प्रधान

तृतीय वर्ष, अभियांत्रिकी, विद्युत विषयक
मला तिला विसरायचंय
तिचा हळूवार स्पर्श
कायमचा शटकायचाय
तिचं धुंद गाणं
कायमचं थांबवायचंय
तिच्या आठवणीच्या तारा
कायमच्या तोडायच्यात;
पण त्या तुटत नाहीत
किती ताणून छेडल्या
तरी तुटत नाहीत.
उलट अधिक भेसूर
स्वर काढीत राहतात;
मनाला कापीत राहतात.
गांधाराला दुर्गंधी येतेय
निषादाचा विषाद वाटतोय
पंचमातून किकाळी येतेय
कोमल स्वरांनी दडा बसतोय
तरी स्वर येतच राहतात
आठवणी सारख्या येतच राहतात
थंड पावसाळ्यांत
तावदानावर बाष्प पुसलं
तरी पुन्हा-पुन्हा जमावं
तशा !

फुटनीक ! म्हणजे मी !

-प्रदीप द्वा. प्रधान तृतीय वर्ष, अभियांत्रिकी

‘अरे बाबा मी जातो तेथे कांही तरी फुटतंच.’ मी तावातावाने माझ्या एका ज्योतिषी मित्राला सांगत होतो. तो गंभीरपणे माझा हात पाहत होता. हे हात दाखवून अवलक्षण आहे हे ठाऊक असूनहि हात दाखवण्याचं धारिष्ट्य मी केलं होतं. तो शांतपणे बोलता झाला-‘तुझं नशीबच फुटकं आहे’ आणि तत्क्षणीं स्वयंपाक घरांतून कांहीतरी खळकन् फुटल्याचा आवाज झाला. ज्योतिषरत्न माझ्याकडे चमकून पाहू लागले. तेवढ्यांत बहिनी हातांत काचेचे तुकडे सांभाळत बाहेर आल्या. गेली पांजव वर्षे वापरतेय हे भांड. पण एकदाहि फुटलं नव्हतं ! कोण्या मेल्याची नजर लागली कोण जाणें.’ बहिनींचा रोष चक्क माझ्यावर होता. मित्रानेहि एव्हाना तिरोपाची भाषा सुरू केली होती. तेव्हां निघावे म्हणून उठलो तर पायाखाली एक कचकड्याचं खेळणं सापडून फुटलं आणि आत्तापर्यंत गप असलेल्या चिरंजीवाना म्हणू फुटलं ! मीहि लगेच काढता पाय घेतला !

माझा आणि फुटण्याचा असा फार घनिष्ठ संबंध आहे. (यांत फुटणें हे क्रियापदच अभिप्रेत असून त्याचा अर्थ प्रेयसी’ (लग्नानंतरची) असा गर्भितार्थ अजिबात नाही. -खरं म्हणजे हा फालतू खुलासा आमच्या घराच्या साठी आहे. कारण संशयसम्राट औरंगजेब याचा पूर्वज असावा असा मला दाट संशय आहे.

मी जन्माला आलो त्यावेळीं हॉस्पिटलमधलं मोठं कपाट पडून फुटून हाहाकार झाला होता असं नंतर आईकडून कळलं. आता एवढं मोठं कपाट तें काय गरज होती ? काय तर म्हणे सरकारबताना तोल गेला. कोणाचा यावर विश्वासही नव्हता. पण तें फुटायचंच होतं ! फुटनीक म्हणजे मी !) जन्माला आला होता ना !

लहानपणीं दुधाच्या बारा कांचेच्या वाटल्या फोडल्या-नंतर मला प्लास्टिकची वाटली देण्यात आली असं आल्या आल्यागेल्याला अजून कौतुकाने सांगत असते. कपबशा मात्र मी बऱ्याच फोडल्या (घरीच फोडल्या ! कांहीना वाटायचं मी हॉटेलांत नवा पोऱ्या म्हणून लागलो होतो तेव्हांची गोष्ट ! कोणाला काय वाटेल याचा नेम नाही !) चहा पिताना फोडल्या, चहा देताना फोडल्या ; घुताना (मुदाम !) फोडल्या (आईनं परत ‘घू’ म्हणून सांगायला नको म्हणून !) शाळेत पाठ्या फोडल्या, रूळ फोडले (कांहीजण तोडले म्हणतात ! म्हणू देत !). मारामारीत सवंगड्यांची डोसकी फोडली, गल्लींत क्रिकेट खेळतांना सणसणीत चेंडू हाणून कित्येक घरांच्या काचा फोडल्या (यापार्थी अनेकदां थोबाड फोडून घेतलं ही गोष्ट अलाहिदा !), आणि अभ्यासापायी डोकेफोडहि केली. ‘मास्तरांची बायको पळून गेलीय, शैलाला मास्तर शिकवणीला येतात त्या खोलींत दुसरं कोणमुद्दा नसतं, कोपऱ्यावरचे अण्णा घरीं कोणी नसतांना चोरून ब्रॅडी पितात’ असल्या गुप्त बातम्या फोडण्यात आपला हातखंडा होता. (यातल्याच एका बातमीपायी असा मार पडला की कान फुटायची वेळ आली होती ! पण सवय मात्र अजून गेली नाही !). अचूक बातम्या काढतो म्हणून पोरं मला बहिर्जी नाईक म्हणायचे. पण बहिर्जी हे नांव आपल्याला कधीच आवडलं नाही. (उगाच कानावर जानवं अडकवल्यागत वाटतं !)

शाईचं पहिलं पेन मिळालं (रस्त्यावर नव्हे !) तेव्हांची गोष्ट. शाई भरतांना शाईची वाटलीच फुटली. इथपर्यंत ठीक होतं. पण तें निस्तरून नव्या पेनने लिहायला लागलो तर शाईच फुटायला लागली ! (हे सत्य कथन आहे. कांहीना वाटेल हा रटाळ इनोद हाये.

पण खरं सांगतो रटाळ लिहिण्याची 'बुवा' बाजी आपण करत नाय !). एकदां परीक्षेला मी भाकीत केलेलेच प्रश्न आले म्हणून 'मी पेपर फोडतो' असा माझ्या नांवाचा बभ्रा झाला. अर्थात् हा (गैर) समज जास्त टिकला नाही. दुसऱ्या परीक्षेतच त्यांच्या भ्रमाचा भोपळा फुटला. त्या परीक्षेत मी भाकीत केलेलं सोडून बाकी सर्व आलं होतं. त्या वर्षी माझ्याबरोबर पुष्कळजण नापास झाले !

मला दाढी-मिशा लवकर फुटल्या ! पण अक्कल उसीरा फुटली असं बाबा अजून म्हणतात !

कालिजमधला पहिला दिवस ! टॉप कपडे करून कालिजमध्ये प्रवेश करता झालो. तेथला सगळा मामला पाहून भांबावलो होतो. धांदलीत एका युवतीला घक्का लागला. (मुद्दाम दिला नाही !) तर 'डोळे फुटले काSSSय ?' करीत ती महामाया किचाळती झाली. सगळा पब्लिक बघायला लागला. पोरीवाळी तर माझ्याकडे बघून विनधास्त हसायलाच लागल्या. घरणी फुटून आपल्याला पोटात घेईल तर बर अस वाटायला लागल. कांहीं दिवस लोटल्यावर मग हळू-हळू सवय झाली !

मी प्रेम केल (गाढवपणा केला !). प्रियेला प्रथमच चौपाटीवर फिरायला घेऊन गेलो तो दिवस ! बरच प्रेम केल्यावर मी आपले नेहमीप्रमाणे फुटाणे विकत घेतले (मला 'फुटाणे' फार आवडतात !) तर साला ही एकदम नव्हस झाली. तिच्या तोंडून शब्दच फुटेना ! आणि रडू फुटण्यापूर्वीच मी भेळ घेतली म्हणून बरं ! नाहीतर पब्लिकला 'शो' आणि रुमालाची खराबी ! (बाकी बायकांना चटकच फार ! 'फुटाणे' काय वाईट होते ? निर्मोळ प्रेम बायकाना जमतच नाही !).

प्रेम केलं इथपर्यंत ठीक होतं. पण जिच्याशी प्रेम केलं तिच्याशीच लग्न केलं हा खरा दुर्दैवविलास ! लग्न होईपर्यंत जी प्रियतमा होती ती लग्नानंतर क्रोधोत्तमा झाली. पण त्यावेळी (लग्नाअगोदर) डोळ्याला प्रेमाचे मोतीबिंदु झाले होते म्हणून एक दिवस 'प्यार किया तो डरना क्या' म्हणत तिच्या बापाकडे गेलो. त्या महोदयांनी माझी मागणी शांतपणे ऐकली आणि एकदम अंगात आल्यासारखे ते मोठ्याने करवदले- 'खुशाल करा लग्न पण एक फुटकी कवडीदेखील

मिळायची नाही'. मी खरा म्हणजे सॉन्नेटिस स्वभावाच पण त्यावेळी मला मोठ्याने ओरडावंच लागलं-, 'फुटकी कवडी तर अजिबात नको. आख्खी कवडी जर दिली असतीत तर घरी शोकेसमध्ये तरी ठेवली असती सगळ्यांना दाखवायला !' आपण तर वैतागलो होतो. पण आमची प्रिया मात्र 'आमच्या पप्पांची कॉन्कटरच तशी आहे' असं बापाच कौतुक करीत होती. आमच्या लग्नांत आलेला सगळा कांचेचा 'आहेर' हॉलवरून घरी आणण्याच्या भानगडीत फुटला.

नोकरीचा पहिला दिवस. नव्या दमाने खुर्चीवर (हुद्दा क्लार्क) कामासाठी बसलो आणि हेडक्लार्कचा चप्पा त्याच्या हातातून निसटून पडून खळकन् फुटला. सगळा क्लार्कपब्लिक खूप ! सर्वांनी मिळून लगेच वर्गणी काढून मला एक चहा पाजला. हेडक्लार्क मात्र माझ्यावर तेव्हांपासून जो नाखूप आहे तो अजून !

आमच्या क्लार्क लोकांच एक युनियन आहे. मी या युनियनचा सच्चा सेवक (कारण हाडाचा क्लार्क !) पण 'युनियन लीडर' पैसे खातात त्यापेक्षा हेडक्लार्क बरा असं म्हटल्यापासून 'फुटीर' प्रवृत्तीचा म्हणून माझी संभावना केली जाते.

मी तसा बऱ्यापैकी लिहितो (कसचं कसचं !) पण फुटकळ लेखक म्हणून लोक माझ्या पाठीमागून मला 'ऐकू' येईल इतपत मोठ्याने म्हणत असतात.

आमच्या जन्मपत्रिकेत आमचा पराक्रम फुटक्या-स्थानी आला; दुसरं काय ?

स्वप्न

अशोक श्रीराम परचुरे
बी. ई. मेक.

स्वप्न मनीचे
मनांत विरले
दुःख मनीचे
मनांत लपले
सुख मनीचे
मनांत हसले
असेच असेच
कितीदा घडले

सूड

प्रकाश कामत

प्रथम वर्ष तान्त्रिक
विभाग १

कोणाच्या तोंडावर कुत्सित हास्य पाहिलं की माझ्या छातीत गलबलतं. अस जर मी म्हटलं तर ऐकणारा किवा वाचणारा म्हणेल 'का बाबा एवढं त्यांत घाबऱ्यासारखं काय आहे ?' पण माझी ती भीति कोणत्या अंगावर ठामपणे उभी आहे हे कळलं तर माझी खात्री आहे तुमच्याही अंगावर कांटा उभा राहिल्याशिवाय म्हणार नाही.

प्रदीप करडे हा माझा बालपणापासूनचा दोस्त ! मला पाहिलं तर मला वाटतं आमच्या स्वभावांत जमीन असतानाचा फरक ! माझा स्वभावच शांत मनोवृत्तीचा ! प्रदीप अभ्यासाव्यतिरिक्त इतर गोष्टीतच रस घेता ! खोडकर ! स्वभावाप्रमाणेच आमच्या स्थितिही फरक ! तो श्रीमंत आईवापांचा एकुलता मुलगा तर मी, टुकटुकीने संसार करणाऱ्या माझ्या बापांच्या पांच मुलांपैकी एक ! पण आमची मैत्री कोण जाणे टिकली खरी.

प्रदीपला पहिल्यापासूनच मुलींच्या खोड्या काढणे संवय ! मी तासाला बसून नोट्स घेत असे तर मुलींची चेष्टा किंवा स्तुति करीत त्यांच्यामागून जात ! आणि परीक्षा आली की मग मी मैत्रीच्याला मुख्य ते समजावून सांगून बहधा पुरवायच्या सारा वर्षे चालले. पण एवढं मात्र खरं की प्रदीपचं काव्य सुपीक ! म्हणूनच शेवटी शेवटी केलेल्या अभ्यासावर तो दरवर्षी पास होत होता.

ही इन्टर सायन्सला असतानाची गोष्ट ! पहिल्या दिवशी कॉलेजांत गेलो. वर्ग भरला ! मुली त्याहाळण्यासाठीच वर्गात बसला असल्याने

तो निर्भयपणे मुलींच्या रांगेकडे बघत होता आणि आमचीही सभ्य 'वासूगिरी' थोड्या प्रमाणात चालू होतीच. वर्गात सर आले नव्हते. इतक्यांत एक नवीन मुलगी छत्री व पुस्तके एका हातात धरून लगबगीने वर्गात शिरली. मुलांनी हाताने बेंचवर 'स्टेपिंग' करण्यास सुरुवात केली तेव्हा तिचा चेहरा पडला. इतक्यांत पलीकडच्या कोपऱ्यातून एका अर्जुनाचा बाण त्या द्रौपदीचा वेध घेण्यास आला तेव्हा तीची पाठ एकदम ताठ झाली. नेत्रांत स्फुलिंग फुलले आणि तिने एकच कटाक्ष सर्व वर्गावर टाकला तेव्हा सारा वर्ग एकदम शांत झाला. आणि ती पुढे सरसावून दुसऱ्या बाकावरील मोकळ्या जागेवर बसली. तिच्या अंगावर एक पांढरे शुभ्र पातळ व नेहमी दिसणाऱ्या स्लिक्वहेस अथवा तोकड्या वाह्यांच्या ब्लाऊजऐवजी कोपरापर्यंत लांब हाताचा ब्लाऊज होता. दाट व लांब केसांच्या दोन वेण्या पाठीवर रळत होत्या. बांधा मध्यम आणि रंग सावळा असूनही तोंडावर विलक्षण तरतरी होती. तिला पाहताक्षणीच मला मनाशी वाटले विघात्याने तिला सौंदर्याची श्रीमंती जरी दिली असली तरी खचितच ऐहिक श्रीमंती मात्र तिला लाभलेली नाही.

माझा हा कयास थोड्याच दिवसात खरा असल्याचे वर्गातीलच एका मुलाकडून कळले, आणि मग मला तिच्याबद्दल समदुःखिताबद्दल वाटावी तशी आस्था वाटू लागली. पण ती दुरूनच ! प्रदीप मात्र रोज तिच्याशी बोलण्याची घडपड करू लागला पण प्रत्येक वेळी ती कांहीतरी उत्तर देऊन किंवा नजरेच्या कटाक्षाने ती त्याला गप्प बसवू लागली, आणि मग एक दिवस प्रदीपने तिच्या नावाची व परिस्थितीची माहिती आणली. तिचे नांव होते रेखा पांचाळ ! तिचे बडील एका मिल-मध्ये कामगार होते आणि माझ्यासारखीच ती पांच भावंडांतील एक होती !

रेखा फार हुशार होती असे नव्हे पण दरवर्षी सेकंड क्लासमध्ये पास होईल एवढी नक्कीच हुशार होती ! हे मला कळले ते टर्मिनल्चा रिझल्ट लागला तेव्हा ! हलकेच नजर समोरच्या नोटीसबोर्डवर फिरवून मी रेखाचा रिझल्ट पाहिला होता.

या पहिल्या सहामाहीच्या परीक्षेत प्रदीप मात्र साफ आपटला होता कारण हे पहिले सहा महिने त्याने

रेखाच्या मागे फिरण्यांत घालवले होते.

दिवाळीच्या सुट्टीनंतर पुन्हा कॉलेज सुरु झाले आणि दुसऱ्या सहा महिन्यांची फी भरण्यासाठी ऑफिस-समोर रांगा लागल्या. आठ दिवस त्याच गडबडीत गेले. शेवटी फी भरण्याच्या शेवटच्या तारखा उलटल्या. ऑफिससमोरील गर्दी कमी झाली. कॉलेजमधील इतर कार्यक्रम सुरु झाले. नुकत्याच घालवलेल्या सुट्टीमुळे सर्व विद्यार्थी या कार्यक्रमांत भाग घेऊं लागले आणि अशा वेळी एक दिवस प्रदीपने बातमी आणली, "अरे आपल्या त्या रेखाला कॉलेजने काढून टाकले." मला तर धक्काच बसला. इतक्यात वर्गात शांतता पसरली म्हणून आम्ही दरवाजाकडे पाहिले तर नेहमीसारखाच शुभ्र पोषाख केलेली रेखा वर्गात येऊन आपल्या नेहमीच्या जागेकडे चालली होती. नुकत्याच ऐकलेल्या बातमीमुळे तीची कीव येऊन सर्व वर्ग शांत झाला होता. पण प्रदीपच्या मनांत विचारांचा किंवा रेखाने इतके दिवस दाखविलेल्या बेपर्वाईने सूडाचा कोणता डोंब उसळला होता, माहित नाही ! त्याने जागेवर उठून उभे राहून म्हटले, "ए, पांचाळ, वर्गात कशाला आलीस ? तुला कॉलेजने काढून टाकले आहे." बसताबसताच रेखा ताठ उभी राहिली. तिला वाटले की नेहमीप्रमाणेच प्रदीप तिची चेष्टा करीत असावा म्हणून तिने मागे वळून त्याला म्हटले, "हे तुला कसे कळले !" जाऊन बघ नोटीसबोर्डावर मग कळेल ?" तो म्हणाला.

मग मात्र एक क्षणभरच रेखा थबकली. नंतर लगेच हातांत पुस्तकं घेऊन ती भरलेल्या डोळ्यांनी घाबतच वर्गाबाहेर पडली. त्यानंतर मी रेखाला पाहिलेच नाही, आणि दुसऱ्या दिवशी तिच्या शेजारी राहणाऱ्या वर्गातील एका मुलाने बातमी आणली रेखाने आत्महत्या केली म्हणून. आम्हाला सर्वांनाच फार वाईट वाटले पण प्रदीप मात्र कुत्सित हसला व म्हणाला, "वरं झालं. माझ्याशी तुटकपणे वागत होती नाही कां ?" त्या क्षणीच मला प्रदीपचा राग आला व तेव्हापासून मी त्याच्याशी मैत्री कमी केली.

माझ्या मनांत विचारांचे काहूर माजले, "रेखाला कॉलेजने कां काढले ?" हा प्रस्न मला सारखा सतावू लागला. मग थोड्या दिवसांनी याही शंकेचे निरसन झाले. "कॉलेजची फी भरण्यास पैसे नसल्याने रेखाच्या बडिलांनी कॉलेजला तिचे नांव काढून टाकण्यास कळविले होते पण रेखाच्या नकळत ! पण प्रदीपने भर वर्गात केलेला अपमान मानी रेखाला सहन न होऊन तिने आत्महत्या केली होती.

त्यानंतर थोड्याच दिवसात वर्ष संपले. परीक्षा झाल्या. यावेळी मी प्रदीपला अभ्यासांत मदत केली नव्हती, आणि जेव्हा निकाल लागला तेव्हां मी फर्स्ट-क्लासमध्ये पास झालो तर प्रदीप नापास ! मी इंजिनिअरिंगला अॅडमिशन घेतली व त्याबरोबर प्रदीप व माझे संबंधही पूर्णपणे दुरावले. नवीन अभ्यासामुळे पहिले दोनतीन महिने मी कॉलेज व घर याखेरीज कोठे जाऊच शकलो नाही. पण हल्लीच माझा एक जुना मित्र भेटला त्याने प्रथम कोणती बातमी सांगितली असेल तर, "प्रदीपचे आईवडील मोटर अॅक्सिडेंट मध्ये गेले. त्याची सर्व श्रीमंती म्हणजे पोकळ वासा होता. बडिलांनी केलेले कर्ज फेडण्यासाठी व देणे-कऱ्यांची देणी देण्यासाठी राहता बंगला प्रदीपने विकला होता व कॉलेज सोडून नोकरीसाठी वणवण फिरत होता." मला हे ऐकून धक्का बसला व जुनी मैत्री आठवून त्याच दिवशी संध्याकाळी मी प्रदीपच्या घरी गेलो. एका खोलीत प्रदीप राहत होता. मला पाहताच तो खिन्नपणे हसला व म्हणाला : "प्रकाश मला ओळखलंस ! अरे गेल्या वर्षी मला कल्पनाही नव्हती की असं कांहीं घडेल म्हणून ! मला वाटत रेखा पांचाळचा मी भर वर्गात अपमान करून हसलो ना ते-हा तिच्या रूपाने नियतीही माझ्याकडे कुत्सितपणे हसत होती. मी रेखावर सूड उगवला तर नियतीने माझ्यावर !" बोलताबोलता त्याच्या डोळ्यातून दोन अश्रू त्याच्या गालावर ओघळले आणि हे दोन सूड आठवून माझे अंग शहारले.



Outgoing B.E. (Civil) Students



Workshop members with the other members of staff



College Peons with Members of Staff



BEEMA: Principal welcomes the chief guest

जीवननौका

धैर्यधर गोपाळ मांजरेकर

फिजिक्स डिपार्टमेंट

आज माझा वाढदिवस आहे. वास्तविक पाहता, मी कुठल्यातरी मध्यमस्थितीच्या हॉटेलमध्ये किंवा स्वतःच्या सामान्य दिवाणखाण्यांत, मित्र-मंडळीसोबत आणि आप्तेष्टांच्या सुखद आशीर्वादांच्या व तोंडभर स्तुतीच्या छायेत असावयास पाहिजे होतो. परंतु नाही! मी आज एकटाच... या समुद्रकिनार्यावर, रसिक लोकांच्या भाषेत 'चौपाटीवर' माझ्या गतायुष्यातील चित्रपट पाहत बसलो आहे.

समोर अथांग सागर पसरला आहे. त्याच्या अंतःरंगात काय खळबळ चाललीय हे कोणीच सांगू शकत नाही, तरी तो वरून शांत दिसत आहे. माझ्याही हृदयात तशीच खळबळ चाललीय, परंतु माझ्या चेहऱ्यावरून त्याची स्पष्ट जाणिव होतेय. मला दुःख शब्दाचा प्रयत्न जमत नाही. मनांत नुसता गोंधळ उडाला आहे. पण मी दुःखी आहे का? नाही! कालच नव्हे का, त्या कोपऱ्यावरील भिकाऱ्याने, त्याच्या हातावर पांच पैसे टाकल्यावर मला आशीर्वाद दिला की, "परमेश्वर तुला असाच सुखी ठेवो." पण खरंच का मी सुखी आहे?

आयुष्यांत अशा दोन विलक्षण घटना घडल्या की त्यामुळे माझ्या जीवनातील सारा जोम पार मावळून गेलाय. कसं तरी रहावं आणि आहे तोपर्यंत आयुष्य कंठावं एवढंच शिल्लक राहिलंय, इतकंच समजतंय.

सर्व दुःखांचा विसर पडावा म्हणून मी या समुद्रकिनार्यावर येऊन बसलो आणि नको त्याच गोष्टी नेमक्या माझ्या नजरेसमोर येत आहेत. दुर्दैवाने मांडलेला हा क्रूर खेळ नव्हे का? आताच या चौपाटीवर कमल आणि शंकर हांसत-खिदळत एकमेकांच्या हातात हात

घालून चौपाटीची मजा लुटत असताना मला दिसली. मी एकाद्या गुन्हेगाराप्रमाणे त्यांच्यापासून स्वतःला लपविलं. मी त्यांच्या नजरेला पडलो नाही हे एकाअर्थी बरंच झालं. नाहीतर त्यांचे मधुर स्वप्न भंगल असत. कांही दिवसांपूर्वी याच चौपाटीवर संसाराची सुख-स्वप्न मी आणि कमलने रंगविली होती. आमचं एक-मेकांवर जिवापाड प्रेम होतं. कमलच्या सहवासातील मधुरस्मृति शेवटी स्वप्नच ठरल्या आणि तीच कमल त्याच प्रवृत्तीने आज शंकरबरोबर स्वप्न रंगवीत आहे. पण मला त्यांत जरासुद्धा विषाद वाटत नाही. माझ्या सर्व आशा-आकांक्षा संपल्या आहेत, भावना मेल्या आहेत. कशा-कशात गोडी वाटत नाही. कमल जर शंकरच्या सहवासांत सुखी होत असेल तर मी कां दुःखी व्हावं? पण खरंच का ती सुखी होईल? शंकरच्या सहवासांत विमलची काय दुर्दशा झाली? विमलचंही एकेकाळी माझ्यावर निस्सीम प्रेम होतं. कमल माझ्या आयुष्यांत येण्यापूर्वी विमल माझी हृदयस्वामिनी होती. पण तिच्याही जीवनात ह्याच शंकरने प्रवेश केला. देखणा शंकर... श्रीमंत शंकर. आणि शंकरमुळेच मला दोन वेळा प्रेमभंगाच्या आगीत होरपळावं लागलं. माझ्या व्यवहारी मनाने मला जाणीव करून दिली की प्रेमाची इमारत कल्पनेवर उभी राहत नाही, गुलाबी स्वप्नावर उभी राहत नाही, आर्थिक परिस्थितीचे पाठबळ पाठीमागे असावे लागते. पण मग विमल दुःखी कां झाली? अरे, खरंच! विमलचं आज सकाळीच पत्र आलंय नाही का? आणि मी ते आतापर्यंत खिशातच ठेवलय की, काय माझा वेडेपणा हा? तितं पत्रात काय लिहिलंय ते पाहिलंच पाहिजे.

"श्री. दिनेश यांस....

सा. न. वि. वि.

माझं पत्र मिळताच तुम्हाला कदाचित आश्चर्य वाटलं असेल, कदाचित पत्र पाहून दुःखही झालं असेल. परंतु हे पत्र लिहिण्याशिवाय गत्यंतरच नव्हतं. जगण्याच्या धडपडीत शेवटचे हत्यार म्हणून मी आपणास हे पत्र लिहीत आहे. मला कळतंय की तुम्हाला पत्र लिहिण्याचा अधिकार मी केव्हाच गमावून बसलेय आणि तरीसुद्धा मी हे पत्र पाठवीत आहे.

माझी फार फार इच्छा असून मी पत्राची सुरुवात 'प्रिय दिनेश' अशी करू शकत नाही, धजत नाही. तुम्ही मला कितीही प्रिय असलात तरी मी तुम्हाला आता प्रिय असेन की नाही हे मी सांगू शकत नाही. माझ्या प्रिय व्यक्तीच्या निस्वार्थी आणि पवित्र प्रेमाचा अन्वेष करून सुखी आणि भडक जीवनाच्या मृगजळामागे मी धावत गेले आणि तहानेलीच राहिले. तुमच्या संयमशील वागणुकीचा गौरव अर्थ केला आणि पैसा व सौंदर्य यावर मोहित झाले. पण अखेर माझ्या जीवनाचे वाळवंट झाले. दैव माझ्याशी हा जीवन-मरणाचा खेळ खेळून, माझे पंख तोडून मला अशा प्रकारे वाऱ्यावर सोडून देईल याची मला स्वप्नातही कल्पना नव्हती.

शंकरबरोबर पळून जाताना सुखी आणि रंगीत जीवनाची माझ्या डोळ्यांवर धुंदी चढली होती. पण ती धुंदी गोव्याला गेल्यावर थोड्याच दिवसात उतरली. शंकरने आपले खरे रूप दाखवायला सुरुवात केली. प्रथम प्रथम मी दुर्लक्ष करी. परंतु पुढे मात्र मला असह्य होऊ लागले. लग्नापूर्वी शरीरसुखाची त्याची अभिलाषा मला जाळू लागली. जीवनात पावित्र्याला फार मोठे स्थान आहे. मोहाला बळी पडून माझे पावित्र्य मी घालवायला तयार नव्हते. तुमच्या माझ्यावरील संयमशील आणि पवित्र प्रेमाची मला जाणीव होऊ लागली. मला तुमची आठवण येऊ लागली. शंकरची मला किळस येऊ लागली. मी त्याचा द्वेष करू लागले. परंतु मी असहाय होते. माझ्या पावित्र्याचं संरक्षण करायला मी असमर्थ ठरले. परकी माणसं, परकं ठिकाण आणि त्या संधीचा फायदा घेऊन त्याच्या पाशवी वासनेने माझ्या भावनांना, माझ्या विरोधाला न जुमानता माझ्या पवित्र प्रेमाचा बळी घेतला. जीवनाचे मधुर स्वप्न त्या काळरात्री भंग पावले. मी कलंकिनी झाले. ती रात्र मी रडून काढली. तुमची सोजवळ मूर्ति माझ्या डोळ्यांसमोर येत होती. तुम्हाला फसवून मी स्वतःच फसले होते. जीवनावरचा माझा विश्वास उडाला होता. जगण्याचा मला वीट आला होता. मला जगणं अशक्य होतं.

पहाटे इतर माणसं जागण्यापूर्वी मी विहिरीत जीव देण्याचा अयशस्वी प्रयत्न केला. परंतु माझ्या नशिवातील दुःख संपलं नव्हतं. केलेल्या कर्माचं प्रायश्चित्त

भोगण्यासाठी मला जगायचं होतं ना ? मी मेले नाही. वेशुद्धावस्थेत मला कोणी तरी विहिरीतून काढलं. दोन दिवस मी अंधरुणात होते. पण शंकरने माझ्याकडे लक्ष दिलं नाही. उलट मला वाचवणारांना तो अभद्र शिष्या द्यायचा. त्याची बोलणी मला असह्य होत होती. माझी प्रकृति साधारण बरी होताच तो मुंबईला घेऊन आला. मुंबई सोडून गेल्यावर परत एक महिन्याने मी परतत होते. पण पूर्वीची मी राहिले नव्हते. जगाच्या दृष्टीने मी स्वैराचारिणी, कलंकिनी म्हणून आले होते. माझे भवितव्य अंधारात होते.

शंकरने मला माझ्या आईवडिलांच्या स्वाधीन केले आणि जीवाची मोज करायला तो स्वतःच झाला. मला स्वीकारण्यास त्याने साफ नकार दिला. माझं स्वातंत्र्य मी गमावून बसले. आज पांच महिन्यांनी मला तुम्हाला पत्र लिहावंचं लागलं, कारण आता माझ्या ध्यानी येऊ लागलंय की, इच्छा असूनही माझ्या जगण्याचा मार्ग बंद झालाय. घरातील माणसे माझा तिरस्कार करतात. मी त्यांना नकोशी झालेय. मी पापिणी आहे, कलंकिनी आहे. माझ्या पोटी त्या नीच माणसाचं पाप वाढतंय.

तुमच्यावरील हक्क मी केव्हाच गमावून बसलेय. परंतु एकेकाळी माझ तुमच्यावर नितांत प्रेम होतं. तुमचंही माझ्यावर निस्सीम प्रेम होतं. कदाचित त्यातील थोड-बहुत अजूनही तुमच्या हृदयाच्या कोपऱ्यात शिल्लक असेल या आशेने आणि तुमच्या उदार स्वभाव-धर्मांमुळे या नरकातून माझी सुटका तुम्हीं कराल या आशेने मी हे पत्र लिहीत आहे. तुमच्याशिवाय माझा बाता या जगाच्या पाठीवर कोणी नाही. जीवनातील चुकलेला मार्ग मी तुमच्या सहकार्याने, तुमच्या संगतीने सुधारेल. माझ्या जीवनातील खुपी तुमच्या हाती आहे. माझ्या परीने प्रयत्न करून मी तुम्हाला सुखी करीन आणि माझ्या पापाचे प्रायश्चित्त घेईन. मला ही संधि तुम्हीं द्याल या अपेक्षेने मी हे पत्र पाठवीत आहे.

पत्र मिळताच मला भेटून आपले विचार मला प्रत्यक्ष सांगाल अशी अपेक्षा आहे. मी तुमची वाट पाहत आहे.

आपली कृपाभिलाषी-अभागिनी

विमल

दुर्दैवाच्या या अघोरी खेळाची सांगड कशी घालावी हेच मला समजत नाही. विमलशी आणि माझ्याशी दैवं वेगवेगळ्या प्रकारे पण जीव-वेणा खेळ खेळलं आहे. मला एकाच गोष्टीच अतिशय दुःख होतंय की, निदान विमलशी तरी असला क्रूर खेळ दैवानं खेळायला नको होता. विचारी विमल ! विमलचा दयनीय आणि केविलवाणा चेहरा मला स्पष्ट दिसतोय. माझ्या पायाशी बसून विमल पदर पसरून माझ्याकडे प्रेमाची भीक मागत आहे. माझी विमल ! होय माझीच आहे ती अजून. क्षणिक चुकीमुळे जरी ती शरीराने दुसऱ्याची असली तरी मताने, आत्म्याने माझीच आहे. फक्त माझी.

आज तिचं पत्र आलंय. विकट परिस्थितीत सापड-लेल्या आणि आधाराची आवश्यकता असलेल्या माझ्या लाडक्या विमलच पत्र. आणि आज माझा वाढदिवस. माझे डोळे अश्रूंनी भरून आले आहेत. या चौपाटीवर जून कोणी रसिक-रंगेल लोक आहेत किंवा नाहीत; या समुदायांत कमल-शंकरची जोडी आहे किंवा नाही मला काहीच दिसत नाहीय. सारं काही अंधुक, धूसर दिसतंय. परंतु समोरच्या अथांग सागरात एक होडी प्रवास करताना दिसत आहे. अगदी स्पष्टपणे दिसत आहे. आणि हवा जोराने वाहत आहे. समुद्रावर जोराचं वादळ सुरू होण्याची लक्षणं असावीत ही.

आणि खरंच वादळाला सुरुवात झालीय की ! काय हे काय ? समुद्रातून एकाकी चाललेली ती होडी मरकटतेय. तिला आतला तोल सांभाळणं कठीण होतंय. वादळाचा जोर वाढलाय... अरे देवा ! ती होडीत एकच व्यक्ति आहे. कशी तग धरणार ती ? आणि... आणि त्या होडीचं शीडसुद्धा फाटलंय की ! सुकाणू... तेही त्या व्यक्तीच्या हातून सुटलंय, कदाचित उडलं असाव ते ! त्या व्यक्तीचं भवितव्य संपुष्टात गेलंय की काय ? तिचे सारे प्रयत्न, सारी घडपड काप्या चाललीय. ह्या विशाल-विकाळ सागरात, बेकाम वादळाशी ती व्यक्ति एकटी-एकाकी मरणाशी

अगडतेय. ती जगेल का ? की ती बुडेल ? ... पण नाही ! कुठून तरी एक भक्कम होडी त्या खिळखिळ्या होडीच्या रोखाने वेगात जातेय. ह्या भयंकर वादळाची क्षिति न बाळगता, स्वतःची पर्वा न करता ती दुसरी होडी, त्या असहाय व्यक्तीला आपल्या होडीत घेण्या-साठी-तिला वाचवण्यासाठी जातेय. आणि नंतर त्या दोघांचा प्रवास सुरू होईल. एकाच होडीतून. अकाळ-विकाळ लाटांच्या मान्यातून-बेकाम आणि सुसाट वाऱ्याच्या तडाख्यातून, दैवावर मात करून त्या दोन व्यक्ति संघटितपणे आपली नौका सुखरूपपणे किनाऱ्याला आणतील.

दैवावर हवाला ठेवून मी आतापर्यंत विमलच्या जीवनाकडे त्रयस्थाप्रमाणे पाहत होतो. परंतु माणसाचे भवितव्य ललाटावरील रेपेत नसून मनगटातील कर्तवगारीवर अवलंबून असते. ज्यांचा आत्मविश्वास-वरील विश्वास उडतो ते दैवावर विसंबून राहतात. मानवाचे नशीब सटवी लिहीत नाही. स्वताच्या हातानीच मानव आपले नशीब लिहित असतो. दुर्दैव विमलशी जो अघोरी खेळ खेळलं आहे त्याची मला आता भीति वाटत नाही. जीवन-मरणाच्या या खेळात शेवटी मी विजयी होईन. माझ्या परीने विजय मिळवीन. तसा मला आता आत्मविश्वास वाटू लागलाय.

संसारसागरात अशाच प्रकारे विमलची जीवनरूपी नौका सापडलीय. सुकाणू तुटलेल्या आणि शीड फाटलेल्या स्थितिमध्यें. तिची स्थिति दिशाहीन झालीय. तिच्या सहाय्याला, माझ्या जीवननौकेत तिला सामावून घ्यायला मला गेलंच पाहिजे. आणि मग आमचा संघटितपणे प्रवास सुरू होईल. संसारसागरातील परिस्थितीच्या लाटातून, जर्ननिदेच्या सुसाट वाऱ्यातून, आमची दोघांची एकरूप झालेली जीवननौका सुखरूपपणे किनाऱ्याला लागेल.

विमलचा उद्धार करून तिला माझी करणं हीच माझ्या वाढदिवसाची भेट !

अश्रू

शशांक मराठे

द्वितीय वर्ष 'स्थापत्यशास्त्र'

हृदयांत दडलेली असह्य वेदना
काळीज चरचरा कापीत आहे
रूप मनोहर तव आठवताना
तिमिर नयने प्राप्तीत आहे
हृदयांत दडलेली असह्य वेदना
अंगप्रत्यंगास बोचत आहे
गीत भावनांचे स्मरताना
मति गुंग करीत आहे
हृदयांत दडलेली असह्य वेदना
विरह तुझा आठवत आहे
गतकालांतील सुखद स्मृतीना
वज्रनखें ओरबाडीत आहे
हृदयांत दडलेली असह्य वेदना
बंधन झुगारू पहात आहे
देऊन उष्ण कढ पापण्यांना
अश्रूरूपे गाली ओघळत आहे

असा मी; असा मी !

दिलीप एल. खेडेकर

एस. ई. (सिव्हिल)

कर्तव्याच्या मरुभूमीवर
ध्येयाच्या मृगजळामागे
धांवणारा
मी एक वाटसरू ! ॥१॥
सौख्याच्या उभ्या पिकामधलें
दुःखाचे तण उपटू पहाणारा
मी एक माथेफिरू ! ॥२॥
आयुष्याच्या कोऱ्या पाटीवर;
कर्तृत्वाचे लेख लिहू पहाणारा;
मी एक होतकरू ! ॥३॥
आयुष्याची अंधारी वाट
श्रद्धेची मिणमिणती पणती घेऊन काटणारा
मी एक यात्रेकरू ! ॥४॥

सापळा

'चकोर'

बी. ई.

काय करावे, काय लिहावे
अगवीच कांही सुचत नाही
पेनावरली शाई सुकून जात आहे,
पण शब्द कांही उतरत नाहीत
आणि अश्रू कांही थांबत नाहीत
अडखळता हात वेई साक्ष त्या अस्फुट भक्तीची
पाणावले डोळे देती ग्वाही त्या ओल्या प्रीतीची
यौवनाच्या बहरल्या कळघा याचि नजरे पाहिल्या
विरहाच्या त्या कळा याचि नजरेत साहिल्या
मीलनाचे धुंद क्षण याचि नजरेत अवलोकिले
आखरीचे ते अश्रू याचि नजरेत सामावले !
असो,

व्हायचे ते होऊन गेले

विसर मना ते सारे सगळे

कारण—

हे तर सगळे-नियतीचे सापळे !

संमोहन

शशांक मराठे

द्वितीय वर्ष 'स्थापत्यशास्त्र'

आकाशाच्या पोकळीत
डोळे फाडून पहातो मी जेव्हा
माझी नजर बनते
नवजात अर्भकासमान तेव्हा
अज्ञानाने भरलेली
कुतुहलाने भारलेली
आश्चर्यांनी विस्फारलेली
नाविन्यासाठी आसुसलेली
दिसतो गडद अंधारच अंधार
घेते त्यातच शून्य आकार
आदिअंत नसलेल्या दारा
सारा शून्याचाच पसारा
गोलातच शून्याच्या पहिल्या
खिळतात डोळ्यांच्या बाहुल्या
आणि फिरू लागतात
भिगरीप्रमाणे गरगरा

कुछ पंक्तियाँ

परमार जयन्तीलाल एम्.

एस. ई. (सिन्धिल)

जम न जाये बदन तेरा, तेरी ही सर्व आहों से,
मर न जायें हम कहीं, तेरी कातिल निगाहों से ।

नजरो से बड़ा और क्या नजराना होगा,
दिल से बड़ा और कौन सा खजाना होगा ।
मोहब्बत से बड़ा और कौन सा तराना होगा,
और तुमसे बड़ा कौन सा निशाना होगा ॥

मुझे तेरे प्यार में क्या क्या न मिला ।
आँसू के साथ गम का फसाना भी मिला ।
देखने को तो बेदर्द जमाना है मिला ।
खेलने को यादों का खिलौना भी मिला ।

दूर से ही देखे, आकर कभी न बात करे ।
मुस्करा कर, हमारा जीना वो दुश्वार करे ।
बस, हम आँखों ही आँखों में कैसे प्यार करें ?
ऐसे कब तक कोई किसी का इन्तजार करें ?

आती है सुबह, लेके गम का पैगाम ।
जाम छूने से पहले हो जाती है शाम ।
न दिन को चैन, न रात को आराम ।
गुजर रही है जिन्दगी लेके उनका नाम ।

एक गीत

परमार जयन्तीलाल एम्.

एस. ई. (सिन्धिल)

जब नजरो से नजरे मिलाते हैं,
फीर हमें देख करीब, क्यों चले जाते हैं ।

कहूँ मैं इसे नफरत या प्यार,
नहीं हूँ मैं इस पार न उस पार ।

जब जब हम उनके करीब आये,
क्यों रहते हैं हमसे वे घबराये ।

क्यों रहते हैं वे हमसे हमेशा डरे डरे,
जब नहीं हम उससे, न वे हमसे परे ।

जब दिल हमारा है उनके लिए बताव,
क्या पता देंगे प्यार से हमारे दिल का जबाब ।

मिल जाये हमें वो कभी अकेले में,
तो बता दें नहीं मजा है इस कदर जीने में ।

उन्हीं की बबूलत हो गया है जीना हमारा दुभर,
मन ढूँढ़ता है उन्हें कभी इधर तो कभी उधर ।

छायी रहती है मन में हरदम उनकी तसवीर,
उनके रूठ जानेपर रूठ जायेगी मेरी तकदीर ।

न जाने कौन सी घड़ी में होगा मधुर मिलन,
दिल हो जायेगा उनका देंगे बधाई धरती और गगन ।

फिर क्यों नजरें चार किये जाती हो ?

परमार जयन्तीलाल एम्.

एस. ई. (सिन्धिल)

तुझे खबर है, हम तेरा साथ नहीं देंगे,
जीवन में तुझे नया पैगाम नहीं देंगे,
देंगे भी तो, सिर्फ एक प्यार ही देंगे,

फिर क्यों हम पर एतबार किये जाती हो,
नजरें चार किये जाती हो ?

हमारी और तुम्हारी राह अलग है,
रस्मों रिवाज और आह अलग है,
दोनों हैं एक, मगर संसार अलग है,

फिर क्यों हमसे प्यार किये जाती हो,
नजरें चार किये जाती हो ?

दुनियाँ की नजरों में हम खटक रहे हैं,
जीवन की राहों पर हम भटक रहे हैं,
अपनी किस्मत पर सिर पटक रहे हैं,

फिर क्यों हमसे इकरार किये जाती हो,
नजरें चार किये जाती हो ?

तेरा भी दिल है, कोई खिलौना तो नहीं है,
तुझको अजीब खुशियाँ, रोना तो नहीं है,
हम तो वो हैं, जिसे खुद पर भरोसा नहीं है,

फिर क्यों प्यार का इजहार किये जाती हो,
नजरें चार किये जाती हो ?

यूँ देखा न करो तुम मुझे प्यासी नजर से

परमार जयन्तीलाल एम्.

एस. ई. (सिन्धिल)

मैं इस काबिल कहाँ जो तेरी तकवीर सवार दूँ,
तेरे सपने, तेरी दुनियाँ, तेरी तस्वीर निखार दूँ ।
मैं कैस नहीं, ढोला नहीं, फरहाद नहीं, वामक भी नहीं,
कैसे मुमकिन कि तेरी किस्मते-तहरीर सुधार दूँ ॥

यूँ देखा न करो तुम मुझे प्यासी नजर से,
जल जाये न तेरा बामन कहीं बलखाती उमर से ।
अपनी दिवाली की खातिर तू मेरी होली न जला,
खाक हो जाएँ न कहीं उल्फत के असर से ॥

यहाँ तो हर सुबह गम का पैगाम लाती है,
रोज नयी शाम हमें नगमये मातम सुनाती है ।
रोशनी दिन की हमें अशके जाम पिलाती है,
सियाही रात भी बेचैनियाँ मेरी बढ़ाती है ॥

तू मेरा सुकून न हीन, कर न मुझे बेखबर,
तुझे खबर हो न हो, मुझको हूँ सब तेरी खबर ।
तुझे जो होश नहीं, तो मुझे बेहोश न कर,
किस्साये उल्फत न सुना, मुझे मदहोश न कर ॥

जमाना बढ़ चुका आगे कदम तू भी बढ़ा आगे,
जहोलत कौम को मेटो अदब तू भी बढ़ा आगे ।
वो देखो फूटी किरन आती है नई सहर से,
यूँ देखा न करो तुम मुझे प्यासी नजर से ॥

ગુજરાતી વિભાગ:

(?) દેવીને કાજ

સૂર્યકાન્ત કાનજી લાલા, એસ. ઈ. (મિક.)

મોડી રાતે પથારીમાં પડ્યો પડ્યો પડખાં ફેરવું છું
હાથમાં ચોપડી લઈને,
કોઈક દેવીની 'આરાધના' કાજ,
હું કંઈક વાંચું છું, મારાથી કંઈક વંચાય છે,
કશુંક યાદ રાખવા, કંઈક ભૂલી જાઉં છું,
અને એ ભૂલી જવા માટે
મારે;

કશુંક યાદ રાખવું પડે છે.

કે

મારે દેવીને પ્રસન્ન રાખવા છે ને ?

તેથી જ સ્તોત્ર,
રાતો જાગું છું,
પાનાં ફેરવું છું,
પડખાં ફેરવું છું,
થોથાં ઉઘલાવું છું,
દેવીને કાજ...

(?)...પરીક્ષા...

★

એજી તમે ઓરાં....આવો તો....

ઓરાં આવો તો, રનેહલીનાં સાયરે
આથાં ખસો તો, વેદનાનાં વાસ રે...એજી તમે ઓરાં...
આંખથી આંખ મળી, કે પ્રીતના જામ છલકે
જાણે ભર શ્રાવણિયે, જળરાશિ છલકે...એજી તમે...
આ ગુલાબી ગાલે કે, કાળોતલ સોલે,
જાણે વસંતાગમને, વૃશે ફૂલ સોલે...એજી તમે...
આ મુખની શોભા કે, મધુરો બોલ ઝરે,
જાણે કો'ડુંગરે, ઝરણાંનાં શીતલ જલ ઝરે...એજી તમે...

★

કૃતિ

હું
ફૂંક મારી ઉડાડતો'તો
મારી સ્મૃતિઓની રાખ
ત્યારે
કોઈએ આવી, મને કહ્યું,
"કંડરાય છે
કાવ્યરૂપી કો'કલામય કૃતિ
આ રાખ થકી જતો."

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આ કબરથી

ચોગી ત્રિવેદી, બી. ઈ. (મિક.)

જીવ્યો ત્યારે તો અનેક બોજ વેંઢારવાને,
અને મૃત્યુ બાદ પણ ભાર આ પશ્ચરોનો;
નથી સહેવાનું, નથી સહેવાનું આ મૃત્યુ;
જીવતા રહેવા જગ્યા ન મળી,
મૃત્યુ પછી આ વિસામો આખો,
મનુજના શિરે ભાર કેટલા કેટલા;
અને વળી આ બોજ કબરનો;
મૃત્યુ બાદ પણ અજાણો આ કબરથી.

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તમારી આંખોમાં

આ જ આ વિશ્વ ઉમટ્યું છે તમારી આંખોમાં;
નીલો સમંદર લહેરાય છે તમારી આંખોમાં,
ગટર્ગુના પડધા શમ્યા છે તમારી આંખોમાં,
આપણી મુલાકાતો સચવાઈ છે તમારી આંખોમાં;
હું આ ઈજન જોઉં છું તમારી આંખોમાં;
તેથી સ્તોત્ર સ્વપનાં સાકાર થાય છે તમારી આંખોમાં;
લજજા જોઉં છું લજજાથી ઝુકેલી તમારી આંખોમાં,
વિરહના વખતે આંસુ છે સ્મિતવિહારી આંખોમાં;
તમારું મન વંચાય છે તમારી આંખોમાં,
કોઈ તો પૂછે? મારી મંઝીલ છે તમારી આંખોમાં;
સ્પંદનો, સંવનનો, ઊર્મિઓ ડુબે છે તમારી આંખોમાં,
હું તમે અને આ વિશ્વ સમાય છે તમારી આંખોમાં.

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બંધનની રક્ષા

સોલંકી ડી. જી., એસ. ઈ. (સિવિલ)

આહા! દિન શો શુભ દિસંતો,
ગુંજ રહું જ નગર નર્મ નાદથી;
'વીરા, મુજ ભાઈ આવ અહીં,
લઉં હું રક્ષા તારી બાંધી;
નાની થી આ રાખલડી મારી,
ન ભૂલીશ વીરા, શણે મને.'

ને સુણી રહ્યો સર્વ નાદ આ
નિરવ ગુંજ રહું મનડું મારું;
હે પ્રભો. ન આપી કાં?
મુજને, બહેની એક આવી,

ના ભૂલ્યો જ હું શું આજે
છે બહેની, તું જ જરૂર છે.
શું ઓટ છે મુજ ભાવ મહી,
સ્મરું આપને મુજ બહેની ધારી.
વિનવું એક જ પ્રાર્થ, ઓ બહેની,
ના દેલજે આ ભાવવર્ણ થકી,
ઉરે ભર્યું ભ્રાતૃપ્રેમ-બિંદુ બહેની,
એ શુભ આદે ઊભો હું પાસ,
દે, બાંધી દે બંધન હવે તો.

'તો લે વીરા આ છે બંધન,
છે રક્ષાનું નામે રક્ષાબંધન.
સદાય કરજે હવે સપ્રેમે;
આ લીધેલ બંધનની રક્ષા,
છું, હું બંધનની રક્ષા.

અરે હો બહેની મારી,
માની વાત મેં સર્વ તારી.
નિશ્ચયે જ હવે હું તો,
ભાઈ છું મુજ ભગીનીનો.

કવોરનટાઈન !

મૂક્યા અવકાશવીરોને કવોરનટાઈનમાં
તપાસવા,
કે, તેઓ ચંદ્ર પરના કો' જેરી જંતુ તો નથી લાવ્યા ને?
જેરી !
કે, જે પૃથ્વી પર ભયાનક રોગો ફેલાવે.
અને,
એ કારણ માનવજાત બચાવવા
મૂક્યા તેમને કવોરનટાઈનમાં.
ભલા !
એમ કોઈએ પૂછ્યું કે
ચંદ્ર પર તમે શું કોઈ જેરી જંતુ નથી છોડી આવ્યા કે?
જેથી, કદાચ ત્યાં મુગો પછી પણ પાંગરે,
વેર, વિષાદયુક્ત દુનિયા
આ દુનિયા જેવી સ્તો !!!

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ને ઝૂલી રહ્યાં બિંદુ નયને,
સ્નેહબિંબ શાં હેતે ભર્યાં.

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સ્વપ્ન શું સુંદર હતું એ,
થયું, એમ કે ના જનું હવે અહીંથી
પરંતુ ઉઘડી આંખ, ભાન થયું કે
હતું સ્વપ્ન, સ્વપ્નનું એ તો.

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આમ જ આવતાં રહો તમે પ્રિય,
તુજ વીણ સર્વ સંગાથ કાચો.
લોક વદે ભલે નિરાશ-નિશાની વડે,
અંધારે તો પડછાય પણ સાથ છોડે,
(પણ) આંસુ તમે તો છો મારા સંગાથી.

★

Statement about ownership and other particulars about "SARJANIKA" as required by Form IV (Rule 8) of the Registration of Newspapers (Central) Rules 1956.

1. Place of Publication Bombay.
2. Periodicity of its Publication Annual.
3. Publisher's Name R. H. Chokhavatia.
Nationality Indian.
Address Bhavan's Sardar Patel College of Engineering,
Andheri, Bombay-58.
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5. Editor's Name R. H. Chokhavatia.
Nationality Indian.
Address Bhavan's Sardar Patel College of Engineering,
Andheri, Bombay-58.
6. Names & Addresses of individuals who own the newspapers & partners or shareholders holding more than one per cent of the total capital. Bharatiya Vidya Bhavan.
Registered under Societies Registration Act XXI of 1860 and Bombay Public Trust Act 1950, No. F-358 (Bombay).

I, Principal R. H. Chokhavatia, hereby declare that the particulars given above are true to the best of my knowledge and belief.

R. H. CHOKHAVATIA

Signature of Publisher.

June 1970



Art 161 — PENDING

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