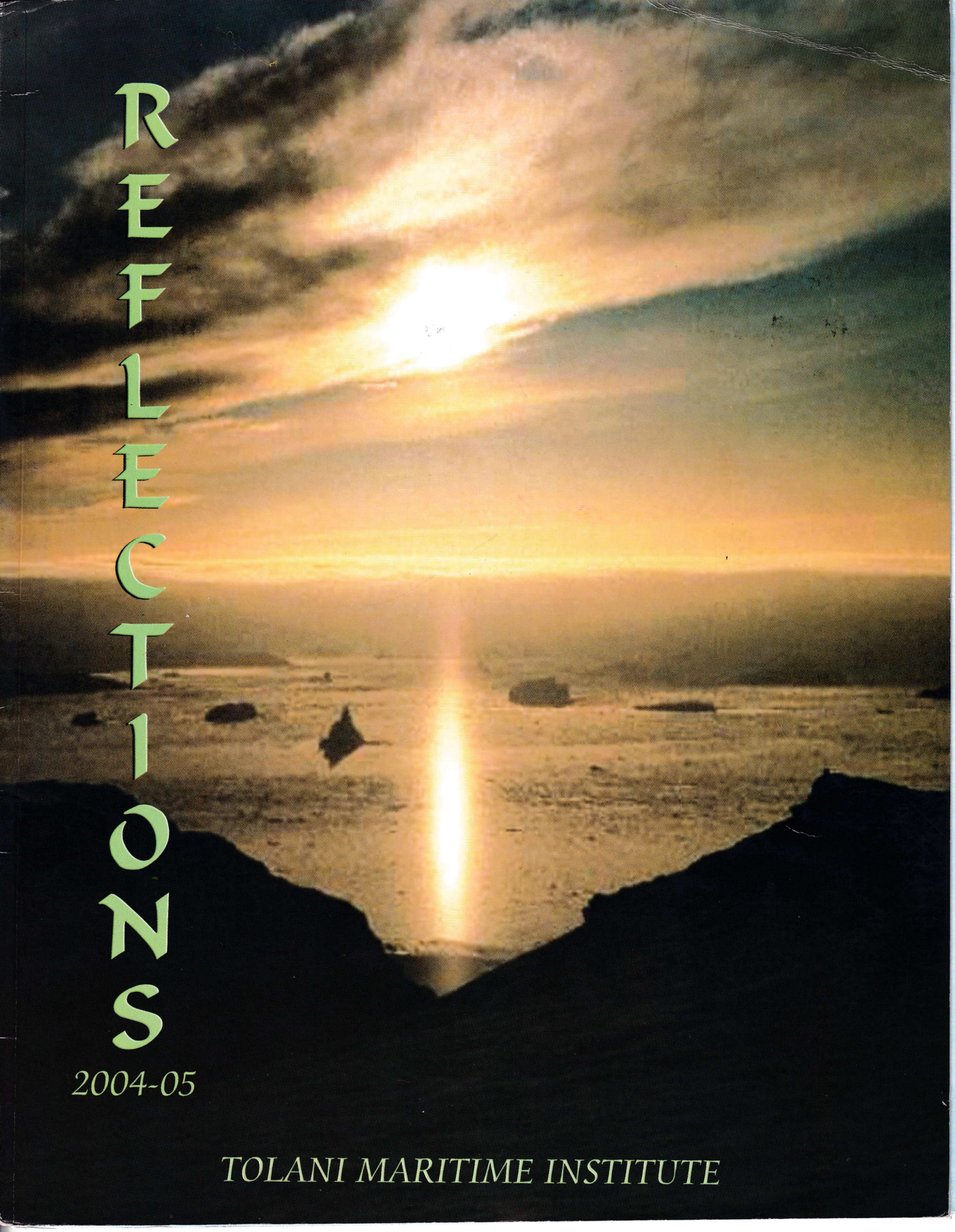

REFLECTIONS

2004-05

TOLANI MARITIME INSTITUTE

ABOUT THE COVER ...

The air in Antarctica is frequently very dry. The low temperatures mean that little or no water vapour is held in the air, instead it freezes and falls out, or builds up on surfaces as frost. Sometimes, however, depending on the particular atmospheric conditions, the frozen water vapour remains in the air as suspended ice crystals. In these conditions the crystals can reflect sunlight in a variety of ways forming atmospheric phenomena of different types.

One of these phenomena is the ***"Solar Pillar"*** *shown on the cover page. The Sun is reflected very strongly so that the* ***REFLECTION*** *is almost as bright as the Sun itself. Like a rainbow, this sight is dependent on where the light is coming from and where the observer is standing. The pillar appears to move when the observer moves, but always remains directly below the Sun.*

Starting With A Prayer ...

We need to talk to God each day
We do this best by a prayer
He's waiting for our call to Him
No matter when or where

We can pray early in the morning
We can pray to Him at night
But we need to set aside a time
To keep Him in our sight

We can tell Him all our worries
We can tell Him all our woes
We can confess all our sins to Him
Though He already knows

When we are heavy laden
And don't know what to do
Let's take His yoke upon us
And He will see us through

He's there to help us bear our load
He always knows what's best
His yoke is easy, His burden light
He can put our souls at rest.

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From the Editors' Desk

A warm welcome!

The present issue of our annual magazine mirrors the ideals and beliefs of TMIans. Featured inside is an eclectic assortment of articles, which spans everything from light to informative reading.

Humourous passages, poems, technical articles, sketches, a crossword, an example of digital morphing ... the list seems endless! All this and a lot more is what REFLECTIONS 2004 - 05 *has to offer!*

I would like to thank all the staff members and students of TMI who have provided us with their valuable assistance in bringing out the magazine in its present form.

Read on ...

Sandeepan Raha
Chief Editor

From left to right : Varun Kodnani, Shivam Sarawagi, Sandeepan Raha, Amrita Mankame, Samarth Singh

CONTENTS

Abbreviations used : M.E. - Marine Engineering program, N.T.- Nautical Technology program

A TRYST WITH TALEGAON

Name :

The place owes its nomenclature to the fact that it is surrounded by two large lakes which provide water to the neighbouring areas. In Marathi, the word *"Tale"* means "Lake" and *"Gaon"* means "Town", and hence, *"Talegaon"* connotes "The Town of Lakes".

Talegaon is also sometimes referred to as Talegaon Dabhade, after its famous warrior, Sardar Khanderao Dabhade.

Geographical location :

Talegaon is situated on the east bank of the Indrayani river. The town is located 40 km from Pune on the Mumbai-Pune highway. It is surrounded by hills which add to its natural beauty.

Indrayani river :

This is the river on the banks of which Sant Dnyaneshwar is believed to have attained enlightenment. The holy river is an important part of Talegaon's geography. It follows course through places like Lonavala, Kamshet and continues further. Near Tulapur, it meets the river Bhima .

Climate :

One of the attractions of Talegaon is its climate, which remains pleasant throughout the year. All three seasons are moderate with a minimum of about 18^0C and the maximum being around 38^0C. Annual rainfall is measured to be in the range of 18-25 inches. March to May is regarded as the summer season, June to October are the rainy

months, and the rest is winter.

Crops :

Talegaon, Maval and their surrounding areas are famous for the cultivation of rice, sugarcane and barley. Optimum rainfall in Talegaon is favourable for growing vegetables like potatoes and tomatoes.

Historical background :

The historical significance of Talegaon dates back to the times of the Mahabharata. Evidence of this can be seen in that one of the two Pandava temples in India is situated here . Sardar Khanderao Dabhade and his wife Sardar Umabai were leading warriors who brought glory to Talegaon. The two forts in Talegaon owe their names to these great warriors.

A Buddhist stupa was constructed during the reign of Ashoka. It was during this time that Buddhist monks sought to observe *'dhyana'* or meditation in the region.

Famous personalities :

Eminent Maharashtrian writer and freedom fighter, Gopal Neelkantha Dandekar, popularly known as *Gonida*, hailed from Talegaon.

Vishnu Ganesh Pingle, a famous freedom fighter, was a student of the Samarth Vidyalaya situated in Talegaon. He was the man who established the Gadar party in the U.S., which contributed to a lot of diplomatic work in the freedom struggle.

Some other facts :

The *Paisa Fund Glass Karkhana* (factory) was started by the famous Lokmanaya Tilak as a source of employment for the people in the area.

The *Udyog Dhama* is a home for leprosy patients, which has been functional since 1977. Founded by Shri Anantarao Chaphekar, this institution helps cure leprosy patients. The patients keep themselves busy by making chalks and other stationary items, which help generate funds for the *Dhama*.

New developments :

The Takve village near Talegaon has been declared as an IT village by the Government of Maharashtra.

The Maharashtra Government has declared Talegaon as an area for industrial development, which continues to generate more and more job opportunities for local people.

Shantanu Shevkar,
IInd year M.E.

Favourite Hangouts Of TMI Cadets

A six-day week packed with academic involvements and other essential activities typical of a reputed maritime college! This is how TMIans keep themselves busy, bearing in mind their constant pursuit to become world-class mariners.

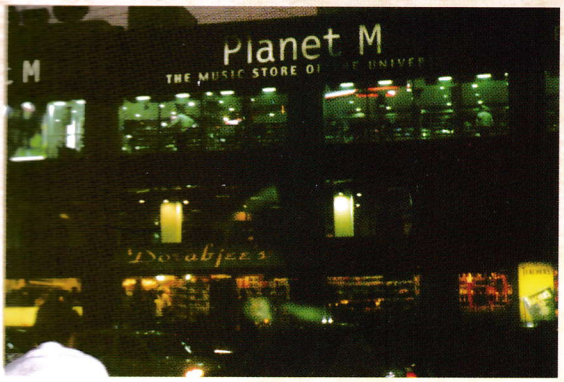
The seventh day of the week is, however, a Sunday, on which TMI cadets can enjoy themselves to the utmost and rush to their haunts. Some of the favourite hangouts of our cadets are as follows …

E-SQUARE

This multiplex tops the popularity ratings in our college. In the words of our IIIrd year M.E. cadet, Nikhil Mahajan, "E - Square stands out because it screens all kinds of movies for an eclectic mix of audiences. Posh interiors, a lively crowd and the mall with numerous facilities make E - Square an obvious choice."

BURGER KING

Just the place for burgers! "Cheap burgers, with a great variety of both, veg and non-veg ones, make Burger King my favourite eating joint!", says IInd year M.E. cadet, Vaibhav Prakash.



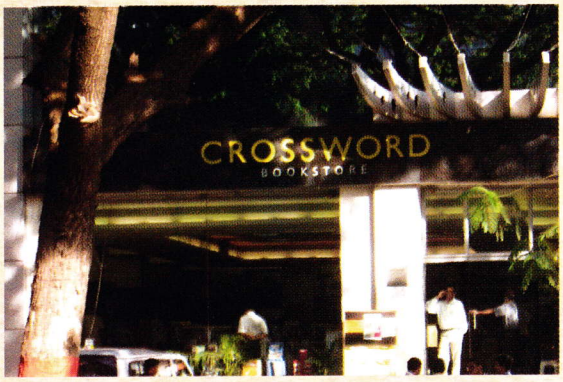
PLANET M

This one is for music lovers! All kinds of music that one can possibly think of can be purchased in the form of cassettes and CDs here. IIIrd year M.E. cadet, Vivek Kadoo points out "This Music Store of the Universe provides me with my all-time favourite "Trance" and other romantic ballads sung by Bryan Adams, Boyzone and Westlife. Moreover, I have never returned from Planet M without making a satisfactory choice."

INOX

Inox is probably the best place for watching movies in Pune, if you don't mind the expense! IVth year M.E. cadet, Himanshu Maheshwari, remarks, "Inox is excellent in its screening facilities." The Pantaloons outlet on the ground floor also attracts a lot of young people towards Inox. The only disadvantage of this multiplex is the exorbitant price of movie tickets."

CROSSWORD



Located in the heart of the city, this bookstore has loads of books to offer! Ist year M.E. cadet, Dipin Desai, says, " From books on ancient English literature to the latest bestsellers, I can buy everything at Crossword. Their non-piracy policy also goes a long way in promoting the healthy sale of books."

PIZZA HUT

Prakhar Singh, a Ist year M.E. cadet opines, "Pizza Hut is where I try to satisfy my endless appetite for yummy pizzas and crisp French fries." Besides Prakhar, many of our cadets definitely enjoy the ambience and the prompt service offered by this pizzeria.

FASHION STREET

Fashion Street is probably the place where you can purchase whatever you are looking for be it apparels, shoes, CDs, watches, electronic goods and a lot more. IInd year M.E. cadet, Kunal Sharma, says, "The place is definitely good for cheap use and throw stuff and allows a lot of bargaining." Well, what better if you wish to purchase something intended for a short period of usage!

"SHIVNOX"

Ist year N.T. cadet, Reshma Sharma aptly states, "This is your best bet for watching movies real cheap - for just eighteen bucks! "Shivnox" also owes its popularity to its proximity to our institute."

THE INDIAN ANSWER TO THE AMERICAN BURGER

The other day, I was taking a stroll in the local market place. It was just then that I happened to pass by the ANAND VADAPAV CENTRE. As was perfectly predictable, the hot and spicy aroma of the *vadapav* set my taste buds tingling - a phenomenon that many of my fellow TMIans have already experienced!

The existence of the *vadapav* is believed to have come about when a vendor accidentally stuffed a *vada* between a bun *(pav)* and lo and behold, was created the *vadapav.* Although an unconventional idea, it soon came to be the liking of the common masses and went on to became a "super-hit" snack.

A technical analysis of the *vadapav* might be presented as follows:

Taste : Delicious (especially when hot and spicy)

Size : Ping-pong ball < *batata vada* (an integral part of the *vadapav*) < cricket ball.

Also, these days, a new fad has come up for a Jumbo *vadapav,* which is only a higher version of the standard one, coming in a larger size. Mind you, the size of the *pav* also varies proportionally to that of the *vada.*

Price : Now this is where it beats the rest of the junk food stuff hands down. A standard *vadapav*'s price may vary from Rs. 2.50 to Rs. 4.00. Also, the price range could be from Rs. 5.00 to Rs. 8.00 for the Jumbo *vadapav.* Thus we can say that the price of a *vadapav* is in coherence with the concept of proportionality, the price of the *vadapav* being in direct proportion to its size.

Availability : This is also one of the key features for it to be called as the snack of the masses. A *vadapav* would be easily available at any roadside stall, at an average restaurant and even at a canteen in a school, college or office.

Special features :

Variety : The mass appeal for a *vadapav* has initiated vendors to put on their thinking caps and come up with innovative ideas to outsell their competitors. Dry garlic *chutney* was the first addition to enhance its taste. After that, various combinations ranging from hot green chillies to the sweet tamarind *chutney* have been tried out. Diced onions and coriander are used as garnishes. Also, crumbs from the fried remains, more popularly called *churas* are added to give the *vadapav* that crunchy taste.

Ease : The most endearing part of a *vadapav*, especially for those living in the 'fast lane' in Mumbai and not having the time to "stand and stare" as Wordsworth might have put it, is that it can be easily carried by hand. Moreover, one doesn't need to bother with forks and spoons. Just pick it up and rush off to your destination, chomping it down all the way!

Progress : The phenomenal success of the *vadapav* has brought about many of its siblings into being, a popular one being the *samosa pav.*

Result : Thus, we can undoubtedly see that its characteristic specialties and popularity among the masses easily gives the *vadapav* an edge over the American burger.

The *vadapav* may be easily featured in the category of junk food but I am in no mood to delve into its nutritional properties. Just eat-n-enjoy! Why think so much ?

Conclusion : Well, my comprehensive technical analysis of the *vadapav* leads me to say "Move over, Uncle Sam! Your burgers are no match for *aamchaa vadapav.*"

Ahmedali A. Lokhandwala,
IInd year M.E.

ABOUT DREAMS

Trust beyond the realm of reality
Across miles infinity
She waves to me
The girl of my dreams...

Her hair darker than night
Her smile that sets hearts alight
Such heavenly grace; A beautiful face
That's who she is,
The girl of my dreams...

"Do dreams even turn to reality ? "
"Only if you believe in the EASTER BUNNY...",
So saying they jeered at me,
" You are a fool to waste your time,
Marry someone before you pass your prime. "

I would rather wait to death
And so saying took up the bet.
For I was a fool , a daydreamer
Waiting for the girl of my dreams...

It was a dark stormy night
When she came and lit up my life
She was everything I had dreamt of
The love of my life.

I loved her, From my heart's core
As our relationship blossomed
I came to know her more,
The girl of my dreams...

She was ambitious;
And wanted to live in luxury
I had only love to offer her
And so she left with a wealthy biggie

She had her trinkets
I my loneliness,
I was a fool; a day dreamer
To my dream, I had my love sworn
But alas...
The girl had dreams of her own!

Ankit Ganju,
II[nd] year M.E.

PETROLEUM CONSERVATION - A PRESENT DAY NECESSITY !

This is neither a story nor an essay, but is my humble appeal to all readers to unite and preserve what breathes life into all modern day's means of transport. You know exactly what I am referring to - I speak of "PETROLEUM RESOURCES". Today, not only the world's essential modes of transport like cars, buses, locomotives, airplanes, ships, etc. depend on these resources but also defense systems which various countries boast of, say, fighter jets, battle tanks, armoured vehicles and missile system propulsion units depend on the same.

One of the most important uses of petroleum resources comes in the form of cooking fuel. Hence it affects our lives in some or the other way & without it life would be impossible. But a question comes ringing into my mind as to how many of us are actually aware of the importance of petroleum resources. These naturally occurring resources which are only found in some parts of the world like the Gulf nations (UAE, Iraq, Kuwait, etc.) and USA, are fast depleting due to their excessive consumption across the world. These resources owe their exhaustion to their non-renewable nature and immediate attention needs to be focused on their preservation. All governments across the world must immediately respond to this alarming situation to ensure economic usage of these resources and bring about a state of negligible wastage.

The invaluable products obtained by refining crude petroleum include petrol, diesel, naphtha, tar, kerosene, lubricating oils, etc. and other innumerable by-products. But persistent wastage of these substances due to our carelessness, laziness and indifferent attitude, is paving its way towards a heavy price which the world has to pay. Gallons of oil are lost everyday owing to our vehicles being left with their ignition ON at signals and during traffic jams, leakage of oil from bunker tanks and pipelines in ships, oil spills in oceans and countless other reasons.

A concerted action is necessary to rectify such flaws and advocate respect for petroleum resources. We must choose to purchase vehicles which give higher economy than those which produce higher power. New engine designs should be aimed at providing better fuel economy with optimum power output. Technology should be utilized effectively to manufacture systems which can reuse and recycle the wasted fuel gases given out in the form of exhaust. This will considerably reduce pollution levels and preserve petroleum resources as well.

What I seek is a positive response from both manufacturers and consumers of petroleum-based products and equipments. I would like to conclude with the message:

SAVE OIL TODAY

FOR A BETTER TOMORROW,

IF YOU DON'T

BE READY TO FEEL SORROW !

Reetabrata Bhattacharya,
IInd year M.E.

SO C'MON YEAH !

I still haven't found what I am looking for!

The saga of mixed emotions always overcomes my thought process and renders it a clandestine affair. The lexicon of my thoughts might be more varied than a rainbow but there exists a predominant iota assumed by people and myself.

I like the thought of intermingling with people, getting to know them and truly understanding them, but I do not wish to fall out of favour with them. But the truth of the above statement has been experienced once too often by me. You might opine differently.

All forgiven and forgotten, changes are due. Changes I would like to bring in those people. Couldn't I be a part of these changes and couldn't I take initiative for a better relation? Sanity questions this outlook. Serenity welcomes it.

Just a moment, and I am drawn by an ironical vision. All my life I have been looking for a person to share my blues, my happiness, my curiosities, and in totality, myself. I would ideally want that person to be of the same vision, identical beliefs and similar aspirations and the same … what not! Practically viewed and all left to notice and experience, was that all companions I have ever had, all my beloved friends, have been so contrary to myself as blood might be to water.

Well, this defying irony troubles me and if you thought that the title was a little irrelevant, have I really found what I have been looking for. The utmost sense of security that I have experienced while writing this piece, points me in the direction of an unknown oblivion and a terrain unexplored.

To say the truth, I might think of myself as a boy interrupted and you might end up thinking the same way, too! But I do not wish to prolong any further- I end!

Lokesh Sekhri,
1st year M.E.

हमारे वर्माजी

सुना था मेहमान होता है भगवान का रूप,
अपने पूर्वजों ने भी यही कहा था,
हमें भी इसपर विश्वास होता,
अगर वर्माजी जैसा कोई मेहमान न होता।

खाना, पीना, सोना हुआ दूभर,
तो हँसना बोलना नामुमकिन,
उनकी ही सेवा और आराम का ध्यान,
इस कर्तव्य में रो सा जाए मन।

न तार, न वार और न कोई त्योहार,
बस, दनदनाता आ गया सारा वर्मा परिवार,
मिठाई, कपडे व फूलों के हार,
उनकी सेवा में हो गया सब कुछ तैयार।

जैसा बाप है वैसे बच्चे,
सुपुत्र पाँच और सारे कच्चे,
टी. वी. देखें, धूम मचाए,
पर कभी काम में न हाथ बटाएँ।

पत्नी भी उनकी है निराली,
दिन भर बातें करने वाली,
माँ की नींद हराम कर के,
चादर तान के सोने वाली।

ऐसा यंह वर्मा परिवार है भैय्या,
चाहो तो अठन्नी, जाए रूपैय्या,
सब समझें और करले जान,
यह मान न मान, हम मेहमान।

ब्रिजेश मोंगिया,
तृतीय वर्ष एम.ई.

ग़ज़ब की जीवनी शक्ति

किसी व्यक्ति द्वारा पटरा-बेड़े पर एकाकी रूप मे सबसे लंबे समय तक रहने और जीवित बचे रहने का कीर्तिमान १३३ दिन (४ १/२ मास) का है। उक्त कीर्तिमान युनायटेड किंगडम वाणिज्य नौसेना के सेकण्ड स्टिवर्ड पून लीम का है। पून लीम के एस.एस.बेन लो मीण्ड नामक जहाज को अटलांटिक महासागर में, सेंट पॉल रॉक से ९१० कि.मी. पश्चिम, ००.३० उत्तर अक्षांश, ३८०° ४५'' पश्चिम रेखांश में २३ नवंबर, १९४२ को प्रातः ११.४५ पर तारपीडो द्वारा ध्वस्त कर दिया गया था।

उसे ५ अप्रैल १९४३ को ब्राज़ील के मछुआरों ने मछली पकड़ने की एक नाव में बचाया। उस समय भी उसमें इतनी जीवनी शक्ति थी कि वह अपने पैरों पर चल कर तट पर आया।

सौरभ कुमार,
तृतीय वर्ष एम.ई.

Winter never felt like winter there. It was the most pleasant weather imaginable after the monsoons. It was like spring, minus the flowers and leaves on trees. That was Rajiv Rao's Mumbai. His first love and true home. He looked at the stars and thought of the wonderful times he had had with his friends and family back in Mumbai. Bombay, so peaceful and so safe.

Rajiv rubbed his hands as he ran back inside the army bunker. The enemy had started its artillery firing again. There were a little more than 40 people in the small underground bunker. But no one seemed to mind the shortage of space. They all had a big mission ahead of them.

The stink of his own body made Rajiv hate himself. Just like the others, he had not had a proper bath for about a week and a half. The Kargil war had not allowed India a moment of peace. In times like these, going out even for nature's call was a problem for the committed young soldiers.

Rajiv was having tea with his fellow soldiers. In these days of war, at more than 4000 feet above sea level, even tea was special. As they sipped tea, they discussed their mission for the fourth time. The company had to climb a peak that was 16,500 feet above sea level. In these early days of war, almost every mission was suicidal as the Indian army had little knowledge of the Pakistani gun positions and bunkers.

Every soldier who was a part of the mission had realized and accepted the fact that there was a high possibility that they might not remain alive to see their families again. Rajiv's mother was his only family member. In his last letter to his mother, he had written, "This might be my last letter to you. But don't worry, Amma. God will take care of all of us. We'll be safe in heaven, if not in these beautiful mountains. I just want you to know that I am thankful for all that you have given to me. I couldn't have asked for a better mother. Just remember Amma, if I die, it will be for India. But if I live, it will be for you."

The mission began at last light the next day. The air was tense and the atmosphere, charged. There was no looking back now. With the enthusiasm of excited children, they started climbing. They couldn't wait to recapture the peaks that rightfully belonged to India.

They had to attack during the night. Because during the day, the enemy would have a full view of the approaching Indian army. And climbing a peak at the height of 16000 feet was no mean task. Going during the daytime would literally mean walking towards death.

The Indian infantry officers ordered for artillery fire before they started climbing. This was the standard strategy followed during the Kargil war, which worked like magic. The Indian artillery started pounding the enemy bunkers with non-stop artillery fire. The bofors guns provided the much-needed accuracy to the Indian army. The Chief Observation (CO) officer was providing coordinates to the base through the wireless. The artillery soldiers fed the information in the computer of the bofors guns. The guns had a long range of 40 kilometres and were very accurate. The bofors guns unleashed hell on the Pakistani bunkers and did not let the enemy soldiers lift their heads even for a second. This provided the much-needed covering fire to the Indian soldiers and they climbed hastily as the artillery fire continued. When they were 300 metres away from the enemy bunkers, they told the artillery to stop firing so that the splinters from the exploding shells did not end up hurting or killing the Indian soldiers.

As soon as the artillery fire had stopped, the Pakistanis started firing at the advancing Indian army. This is where many brave Indian soldiers died. They were fighting a war in the middle of a sea of bullets.

Rajiv was on his way up when the mortar shelling of the enemy became very fierce. Rajiv told his fellow soldiers to give him covering fire while he tried to find an alternative route to the bunkers. But he failed to find another route to the enemy bunkers. The attack had to be from the front. But doing that would mean suicide for all of the

Indian soldiers because it was absolutely impossible to advance through the enemy bullets unharmed. So Rajiv told the wireless operator to request the base for more artillery firing. The soldiers were more cautious about the splinters than the shell itself, because the splinters were the ones which did the maximum damage. But in their case, the Indians had to request for more artillery firing. They had to take the risk of being hurt by splinters. There was no other option. So the base was told to give more cover using the deadly bofors guns. The plus point Indians had, being so close to the target, was that they could pinpoint exactly where they wanted the firing to be done. The artillery started its bombardment. The shells were falling a few metres away from the Indian soldiers.

It was a ten-day mission. By the ninth day, the Indians had climbed most of the hill. Only the last hundred meters were left to climb. The army had conquered all of the enemy bunkers on their way to the top. But there were four more on the last 100 metre stretch.

The number of casualties on the Indian side were high. Of the 36 soldiers, only 18 remained fit enough to fight. Though a bullet had pierced his left shoulder, Rajiv was one of the soldiers who considered himself fit to fight. The ten-day mission was extended by another day. The Indians, with great difficulty, managed to gain supremacy over the peak. By this time, 2 more Indians had fallen to enemy bullets and 3 seriously injured. Rajiv was one of the 3 injured.

Reinforcements were called for soon after the Indians conquered the peak. The injured were taken to a tent filled with emergency medical supplies at the base of the mountain. As Rajiv lay on the bed, he couldn't believe his luck. He had survived one the most difficult battles. He looked at the olive green roof of the tent and thought about his mother. " I have lived for you, Amma," he said.

After two days, Rajiv was shifted to the army hospital in Kargil. There he received a call from Mumbai. But it wasn't his mother. It was his neighbour. She had called to inform Rajiv that his mother had expired following a heart attack because of acute hypertension. She told him to come over as soon as possible to perform the funeral rites.

Rajiv was crushed. For a few seconds, he couldn't speak or cry. He just moaned in despair and helplessness. Then he started crying uncontrollably. His fellow soldiers in the hospital tried to console him but to no avail. He had lost his only near and dear one and was left all alone in the world.

Rajiv felt as though he had been through a terrible nightmare and that the news of his mother's death was not real. But after a few minutes, he realized that his mother was indeed dead. Rajiv was sitting on his bed. He closed his eyes, rested his forehead on his palms and said, "I lived for you Amma, why did you die for me?"

Varun Sabhlok,
Ist year N.T.

WOMEN IN ENGINEERING FIELDS

Only 9% of American engineers are women. According to the 2001 current population survey (CPS), 2 out of every 10 employed engineers were women. At the same time 3 out of every 10 computer system analysts, engineers and scientists were women. The challenge for women lies in exploring educational and training opportunities that will lead them towards high-tech careers.

Why women in engineering?

There are several reasons, why women should be encouraged to become engineers :-

1] There is a shortage of skilled workers

Polls of business leaders indicate that skill shortage is their no.1 barrier to growth. Current work force projections show that unless women and minorities are attracted to science, technology and engineering; a country will not have trained personnel to meet its needs .

2] Society benefits from a more diverse engineering community

Women's perspective to problem - solving and their different approach towards effective teamwork enable project teams to generate creative solutions and to address society's needs better.

3] Business benefits from engaging women in research, design and development

Women account for about 50%of the population and are a major consumer group. By attracting women engineers, companies gain better understanding of their customers' needs, improve product design and compete more effectively in the market.

4] Engineering can be a rewarding life- time profession

On an individual level, engineering offers women significant financial benefits and job security. An engineering graduate receives a high starting salary. Engineering for women also provides many choices of work environment and the nature of job is more varied.

Females' opinions about engineering are shaped by their interaction with parents, teachers and mentors. Parents can now expect their daughters to achieve success and encourage them to opt for challenging high-tech careers. Teachers can present technology through activities and curriculum that engage females. Counsellors and mentors can encourage girls to pursue engineering and other technological careers.

With the advent of modernisation, women must shoulder responsibility along with their male counterparts to usher the world into a new era of technology.

Amrita Mankame,
Ist year M.E.

Dual Fuel Technology

(Ever since its inception, TMI has always been on the forefront of maritime education in the country. In keeping up with the same, a technical paper presented by two of our fourth year cadets won the first prize at a national-level seminar on large internal combustion engines, held in December 2004. A synopsis of the technical paper is presented below.)

Introduction

The dual fuel engines have received attention in recent years due to increasingly restrictive engine emission standards and the need to identify viable substitutes for conventional fuels such as diesel and gasoline. Meeting future emissions standards with conventional diesel engines, particularly achieving simultaneous reduction of NOx and particulates, without sacrificing engine performance will continue to be a challenging task. Dual fuel engines may offer some advantages in this regard. They are known to produce very little particulate matter, since combustion mostly occurs in a lean premixed fuel-air mixture. However, some inherent problems will also need to be resolved if these engines are to be a feasible option. Dual fuel engines exhibit poor performance and excessive unburned hydrocarbon and carbon-monoxide emissions at low loads. They also have a tendency to knock at very high loads. Identifying and implementing strategies for modifying engine design and operating variables to ensure satisfactory engine operation over the entire operating range is important.

Concept of Dual Fuel Engines:

In compression ignition engines (diesel engines), air is compressed in the cylinder and becomes hot. The hot air ignites diesel fuel injected into the cylinder providing power. Because the auto-ignition temperature of natural gas is hundreds of degrees higher than that of diesel fuel, natural gas is not readily ignited using the same technology. However, injecting a small amount of diesel fuel at the appropriate time, emulating a spark plug can ignite a natural gas/air mixture. The engine is then said to be a dual fuelled engine.

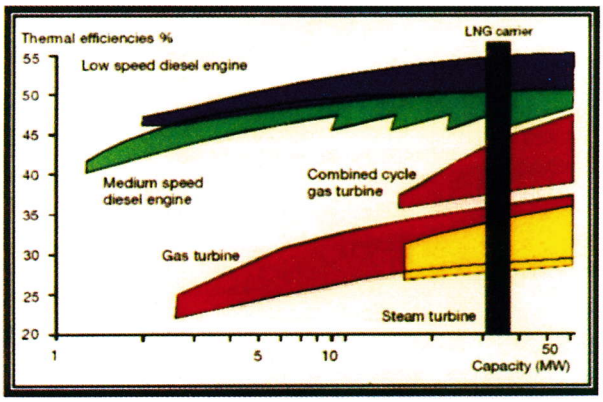


Fig 1. Efficiency of Various Propulsion Systems

Most of the Dual fuel engines use a diesel pilot to ignite the natural gas/air mixture in the cylinder, but have standard diesel injectors that allow the engine to run on 100% diesel fuel if necessary.

Out of all the options for the prime mover, the low speed two-stroke diesel engine gives the best thermal efficiency for any conventional propulsion system. Thermal efficiencies of around 50% for diesel engines far exceed the 30% offered by steam turbines.(Refer figure 1)

Engines equipped with Dual-Fuel technology operate simultaneously on both diesel fuel and natural gas. For Dual-Fuel engines the primary fuel source is natural gas. Traditionally natural gas as a fuel produces less power than diesel fuel.

When air and gas are compressed above an 11.5:1 ratio, spark ignition can no longer consistently ignite the fuel because of high resistance across the spark plug, resulting in a loss in mechanical efficiency. Spark ignited natural gas engines are unable to use the high compression ratios that make today's diesels so powerful and efficient. Further spark ignition requires an air throttle in the intake system. Dual-Fuel technology offers a better solution. Compression ratios of today's diesel engines are about 16:1.By using a small amount of diesel fuel as a "liquid spark plug". Most engines use a "micro-pilot" injection with less than one per cent of the fuel energy being required as liquid fuel at nominal load. Electronic control closely regulates the "micro-pilot" injection system and

air-gas ratio to keep each cylinder at its correct operating point between the knock and misfiring limits. Dual-Fuel natural gas engines operate at the same compression ratios of a diesel-fueled engine. No air throttle or spark plugs are required. Dual-Fuel engines have an average substitution rate of up to 85%.

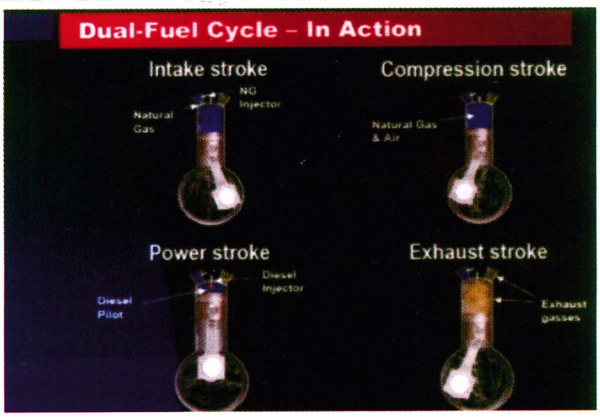


Fig 2. Different Strokes of 4-Stroke Dual Fuel Engine

Gas fuel is supplied at a low pressure (less than five bars) to the engines. In gas mode, Dual Fuel engines operate according to the lean-burn Otto process. Gas is admitted into the air inlet channels of the individual cylinders during the intake stroke to give a lean, premixed air-gas mixture in the engine combustion chambers. Reliable ignition is obtained by injecting a small quantity of diesel oil directly into the combustion chambers as pilot fuel which ignites by compression ignition as in a conventional diesel engine.

The principal justification for a system using two fuels (diesel/gas) is that the fuel economy is better in dual fueled engines (by as much as 20%) than it is in spark ignited natural gas engines, particularly when an engine is running at partial power. In some instances, dual fueled engines may deliver even better thermal efficiency than an equivalent diesel engine.

Applications to Shipping :

1. Crude Oil Carriers : On some crude carriers, where Volatile Organic Compounds (VOC) can be used as free fuel in dual fuel engines. This also reduces emissions from such carriers. During the loading and unloading of crude oil large quantities of its light components evaporate; these oil vapors are normally termed Volatile Organic Compounds (VOC). Evaporation also occurs during the voyage when the oil splashes around in the cargo tanks. The tanks are filled with inert gas to prevent the vapors from exploding, the inert gas normally consisting of cleaned combustion gas with an oxygen content below 8% (and hence primarily of nitrogen). The VOC is discharged to the atmosphere through a pipe from the crude oil tanks. The discharged gas, a mixture of hydrocarbons and inert gas, represents a substantial loss of energy as well as an environmental problem. The non-methane part of the VOC released to the atmosphere reacts in sunlight with nitrogen oxide and may create a toxic ground-level ozone and smog layer detrimental to human health and the environment. Ozone and smog attack mucous membranes (in the eyes and lungs), crops and forests. This led to the development of a system that can condense and collect the VOC in special tanks and use it at high pressure as fuel for the main engine of a - shuttle tanker (and large crude carriers) instead of heavy fuel will tap otherwise wasted energy and reduce environmental pollution. A much cleaner exhaust gas from the engine will also be fostered since VOC is a cleaner non-sulphur fuel than normal bunkers. Exploiting the VOC on a shuttle tanker calls for a system embracing the following main elements: a VOC gas cleaning system; a VOC gas condensation system; a VOC storage tank; a high pressure VOC supply pump; a

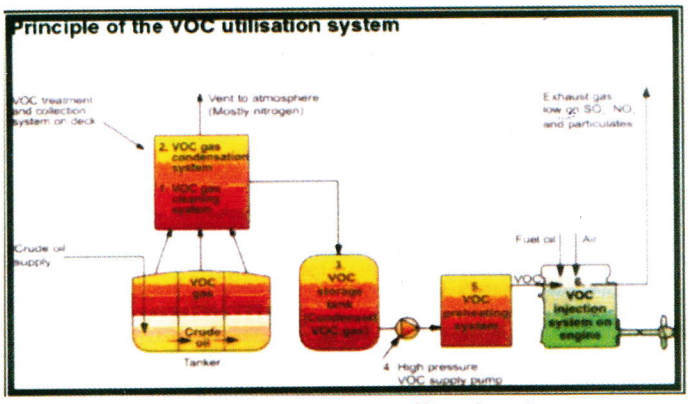


Fig 3. Principle of VOC Utilization System

VOC preheating system; and a VOC injection system on the engine, as shown.

VOC release tends to be greatest during crude oil handling, notably when the tanker is loading at the field. The emissions must therefore be converted to a form that can be easily collected and stored until the engine can use them. VOC and inert gases emitted from the crude oil tank are conducted via piping to the treatment and collection system. Any rust that has peeled off from the tank, and all water, must be removed before the gas enters the condensation system to avoid blockage. Gas is compressed before it is cooled, during which process the propane, butanes and the higher hydrocarbons may condense and become liquid. The inert gas and the light VOC gas (methane and ethane) remain in gaseous form and are vented to the atmosphere. The liquid VOC is separated and transferred to a storage tank. In a later development phase, the light VOC gas will also be captured and used as fuel in the engine.

2. LNG Carriers: Since boil-off gas from tankers can be used as free fuel, resulting in good economy. Because the extremely cold cargo inevitably absorbs some heat from the atmosphere during transit, a controlled amount of LNG will be vaporized, or boiled off. The flammable range of natural gas has been reported to be 5 to 15% gas in air at ambient temperatures and pressures. If the gas concentration is less than 5% (lower flammability limit-LFL), it cannot be ignited. Higher than 15% (higher flammability limit-HFL), there is too little oxygen to support combustion; these factors are to be taken into account while designing the system. This boil-off mainly contains pure methane and nitrogen at atmospheric pressure. This boil-off gas (BOG) is compressed in compressor to about 5 bar and then it is utilized in dual-fuel engine, as shown in the following figure. An accumulator is also incorporated to store excess BOG, if any.

In all above cases, dual fuel engines should be constructed so as to operate on variable primary fuel-diesel ratios depending upon the requirements and also on 100% diesel, if needed (in case of ballast voyage).

Benefits of the Technology :

Natural gas and diesel fuel used simultaneously results in lower fuel costs and lower emissions without sacrificing diesel performance and efficiency.

Whilst making maximum use of the gas fuel (boil-off from the cargo of liquefied natural gas) to develop useful power, Dual Fuel engines have a much lower fuel consumption overall and thus lower operating costs

Being more compact than steam turbines, diesel-electric propulsion enables much improved flexibility in the machinery layout. This enables increased cargo capacity for a given displacement, or alternatively smaller ship dimensions for a given cargo capacity.

Dual-fuel generators can be delivered as compact, containerized, fully functional power modules. They can be tested before being lifted onboard, thus enabling savings in installation and commissioning cost and time.

- Lower maintenance costs than a dedicated natural gas engine.
- Diesel substitution rates ranging from 80% to over 90% using less expensive natural gas.
- Extended engine life.
- Can be converted back to dedicated diesel enhancing its resale value.
- By reducing the amount of diesel fuel used in an engine, the fuel tanks can be made much smaller.

Vishit Arora,
IVth year M.E.
Chirayu Joshi,
IVth year M.E.

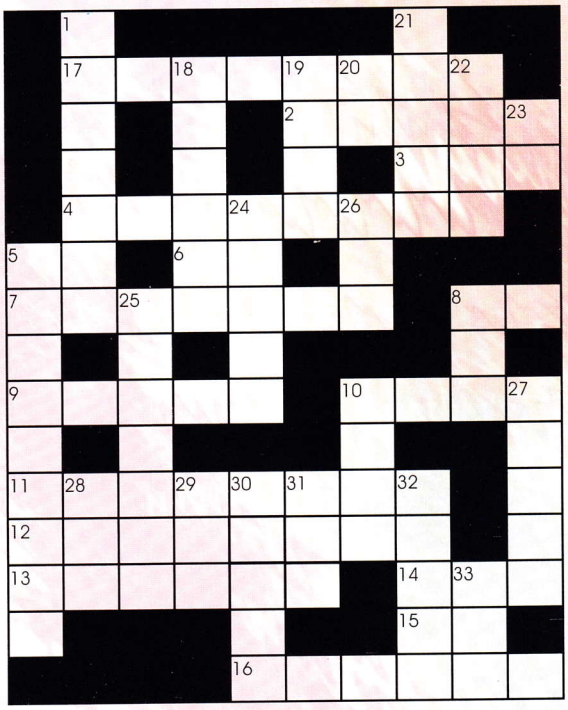
A CROSSWORD ON TRIVIA

ACROSS

2. Mysterious and frightening
3. Not new
4. Author of the best seller 'Angles & Demons'
5. A common preposition
6. One of the leading airlines operating in India (abbreviation)
7. 2003 - 2004 English Premiership Winner
8. The fourth note of a major scale
9. A cultural or religious custom that does not allow people to do something
10. An extremely small amount
11. First name of the creator of Mona Lisa
12. Eight-sided figure (plural)
13. World's largest search site on the Internet
14. A secret agency of the U.S. government (abbreviation)
15. Used in the Christian calendar (abbreviation)
16. The person who is wearing
17. Animal from southern Africa with a long nose and a tongue breeding on insects

DOWN

1. A bullfighter
5. An unnecessary repetition of words
8. In right shape and size
10. A prominent Internet service provider in India
18. Veronica's pet name in Archie's Comics
19. To change direction suddenly
20. First two vowels of the English alphabet
21. A thin stick with a sharp point at one end used as a weapon
22. A large oven for baking bricks
23. Editor (abbreviation)
24. A musical instrument like a guitar
25. Owner of Sahara group (first name)
26. Thick liquid found underground
27. First letter of the Greek alphabet
28. Connected with the environment
29. To keep complaining
30. Shining with warmth and colour
31. Mass of eggs inside a female fish
32. Academy Award
33. A common suffix used in Chemistry, meaning a compound of something



Aseem Halbe,
III[rd] year M.E.
Mohit Khemani,
III[rd] year M.E.

CAN YOU MANAGE YOUR EMOTIONS ON BOARD ?

Often seafarers dissipate their energy over trivialities. And if these feelings are not resolved, they crystallize into a solid grudge. Holding a grudge gives a sense of control and superiority but when seafarers keep nursing a grudge, they are essentially stuck in the victim's role, slowly releasing toxins into their body.

Seafarers should go through this quiz in order to figure out how well they tend to manage their emotions on board :

Can seafarers accurately perceive the emotions of others?

Are seafarers flexible in their work environment and interested in building a supportive social network?

Do seafarers find it hard to strike warm relationships with their colleagues?

When seafarers respond to others, do they take care to do so according to the emotions they have expressed?

Do seafarers act as knowledge workers to create a "group intelligence" for their organization?

Do seafarers feel that they are making a significant difference to their shipping company?

When seafarers are full of hatred for someone, are they able to think rationally?

Do seafarers often see themselves as victims, dealing with a powerful adversary?

..... ***Judge and see where you stand !***

Mithlesh Kumar,
I[st] year N.T.

SUCCESS

Success...
Is the fruit that once eaten gives taste for ever,
Flower that never withers, once blossomed,
Is for him who can extract nectar from thistle,
Who works hard to make water out of desert,
And absorbs oceans of pain emitting happiness,
A tree that raises inhaling the same as others,
A sunflower who knows its ultimate aim is to face the Sun,
And for those who consider hurdles as passed-by milestones.

Ganesh Birle,
I[st] year M.E.

ACCEPTANCE OR RESISTANCE ?

The terrace on the second floor was wonderfully landscaped. The Sun had moved well onto the west. I leaned back on a chair and started reading a book of short stories, enjoying the cool breeze. There are books, which are better when we choose a page in it at random and start reading than from the beginning of the book to its very end. I opened a page at random.

" A man began to give large doses of cod-liver oil to his Doberman because he had been told that the stuff was good for dogs. Each day he would hold the head of the protesting dog between his knees, and pour the liquid down its throat. One day the dog broke loose and spilled the oil on the floor. Then to his great surprise, it returned to lick the oil on the floor. The man then discovered that what dog had been rebellious against was not the oil but his method of administering it."

I closed my eyes, placing the book on my chest and started thinking.

A couple of days later my family and I were going to a nearby beach in our Mercedes Benz when we were suddenly intercepted by a cargo truck from one side of the lane. The driver couldn't take control of the situation. The car was completely rammed into! Fortunately none of us were hurt, but the vehicle was in a really bad shape after the incident. I didn't know what to do and I was totally dumbstruck. Suddenly I remembered the passage that I had read a couple of days ago on the administration of things. So I thought that I could choose to accept what had happened and remain calm instead of resisting it and becoming miserable about the whole affair.

Think of this, friends! If I had resisted what had happened and if I had taken severe action against the truck driver, the entire thing might have ended up in a mess.

"When you resist what is happening in life, what is happening in life continues to happen creating misery in you. When you accept what is happening in life, what is happening in life continues to happen, leaving a milder effect on you."

I would like to know what your choice is - ACCEPTANCE OR RESISTANCE ?

It has been aptly said :

"In the womb we were sleeping, in the tomb we will keep sleeping, but in between in this life should we, wake up and think the right choice out."

Sathish L.,
Ist year M.E.

THE ESSENCE OF PJs

(Readers Beware - Highly Non-Humourous Stuff !)

"All the World is a stage."

But hey, where did all the audience go ?

I'm sure you didn't laugh. Well, this one was not meant to make you cry either. Just wanted to say that we often find ourselves giving way to circumstances wherein our audiences suddenly start running for their lives in an attempt to defend themselves from some seemingly harmless words or a PJ (*pakaoo* joke), as you may call it.

Oh yes, this is about PJs and stuff but please, if you think that you might not be able to digest such facts or this matter can prove disastrous to your psyche, please read no further...

Have you ever thought how humourous it can be to say a non- humorous humour in a humourous way or a humourous humour in a non- humourous way. It will create just the kind of impact that the above sentence did. Astonishing as it may seem, it is very true!

Well my dear friends, I've been into PJ thing for quite some time now. Over a period of time I've started enjoying the annoyance I cause to the populace.

But of course it is an art and not everybody's cup of tea. I've been into situations wherein I have literally tried to conjure humour out of nothing. Like there was this fellow who came to my room just before P.T. time early in the morning and said, "Hi there!" and I just looked east and west and said, "Hi where?". Well, as I said, such kind of a comprehension can sometimes be too comprehensive to comprehend and can be fatal some other times because the next second I found myself being strangulated by that fellow.

It was only that I accidentally bumped into people who, like me, wanted to break all strands of complications and venture out into the real world of jesting tragedies. It was like I asked this fellow, " Do you have any idea of what I'm thinking?", and he replied, " No! Because I have an Airtel connection.". People call it perilous, I call it perception. But after the incident I have noticed a remarkable change of attitude in people. The syndrome has been growing ever since it has been unleashed.

Deep down in everybody is sleeping a *pakaoo* somebody that you yourself are not acquainted with. You have got to break the ice!

Let's try for instance, changing the genders of a word. How about changing "Seamanship" into "He-manship"? And even if you have got nothing to change, you can always swap the initials of your first and second names. And all sorts of nonsense you can think of!

So friends, as I say, be aware of what is growing so fast in our community. Though it causes no harm to anybody, it spreads like a virus.

So, wake up and personify your ambience, delude yourself in this commotion of meaningless words. And those who choose to opt otherwise, better be prepared to get assaulted. After all, being *pakaoo* is no joke!

Abhinav Madan,
II[nd] year M.E.

MY WORST ENEMY

I stare at my worst enemy;
The one who fills my life with agony.
His Eyes, those stone cold rocks;
Always wanting my love towards others to block.
His Lips with the ever- devious Mouth;
Utter words which end up sending my friends south.
His Heart, a black pit of hatred;
Swallows everything which to my heart is sacred.
His Hands, the tools of the Devil;
Destroy everything which make my life twinkle.
Never, such a thing had I realized;
Till I saw my worst enemy in the mirror life-sized.

Ullas Panwar,
II[nd] year M.E.

LIFE

Life is a flower,
which will fade tomorrow,
strive not beg or borrow,
for you shouldn't succumb to sorrow.

Life is a dream,
in a dream we find everything,
we can become both poor and king,
but after waking we find nothing.

The same way in life,
we find many things,
some light and loose strings
but happily we receive what ever it brings.

Life is a road,
in which we stroll,
after passing various poles,
we reach our real goals.

True life is then,
when we reach our aim,
the feeling of joy we have within
because we win the lord as our gain.

Rohit Mishra,
IV[th] year M.E.

कलियुग की माया

"रामचंद्र कह गये सिया से, ऐसा कलियुग आयेगा,

हंस चुगेगा दाना और कौआ मोती खाएगा।"

एक बार भगवान शिव अपनी पत्नी पार्वती के साथ पृथ्वी भ्रमण के लिए निकले। घूमते-घूमते उन्होंने एक छोटे से गाँव में प्रवेश लिया। उस गाँव का नाम था रायगढ।

रायगढ में दो विशेष परिवार रहा करते थे। एक था फकीरसिंह का परिवार जो धन-धान्य, खेत-खलिहानों, गाय-बैलों से परिपूर्ण था। किसी भी ऐशो-आराम की कमी न थी परंतु अपने नाम स्वरूप वह स्वभाव से बहुत फकीर था। पूर्णतः नास्तिक फकीरसिंह ने अपनी जिंदगी में किसी को एक फूटी कौड़ी नही दी थी।

इसके विपरीत दूसरा परिवार था धनीराम का। हालाँकि वह बहुत गरीब थे लेकिन आज तक कोई भी आंगुतक उनके घर से भूखे पेट नही गया था। वह बडे ही आस्तिक और दयालु थे।

अचानक शिव के मन में एक विचार आया। उन्होंने पार्वती से कहा कि अब जब इतनी दूर आ ही गये हैं, तो तुम्हें दो परिवारों से मिलवाते चलें। यह कहकर उन्होंने अपना व पार्वती जी का रूप बद कर साधु रूप ग्रहण कर लिया।

पहले वे पहुँचे फकीरसिंह के यहाँ। वहाँ उन्होंने भिक्षा मांगी और कहा कि वे दोनों दो दिन से भूखे हैं तथा कुछ भोजन चाहिए। यश-वैभव दौलत की कमी न होने के बावजूद फकीरसिंह ने उन्हें वहाँ से दुतकार दिया।

वहीं धनीराम के पास केवल एक गाय थी। उसने साधु बने भगवान को सप्रेम बिठाया और गर्म दूध के साथ जो बन पडा, खिलाया-पिलाया।

तृप्त हो शिव-पार्वती वहाँ से चलें गये।

एक दिन पश्चात पार्वती जी को ज्ञात हुआ कि धनीराम की इकलौती संपत्ती उसकी गाय, की मृत्यू हो चूकी है। और फकीरसिंह की दौलत पहले से दोगुनी हो चूकी है।

यह देख पार्वती जी को बडा गुस्सा आया और आश्चर्य हुआ, कि यह उल्टी गंगा क्यों बह रही है।

उन्होंने शिव से प्रश्न किया - प्रभू जो आपकी इतनी भक्ति करता है, इतना दयालु है, उसकी इकलौती संपत्ती भी आपने छीन ली। क्यों ?

इस पर शिव बोलें कि -"हे पार्वती, यह सब मैंने धनीराम की भलाई के लिए ही तो किया है। उसकी मेरे प्रति प्राप्ति में सिर्फ गाय रूपी माया बीच में थी। अब जब वह भी नहीं रही तो उसके और मेरे प्रेम के बीच कोई माया नहीं होगी तथा वह मोक्ष प्राप्त करेगा, जबकि वह फकीरसिंह ओर दौलत पा सांसारिक कीचड में धँसता चला जाएगा और नरक को प्राप्त होगा और जन्म दर जन्म भटकता रहेगा।"

तो अब बताओ प्रिय कि मैंने न्याय किया या अन्याय ? पार्वती जी अब तक समझ चूकीं थी कि, सच को थोडा दुख सहना पड़ेगा परंतु भव भी बाद में अमृत बन जाएगा। इसलिए अब वह भी शिव के न्याय के साथ थीं। अतः यह सच ही है कि, कलियुग में सच्चाई और धर्म को अक्सर अधर्म के आगे झुकना पड जाता है। परंतु अंत में विजयश्री उसी की होती है।

दिव्यांशु मित्तल,
तृतीय वर्ष एम.ई.

DOES ANYONE REALLY WIN A BATTLE ?

Now I know you might have read a lot of smart comments and one-liners about how no one really wins in a war and peace always loses in it. But I intend to dissect a very natural phenomenon in a more ... let's say, philosophical manner. So ladies and gentlemen, I present to you the eternal battle of a river and the mountain in which it is born. Quite a few rivers originate in caves, and thus technically speaking, in a mountain. But this is just for kicks. No real significance as such.

Now we all know the life cycle of a river. We have read about it in Geography, we have written about it in our English and Hindi essays. Thus begins my story. A river is born, melted off a snow-covered mountain peak and it flows with all its might. And they say, that a young river is like a young person. Just learning to flow, it'll fall every now and then, bump along the way, till such time it becomes so strong, and thus adamant, that it thinks it can take on anything. Just the right time for Mr. Blocking Mountain to enter. As the name suggests, well, he presents an obstruction in the way of our mighty young river. But obstructions are meant to be overcome or destroyed. That's the only way to move ahead in life. Haven't we all learnt that? And so the mighty river flows, as it carries along pieces of the mountain it broke down with its strength. The *oh so* mighty mountain now plummets down its own heights, its broken self, totally helpless. Ah yes, the river emerges victorious in this battle. Or does it?

Let us now cut straight down to the end of the river. Its starts getting slower. The mountain still flows with it. Its journey has turned it into rounder pebbles and stones. And now the mountain strikes for its revenge. The very pieces that the river carried all along its path as a symbol of its victory over the mountain, now make it hard for the river to move on. And thus the mighty river now breaks into small streams, its glory fading away. What the mountain couldn't do as a huge boulder of rock, it does now, thousands of its pieces scattered all over the place, most turned to soil. But still it blocks the rivers flow, forces it to break up and take a different path. And the mountain did it all from the inside.

But then again, like I said in the beginning, who won? For the river might now stand broken apart by the mountain, but the mountain is no more itself.

Vineet Sharma,
III[rd] year M.E.

DIGNITY OF LABOUR

What does dignity of labour mean?
Does it mean just to clean?
No! It means to do anything without shame,
That is not for name and fame!

Whether a sweeper, whether a lawyer,
They all do things with equal flair,
To be the best in their profession,
Is their very mission.

Nature is an infinite source of beauty,
To preserve it is our duty,
Instill the sense of dignity of labour,
So that everything turns out in our favour.

Be the first to start,
Take the challenge with a big heart,
Don't hesitate to do so,
Work together, be it your friend or foe.

Work one, work all,
Let it be our hearts' call,
No work is big or small,
The joy obtained is the same for all.

Aayush Kundra,
I[st] year M.E.

NANOTECHNOLOGY : DESIGNS FOR THE FUTURE

Today's manufacturing methods are very crude at the molecular level. Casting, grinding, milling and even lithography move atoms in great thundering statistical herds. It's like trying to make things out of LEGO blocks with boxing gloves on your hands. Yes, you can push the LEGO blocks into great heaps and pile them up, but you can't really snap them together the way you'd like. In the future, Nanotechnology will let us take off the boxing gloves. We'll be able to snap together the fundamental building blocks of nature easily, inexpensively and in most of the ways permitted by the laws of physics. This will be essential if we are to continue the revolution in computer hardware beyond about the next decade, and will also let us fabricate an entire new generation of products that are cleaner, stronger, lighter, and more precise. It's worth pointing out that the word "Nanotechnology" has become very popular and is used to describe many types of research where the characteristic dimensions are less than about 1,000 nanometers.

Nanotechnology can make big things as well as small things. An attractive approach is to use convergent assembly, which can rapidly make products whose size is measured in meters starting from building blocks whose size is measured in nanometers. It is based on the idea that smaller parts can be assembled into larger parts, larger parts can be assembled into still larger parts, and so forth. This process can be systematically repeated in a hierarchical fashion, creating an architecture able to span the size range from the molecular to the macroscopic. If we are to continue these trends we will have to develop a new manufacturing technology which will let us inexpensively build computer systems with mole quantities of logic elements that are molecular in both size and precision and are interconnected in complex and highly idiosyncratic patterns. Nanotechnology will let us do this. When it's unclear from the context whether we're using the specific definition of "Nanotechnology" (given here) or the broader and more inclusive definition (often used in the literature), we'll use the terms "Molecular Nanotechnology" or "Molecular Manufacturing."

There are two concepts commonly associated with Nanotechnology:

- Positional Assembly
- Massive Parallelism

The need for positional assembly implies an interest in molecular robotics, e.g., robotic devices that are molecular both in their size and precision. These molecular scale positional devices are likely to resemble very small versions of their everyday macroscopic counterparts. Now, imagine trying to build a bicycle with both hands tied behind your back! One robotic arm assembling molecular parts is going to take a long time to assemble anything large - so we need lots of robotic arms: this is what we mean by massive parallelism. While earlier proposals achieved massive parallelism through self-replication, today's "best guess" is that future molecular manufacturing systems will use some form of convergent assembly. In this process vast numbers of small parts are assembled by vast numbers of small robotic arms into larger parts, those larger parts are assembled by larger robotic arms into still larger parts, and so forth. If the size of the parts doubles at each iteration, we can go from one nanometer parts (a few atoms in size) to one-meter parts (almost as big as a person) in only 30 steps.

So, will nanotechnology open up the gates of the future? Only time will tell. Here are some interesting possibilities:

The applicability of manufacturing at an even smaller scale: This is nowhere more self-evident than in computer technology. Indeed, Moiré's law (an observation, not a physical law) says that computer chip feature size decreases exponentially with time, a trend that predicts atomically precise computers by about 2010-2015!!

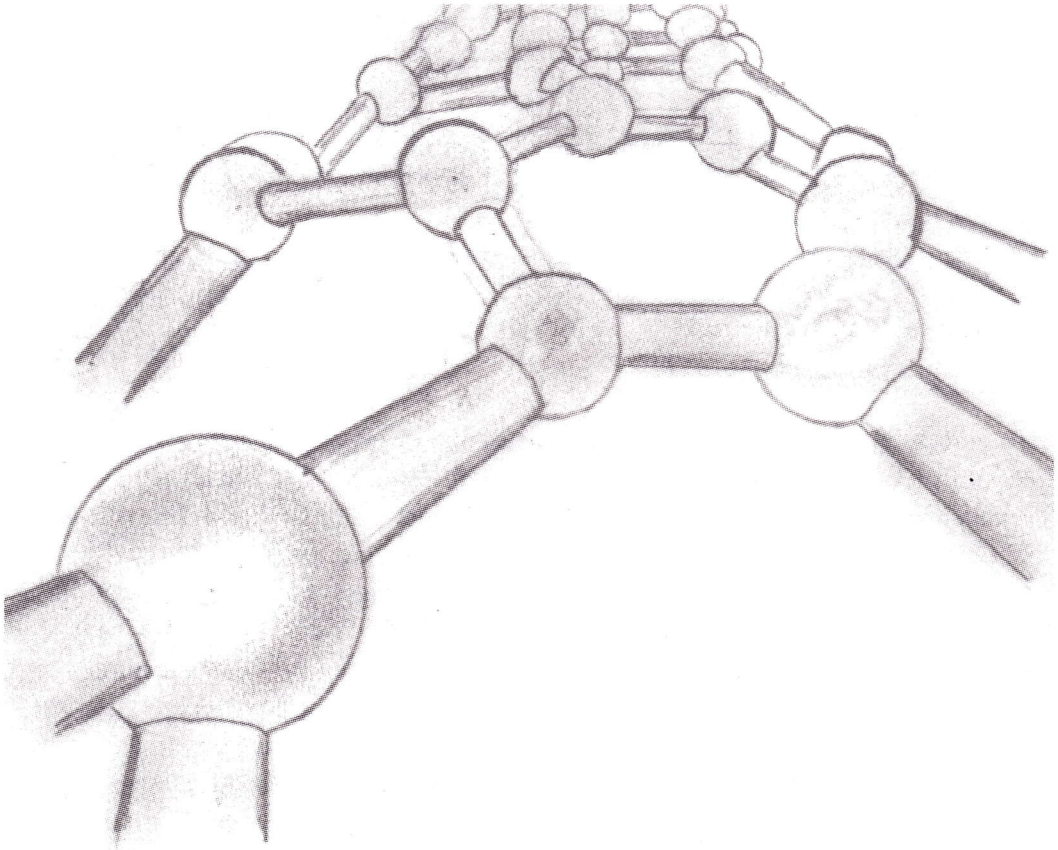
Data Storage On Molecular Tape

It is possible to store data on long chain molecules (for example, DNA) and it may be possible to read this data with carbon annotate tipped Sims. Existing DNA synthesis techniques can be used to write data. If the different DNA base pairs can be distinguished with a carbon annotate tipped SPM, then the data can be read nondestructively (current techniques allow a destructive read).

Helical Logic

Helical logic is a theoretical proposal for a future computing technology using the presence or absence of individual electrons (or holes) to encode 1s and 0s. The electrons are constrained to move along helical paths, driven by a rotating electric field in which the entire circuit is immersed. The electric field remains roughly orthogonal to the major axis of the helix and confines each charge carrier to a fraction of a turn of a single helical loop, moving it like water in an Archimedean screw.

William Watkinson,
Pre-sea Deck Cadet



CELLPHONES RINGING!

In the present-day world, cellphones have become a commodity which we carry with us no matter where we go. This electronic gadget keeps us well-connected with our friends and family members even in our fast-paced way of life.

With special reference to TMI cadets, here are some cellphone models that are popular on campus...

NOKIA 3315

This is one of the basic models offered by Nokia. With its easy features of operation and practically negligible fear of breaking, this phone has found popularity among the young crowd. IInd year M.E. cadet, Tushar Singh says, "It is a handy, compact piece with upto250 storable contacts. The network coverage is undoubtedly remarkable!"

MOTOROLA E-365

This good resolution camera phone has the special feature of night vision. "It's user-friendly keypad and a high capacity battery coupled with a good memory and high fidelity makes it an awesome buy! The inbuilt aviation games work wonders!", remarks IVth year M.E. cadet, Abhijeet Nimbalkar.

SAMSUNG C-100

"Java enabled games and software are a buzz with this hot buy, encompassing everything from a good price tag to a 65K colour screen and auto updating of date and time even after removal of batteries." states Ist year M.E. cadet Piyush Mishra. The downside? It isn't a winner when it comes to size!

NOKIA 6230

Pre-sea cadet, Abhishek Mishra, says, "The model has an inbuilt karaoke for singing wannabes. Another unique feature is the inbuilt language translation facility from Chinese to English and vice-versa."

NOKIA N-GAGE QD

This one is for the gamers! Amit Sathe, a Ist year N.T. cadet, says, "I simply love my N-gage QD because it offers me a wide variety of games to choose from. Multiplayer options are an added feature and the N-Gage arena allows me to play against anyone in the world."

SONY ERICSSON T610

IVth year M.E. cadet, Nirupam Roy, comments, "My T610 allows for voice recording upto 3 minutes. The Picture Editor allows me to successfully alter photographs (taken by my cellphone's camera) to my satisfaction."

NOKIA 6600

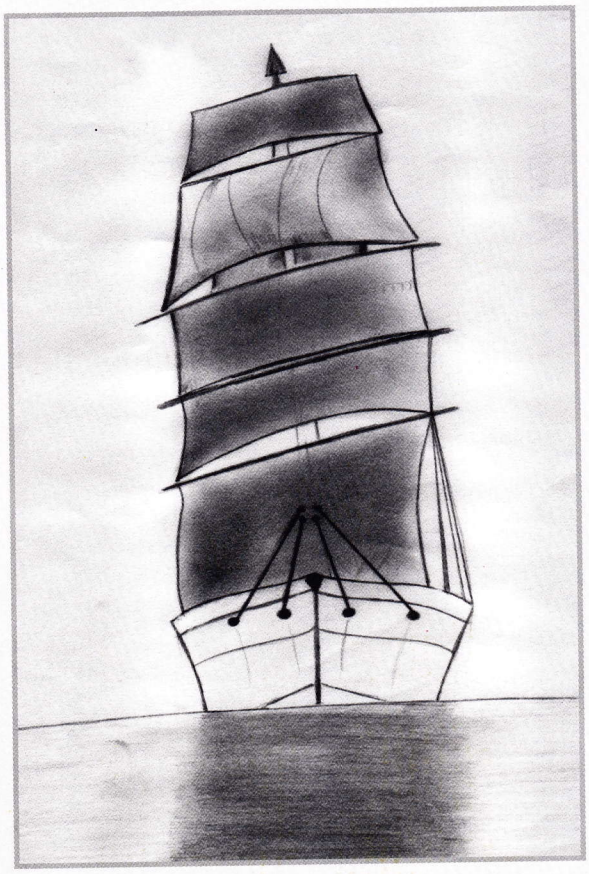
This one seems to be all the rage these days! IIIrd year M.E. cadet, Harsh Kumar, cites, "A choice for wide array of Java and Symbian downloads coupled with a rich browsing experience offered by WAP2.0 and HTML browser makes the Nokia 6600 special. And the 2.1" colour screen is also a boon to better viewing."

SONY ERICSSON P-900

IInd year N.T. cadet, Manish Bajpai, says, "The Sony Ericsson P-900 has a special inbuilt speaker for high quality and high volume playback sounds. The digital VGA camera allows for some great photography as well!"

And we believe that Cleanliness is next to Godliness!

Varun Dogra,
III[rd] year M.E.



***THE MERSEY* (1894-1923)**

Milind Ashar,
I[st] year M.E.

IMPARTING INFINITE KNOWLEDGE

Gaurav Saraswat,
III[rd] year M.E.

A SOLDIER'S STORY

Films have become an integral part of our society. Whether we like it or not, they have exerted a tremendous impact on our way of thinking and behaviour. They have not remained mere means of entertainment but have been producers of knowledge and welfare. We have several instances of films representing the public and its ways of life. In order to understand these aspects we were taught how to do a film review. As a part of the same, we had an opportunity to view an English movie namely *"A Soldier's Story"*, and write its review. Now let us explore the film ...

Director Norman Jewison's (In the Heat of the Night) 1984 adaptation of the Pulitzer Prize-winning play throws light on racism unfolded through a murder mystery set in the 1940s deep south. The film is about what it means to be a black in a white man's world. While this film explores the issue of racism, it is not too philosophical or preachy.

Captain Davenport, played by Howard Rollins, arrives at a small southern town in the years of war, to investigate the murder of a block officer from the local base. Being the 1940s and being in the Deep south, killings of black soldiers from the base is not unheard of. Between vengeful white officers and the clan, and a tendency to sweep such issues under the rug, it's assumed that this investigation will just be another dead end formalisation.

So the local base commander is surprised when the investigating officer, a Navy lawyer, is a black officer and the first he has ever seen. Actually this is the first black officer that anyone on the base has ever seen. It quickly becomes apparent that Davenport is not going to sweep this under the rug, and a few people had an altercation with the victim that night, and were known to have been issued firearms that night.

As we come to know a certain Sergeant Waters better, we see how his life has been incredibly twisted by the racism that he and his father endured, to the point that he is as racist against his own people as any clansman. Beaten into him by his father was the belief that he must be better than the white people, and that "Uncle Toms" are the enemy of the black race, attracting ridicule from whites and holding back the race. We find that in France during the previous war, he and others had killed numerous black soldiers who were seen as embarrassing throwbacks. This life has left Waters bitter and self-hating, and he takes this out on his squad, eventually causing the death of one of his own people.

So Davenport begins to see that almost everyone on the base could have had reason to kill Waters, either out of racism or from being tormented by Waters' own inward-looking bigotry. As he digs deeper, the story just gets more and more muddied, and everyone's natural inclination to blame the white officers or local clansmen threatens to hide the real truth. Eventually though, the truth is revealed and the real culprits are uncovered.

I recommend this one highly. I think it's a good thing to have powerful films like this in our midst once in a while. It makes us think, and gets us out of our social ruts. It's easy in this day and age to forget how far we have come and how far we have yet to go.

And, though it's a pretty heavy flick, it is not without humour and has some good rocking blues provided by Patty Labelle and others. Racial tension didn't occur in a vaccuum. It happened within the context of real lives, and it is important not to ignore either aspect if you want a well-rounded story.

Note: The authors of this article acknowledge their allusion to sources

Divya Tripathi,
Ist year M.E.
Chitra Sahu,
Ist year M.E.
Sandip Upadhyay,
Ist year M.E.

BESIDE THE LANE ...

An old beggar beside the dirty lane,
Can tear out stability of the calm brain.
Her permanent stay is in milestone bridge,
Along with stray dogs of life line abridge.
Dust is her bedspread and the sky, her roof,
Passer-by's shoes her mirror, without proof.
There she drinks the road's intoxicated air,
And eats thrown out remnants with no care.
There she only pees and excretes,
As being out of both limbs and no treats.
She out of insanity blasphemes, also howls,
No one cures her, but all wear the cowls.
Her fleshless body has eyes as teaspoon,
And lack of care will kill her very soon.
She unknowingly absorbs a lot of pain,
I pray, at least death may heal her strain.
That may either come by appetite attack,
Or by accident crush or by a string going slack.
Albeit her death can form passer-by's crowd,
But, will any one offer her a white shroud?

Abinash Bhoi,
Ist year M.E.

The Melody Of Love

When two hearts beat together,
The melody sounds so sweet.
No greater tune can ever be heard
Than when two loving hearts meet.
Every note, string together,
Comes from both hearts' devotion.
Creating a musical masterpiece
Filled with such deep emotion.
A love tune without an ending,
As new notes are continually created.
A beautiful melody from hearts in love,
Which together, are wonderfully blended.

Neil Bhatnagar,
IIIrd year M.E.

SANITY IS MORE IMPORTANT THAN THE REALISATION OF TRUTH

I do not know if I am a believer. There are moments when I maintain that God is a fabulous story. There are moments when I fall at his feet like an obedient child. But neither my disbelief nor my affirmation has the kind of intensity which Ramakrishna Paramahamsa or Tukaram is known to have experienced...

I do not deny that the experience of the sublime comes one's way in the presence of Nature. I have experienced an afflatus while standing in the middle of a cyclone or a torrential rain or while facing the snow-clad Himalayas. Similarly, when I see and feel the pain and the hunger of the poor, I know for certain that it is not God but man who controls human destiny. I have often stood at the very edge of reason as well as of devotion. Only, I have found it impossible to plunge headlong into the abysmal monotone of faith and skepticism. There is something that holds me back.

I have read most of the scriptures. I find the account of the life of Jesus deeply moving. It transposes me to the realm of communion, but more so because of the profoundly lyrical prose of the narrative. I find the Quran full of nobility and austerity, which have been instrumental in rendering splendour to my personal life. The Gita, which I've tried to read everyday for years, and sometimes in the midst of train journeys and noisy meetings, adds a touch of stoicism to my emotional transactions.

I find that the Upanishads draw me into the unexplored region of the unconscious where one continuously carries on a quite dialogue with death. Yet not one of these has the power to sweep me off my feet so completely that I can transform my inner life altogether and launch myself on a spiritual voyage of no return. Though I am convinced that most practices related to collective worship are based on superstition, I do not possess the will to disown them and attack them in the public sphere. To this hesitation, this lack of courage and conviction, I have given a name-Tolerance.

But I do not feel ashamed of being tolerant. On the contrary, I shudder at the thought of being a believer, who is prepared to negate all reasons, all knowledge bound to the senses. I feel equally terrified by the thought of declaring war on all religious customs. My ambivalence provides me with the understanding that the spiritual experience and religious favours have a certain notion of reality, and that they are honest and consistent with that notion. It also provides me with the understanding that the denial of mysticism too is necessary in certain areas of human existence. I find this ability to line in two worlds the greatest bliss of the strange combination of solitude and turmoil within me.

The peace that passes all understanding is as terrifying as the knowledge that destroys all peace. They point to an area of the absurd, which threatens one's sanity. Very few can return from these extremes to the normal realm of life. Those who can do so are either the greatest of mystics or the most gifted of scientists.

My sanity is far more important to me than the realisation of truth, my speech far more precious than peace. My spirituality lies within the boundaries of the ordinary.

The beauty of existence lies for me in the defeat of the human mind by the limitless. To see through it all, to affirm or to negate the All of it, is in a way to stop the journey and to arrive at the final destination.

Ishita Dash,
IInd year M.E.

A TWIST IN FATE

The days were short and the nights long. It was the archetypal Indian winter. In the morning, the fog was thicker than the first rays of the Sun. There was a steady downpour. The visibility was almost zero...

But she was undeterred. She was determined to return to her native land, to her people. As she sat on the bench in the platform, making crackling sounds, each time she made a movement, memories flooded her mind... some of them sweet, some bitter.

It had all begun on a cold moonless night. The condition of her mother, who had been ill for sometime, had suddenly deteriorated. She had to be taken to the hospital in the town 50 km away. But alas! It was not meant to be. A few heart rendering cries of pain followed a strange silence- her mother was dead! And she had made her decision. She had to become a doctor!

After doing her graduation, she went for her higher studies to the States. She won many laurels, but in her heart of hearts, her motherland beckoned her. She had to return to her motherland, to her people.

"Ma'am, the train might be delayed or might even be cancelled. The weather is bad. It would be better if you go tomorrow", the station master's voice broke the eerie silence and calm of the platform, where not a living soul could be seen except them.

"I'll go today", she answered back in her confident, head- strong voice. She couldn't imagine that so many days of waiting would now be rendered useless with the weather playing foul.

After two long hours, the train finally arrived. By now, the shower had reduced to a drizzle. The pitter-patter of raindrops could be heard on the roof of the train. She embarked upon the train, took her seat and soon afterwards, started reading a magazine.

There was a sudden jolt! An excruciating pain tormented her hands before she remembered no more ...

Her eyes opened in a hospital and she could see doctors standing around her. It then dawned upon her that there might have been a train accident. The doctors' faces didn't look too encouraging. It hit her - a tornado with the speed of a torpedo. She looked down in petrified horror at her hands which were no longer a part of her anatomy. Her hands had been amputated! The very instrument with which she wanted to serve her people, her motherland, had been snatched away from her by the cruel hands of fate ... and she could only cry!

Jeetesh Naik,
Ist year M.E.

Junaid Murtuza,
I[st] year N.T.

DESI TITANIC

This is a small attempt from my side towards a Bollywood remake of the world-famous blockbuster "Titanic".

- Priety plays Rose and who else but SRK features as JJJ...Jack. Priety's fiancé would be Gulshan Grover who mutters 'Bad Man' every time he sees SRK.
- Big B would make a guest appearance as the ship's Captain and would be some so-called uncle of Priety. Only if I want to make my movie a flop, will I let the Sr. Bachchan die.
- SRK will be travelling with his sister and 5 other *chamchas* from college (including a duplicate of a famous superstar) with 50 extras who can dance after every 10 minutes.
- The movie would last for only 5 hours. Thanks to a great piece of editing, only 10 songs out of the 18 on its CD album would make it to the screen.
- The ship would be overflowing with extras normally found in movies that have a courtroom full of spectators or a slum full of the *aam junta*. The ship will start sinking not because of colliding with an iceberg but due to an excess of passengers.
- Remember Rose changing her mind about jumping into the water. In our case, there will be a *"Tumhe Mere Pyaar Ki Kasam Hai"* sequence from the hero's side.
- How can we forget the painting scene? SRK will be painting Preity's portrait, her body being fully covered with a *"Ghagra Choli"* minus the locket. (Censors didn't allow that!)
- SRK will eventually find his long lost mother, Aansoo Devi, on the ship itself. Only during the climax, would Aansoo Devi tell SRK about how brutally Gulshan Grover killed his late *imaandar* father who was a *jaanbaaz* police inspector and inspire him to take his *Baap Ki Maut Ka Badla.*
- And this masterpiece would be a waste of time and money without the very famous all-time hero "*The Bhagwaan."*
- The *Bhagwaan* gives rise to a series of miracles and finally the hero along with his whole family survives till the very end.
- Finally, the happy ending would feature SRK outside the maternity ward of a hospital and a nurse congratulating him on the birth of his twin sons strictly following the Government policy, *"Hum Do, Humare Do."*

Jagdish Talreja,
III[rd] year M.E.

PRIVATISATION OF INDIAN PORTS

The basic objective of the Port Sector is to provide adequate cargo handling facilities at major Ports to meet the demand of trade and industry in the country. India's coastline stretches over 5560 kms and has 12 major ports and 150 minor ports out of which only 30 handle cargo. About 95% of international trade is carried through sea. Major ports are under the control of the Central Government and minor ports are with the Maritime State Government for development and administration. Following the liberalisation and opening up of the economy in the early 90s, there has been a significant increase in India's maritime trade.

But still Indian ports, as compared to foreign ports, are characterised by the existence of obsolete and poorly maintained equipment, hierarchical and bureaucratic management structures, excessive labour and, in general, an institutional framework that is considerably in variance with the Government's overall economic objectives. The aim is to revise this trend.

With the purpose of port restructuring and to meet the projected traffic and capacity requirements of 650 million tones by 2006, the Government of India has decided to adopt the concept of landlord ports, and gradually secure private participation in the concept of port services. The privatisation concept has proved to be successful at the modernised portJNPT where primarily container handling equipments were taken on lease following a new container terminal by P&O Australia, the pioneers in operation of container terminals, at a cost of Rs. 900 crores. This generated a competition between private and port owned terminals. What followed was the privatisation of container terminals in Tuticorin, Chennai and Vishakhapatnam.

Some areas such as construction and operation of container terminals, of bulk, break bulk, multipurpose and specialized cargo berths, warehousing, handling equipment, dry docking as well as setting up of captive power plants, pilotage, etc., have been identified for participation/investment by the private sector and individual ports can expand the scope of activities after prior consultation with the Central Government.

Privatisation is advantageous to ports in the following aspects: ----

- Port Development
- Increased Productivity
- Better Management
- Flexibility in operation
- Use of latest equipments

The way forward for the Government of India is to develop intra and inter port competition, labour reforms and tariff revision as well as an integrated approach for the commercialisation and privatisation of port services. The same should envisage a better future for Indian ports.

Mitesh Ranade,
III[rd] year M.E.

INTERNSHIP EXPERIENCES

Internship is an integral part of our Marine Engineering and Nautical Technology programs. Let us explore what our fourth year cadets have to say about their internship experiences...

Cdt. Anupam Mittal, who sailed with K.C. Maritime on the vessel *M.V. Darya Jaan*, has to say, " Mine was an old ship and I got to learn a lot. One of my seniors, Karan Madan, was the fourth engineer on board. He was of immense help and without his guidance, my internship would not have been special. He helped me during every single day of my internship, made me familiar with the systems and machinery on board and inspired me to learn the tricks of the trade.

I acknowledge the fact that certain subjects taught in our curriculum proved very useful to me on board, the foremost among them being Marine Auxiliary Machinery I and II, Internal Combustion Engines I and II and a working knowledge of computers came in very handy.

My crew members were extremely supportive. But what I liked the most about them was that they looked upon me as a member of the workforce and allowed me to shoulder responsibility along with them. I would like to point out that we must always keep our personal safety on board in mind. I have seen my third engineer with his face badly burnt because of an accident with the gauge glass.

My seniors were happy with my work. They praised me often because I worked at a fast pace. Moreover, their constant encouragement made me put my heart and soul into work."

"I sailed aboard *M.V. NYK Kai*, a container ship. At first, my job there was to keep the machinery space clean, later on to keep watch and further, as I got acquainted with the machinery, its maintenance work was entrusted to me.

My time aboard the ship was full of learning experiences, but to me, the most memorable moment was when I was praised by all for detecting a problem with the main engine which had almost brought our ship to a halt.

Although there was plenty of work, we did get some time to enjoy some of the ship's recreational facilities like T.T., squash and deck billiards. Occasionally we watched movies, too. My shipmates were like my family members. We, both Philippine and Indian seafarers, worked in harmony with each other and our dear cook took special care of everyone. He took into account the likes and dislikes of our palates almost every time.

The time I spent there was fruitful and I hope I get such good and friendly shipmates on all my voyages.", says **Cdt. Krishna Kumar**, narrating his internship experiences.

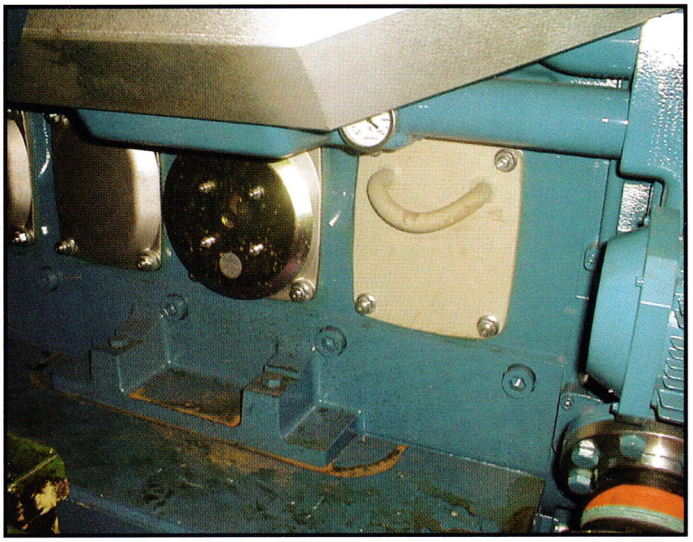
"My internship aboard the product tanker *M.T. Louis* was a period of intense learning. My ship had a totally Indian crew and I adapted myself to the work environment very quickly. There, all my knowledge, both theory and practical skills was used by me to work effectively. My work ranged from watch keeping and maintenance of machinery to minor welding and fitting jobs, which called for a lot of physical labour. Due to the demanding nature of our work, we were, at times, not able to keep in touch with our family. But it's a part of my job... and I place my career before everything else!", says an ever-enthusiastic **Cdt. Shobhit Agarwal**.

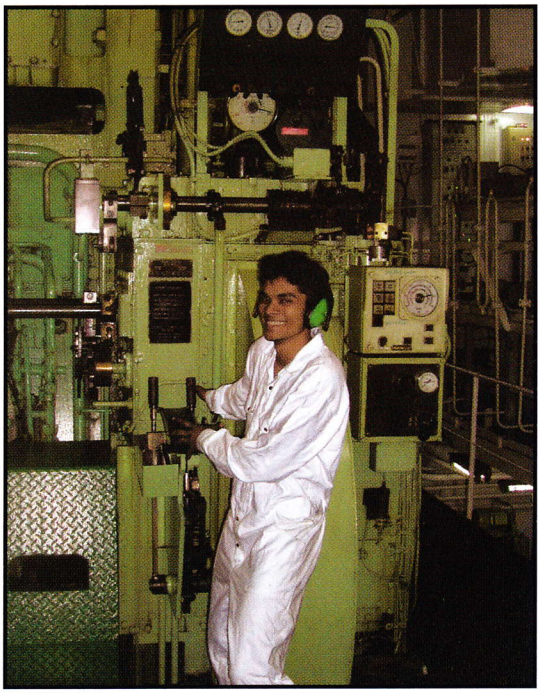
INTERNSHIP PHOTOGRAPHS

Off the coast!

Cement off-loading in Bowsers!

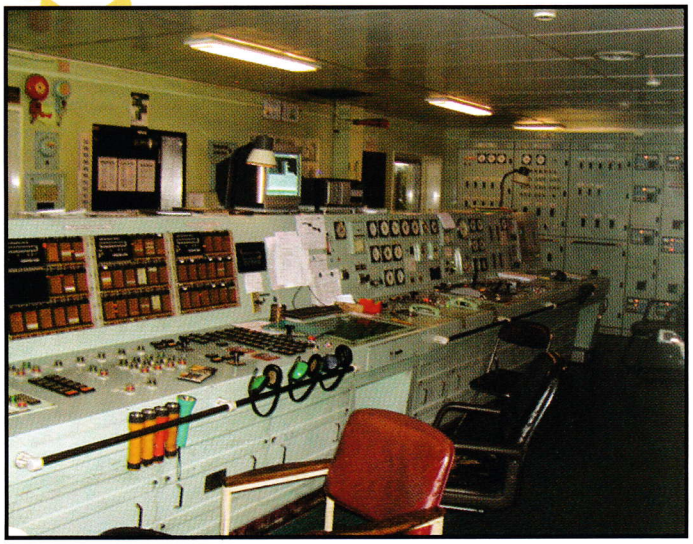
Explosion Door - Keep your hands off!





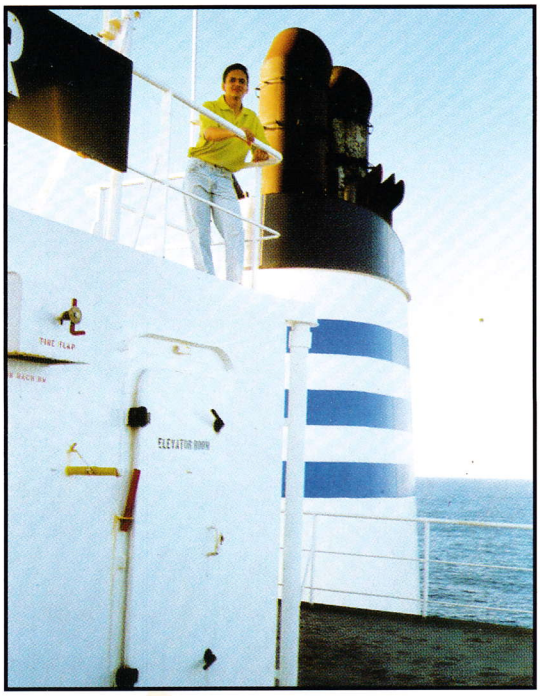
In the Driver's Seat for a change!

INTERNSHIP PHOTOGRAPHS



Engine Control Room!

A night view of the Deck from the Bridge!

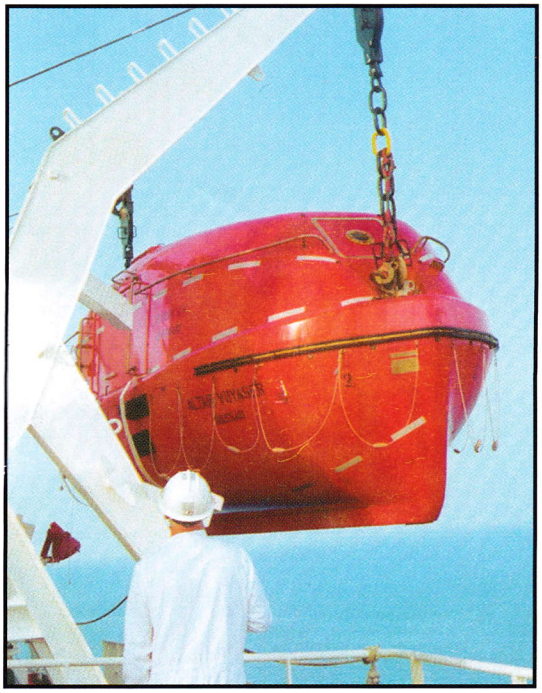


View of the Monkey Island!

That's the clean Alleyway!

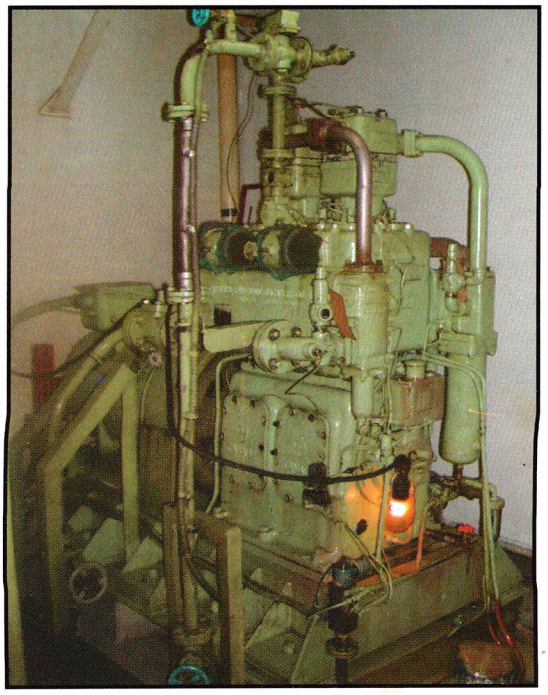
INTERNSHIP PHOTOGRAPHS

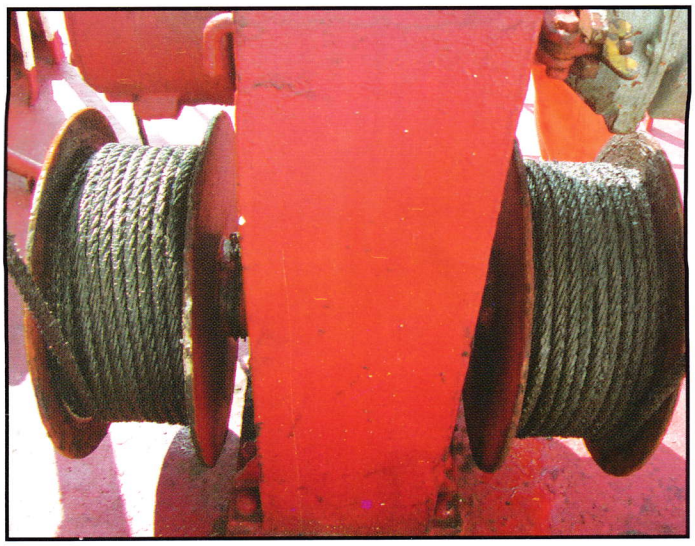
Main Mast -
Mind your head!



What a Lifeboat!

Manoeuvering Starters!



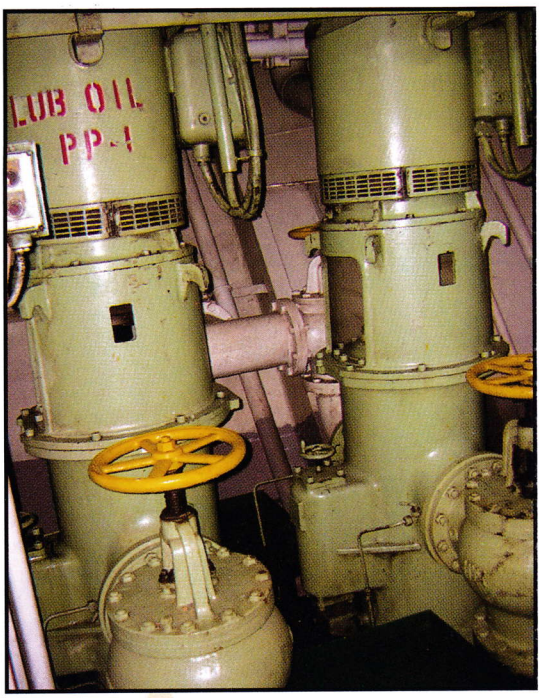


Winch for a Lifeboat Davit!

INTERNSHIP PHOTOGRAPHS

Pretty tidy!

Have a look at Gantry Cranes!



Keeping the friction off!

Dream Boats!

INTERNSHIP EXPERIENCES (Contd.)

Cadet E. Dhaneshwar Nath admits "Money was what initially lured me towards Marine Engineering. But I have really developed a great liking for the profession, thanks to my internship on board *M.V. Canmar Venture*, which belongs to the fleet of Anglo Eastern Ship Management. Important ports along my vessel's route were Thames Port (U.K), Le Havre (France), Antwerp (Belgium) and Montreal (Canada).

My ship was unmanned and my working hours were generally from 08:00 to 12:00 hrs. and from 13:00 to 18:00 hrs. My job was to assist my seniors in watchkeeping, overhauling and in repair and maintenance work.

The average period of port stay for my vessel was about 3 days. I was granted leave for 4-5 hours on such days when the workload was comparatively lesser. Of the places that I have visited during the course of my internship, Montreal (Canada) was very impressive owing to its clean environment, high living standards and the friendly nature of people. An added advantage of our profession lies in the fact that we get to see the world and hence, come across a variety of cultures and lifestyles."

Internship on an Offshore Supply Vessel (OSV)

For my internship program, I sailed on an offshore supply vessel (or OSV, as it is popularly known as), belonging to the Great Eastern Shipping Company. My vessel had a fixed route from Tahara near Pondicherry to Chennai, where we picked up our provisions such as food, drinking water, spare parts, fuel, and the like.

I had to work for about 12 hours each day and my task was to take care of engine routines and other maintenance work. On a certain occasion, however, the entire engine crew had to work constantly for 3 days (only with breaks for meals), because we encountered a major problem with our vessel's rudder.

It is very important for one to concentrate on his or her own job. Follow your seniors closely, and you shall learn quickly. And always make it a point to be truthful and honest with your seniors.

Rohan S. Patil,
IVth year M.E.

लघुकथा - पितृऋण

हरि एवं राधा की दिन भर की मज़दूरी के बाद भी केवल घर का चूल्हा जल पाता था एवं तीन प्राणियों का पेट बमुश्किल भर पाता था। ग्रीष्म, शीत व वर्षा की सतत मार को सहते हुए भी हरि एवं राधा ने अपने पुत्र यदु को पढ़ाया-लिखाया और कुछ बनने के लिए शहर भेज दिया।

यदु अध्ययन में प्रवीण, जिज्ञासु प्रवृत्ती, सहनशील, सुशील एवं व्यवहार कुशल था। वह अध्ययन में प्रवीण होकर तीव्र उन्नति करता गया। लेकिन उम्र के फेर में संभल न पाया। यद्यपि वह अध्ययनशील व कर्तव्यशील था, तथापि पूजा नामक विदुषी सहपाठी से आकर्षित होकर उससे प्यार करने लगा। कालचक्र की गति से यदु के परिश्रम ने रंग दिखा दिया। उसे शासकीय रोजगार मिल गया। अब वह पूजा और भविष्य के लेकर सपने संजोने लगा। मन में रसपूरित, मधुर कल्पना लेते हुए अपनी नौकरी की खबर देने गाँव के लिए बस में निकल पडा।

किंतु दुर्भाग्य की दृष्टि का हरि, राधा व यदु के सपने नागवार गुजरे। रास्ते में बस पलट गई और मृतोन्मुख दशा में यदु को चिकित्सालय पहुँचाया गया। खबर पहुँचते ही राधा और हरि बिलखते हुए अस्पताल पहुँचे। लाखों दवा और दुआ के बाद भी यदु अपनी आँखे न खोल पाया। अंतिम समय में उसके मुँह से केवल एक शब्द निकला पूऽऽऽजा।

हरि और राधा को अपने त्याग व बलिदान का फल आखिर मिल ही गया, जिस कलेजे के टुकड़े को उन्होंने वर्षों तक अपने ही हृदय धमनियों एवं श्वसन तंत्रिकाओं से सींचा, उस ने मरते वक्त उनका नाम तक न लिया।

सुशील कुमार नायक,
प्रथम वर्ष एम.ई.

लाक्षा गृह

अतुलित यश क्रेता कौन हुआ
भूखंड विजेता कौन हुआ
नवधर्म प्रणेता कौन हुआ
वसुधा का नेता कौन हुआ
विघ्नों में रहकर काम किया
जिसने न कभी आराम किया।
जब विघ्न सामने आता है
विवेक शून्य हो जाता है।
फिर भी सतपथ दिखलाकर ही
जाता है हमें जगा कर ही ॥
वाटिका और वन एक नहीं
आराम और रण एक नहीं।
वर्षा, अँघड़ आतप अखंड
पौरुष के हैं साधन प्रचंड ॥
वन में प्रसून तो खिलते हैं
पर बागों में शाल न मिलते है ॥
कंकड़ियाँ जिनकी सेज सुधर
छाया देता केवल अंबर।
विपदाएँ दूध पिलाती हैं
लोरियाँ आँधियाँ सुनाती है ॥
जो लाक्षा-गृह में जलते है
वे ही सुरमा निकलते है ॥

सौरभ कुमार झा,
प्रथम वर्ष एम.ई.

THE QUINTESSENCE OF PHYSICAL FITNESS

Our sports coordinator, **Mr. Alex Martin**, says that physical fitness refers to the bodily readiness to perform the strenuous and critical physical aspects of a job. With specific relevance to the marine profession, keeping fit is of quintessential importance because a seafarer has to meet the challenges which his or her profession demands in the self-contained environment of the sea. Physical fitness is an absolute necessity even for the psyche owing to the fact that a healthy mind can only function in a healthy body.

THE BASICS OF PHYSICAL FITNESS

Physical fitness is most easily understood by examining its components. There is widespread agreement that the following four components are basic:

Cardiorespiratory Endurance - the ability to deliver oxygen and nutrients to tissues, and to remove wastes, over sustained periods of time. Long runs and swims are among the methods employed in measuring this component.

Muscular Strength - the ability of a muscle to exert force for a brief period of time. Upper-body strength, for example, can be measured by various weight-lifting exercises.

Muscular Endurance - the ability of a muscle, or a group of muscles, to sustain repeated contractions or to continue applying force against a fixed object. Push-ups are often used to test the endurance of arm and shoulder muscles.

Flexibility - the ability to move joints and use muscles through their full range of motion. The sit-and-reach test is a good measure of flexibility of the lower back and the backs of the upper legs.

Body Composition is often considered a component of fitness. It refers to the makeup of the body in terms of lean mass (muscle, bone, vital tissue and organs) and fat mass. An optimal ratio of fat to lean mass is an indication of fitness, and the right types of exercise will help you decrease body fat and increase or maintain muscle mass.

A WORKOUT SCHEDULE

How often, how long and how hard you exercise, and what kinds of exercises you do, should be determined by what you are trying to accomplish.

Here are the amounts of activity necessary for the average, healthy person to maintain a minimum level of overall fitness. Included are some of the popular exercises for each category.

WARM-UP - 5-10 minutes of exercises such as walking, slow jogging, knee lifts, arm circles or trunk rotations. Low intensity movements that stimulate movements to be used in the activity can also be included in the warm-up.

MUSCULAR STRENGTH - a minimum of two 20-minute sessions per week that include exercises for all the major muscle groups. Lifting weights is the most effective way to increase strength.

MUSCULAR ENDURANCE - at least three 30-minute sessions each week that include exercises such as calisthenics, push-ups, sit-ups, pull-ups, and weight training for all the major muscle groups.

CARDIORESPIRATORY ENDURANCE - at least three 20-minute bouts of continuous aerobic (activity requiring oxygen) rhythmic exercise each week. Popular aerobic conditioning activities include brisk walking, jogging, swimming and cycling.

FLEXIBILITY - 10-12 minutes of daily stretching exercises performed slowly without a bouncing motion. This can be included after a warm-up or during a cool-down.

COOL DOWN - a minimum of 5-10 minutes of slow walking, low-level exercise, combined with stretching.

A MATTER OF PRINCIPLE

The keys to selecting the right kinds of exercises for developing and maintaining each of the basic components of fitness are found in these principles:

Specificity - pick the right kind of activities to affect each component. Strength training results in specific strength changes. Also, train for the specific activity you're interested in. For example, optimal swimming performance is best achieved when the muscles involved in swimming are trained for the movements required.

Overload - work hard enough, at levels that are vigorous and long enough to overload your body above its resting level, to bring about improvement.

Regularity - you can't hoard physical fitness. At least three balanced workouts a week are necessary to maintain a desirable level of fitness.

Progression - increase the intensity, frequency and/or duration of activity over periods of time in order to improve.

AN APPROACH TO ACTIVE LIVING

Active living is a way of life in which physical activity is valued and integrated into daily living. It is an entire physical activity experience that engages the "whole" person . . .

Mentally - through concentration and intensity while learning new skills.

Emotionally - through the confidence that comes from enjoying established skills.

Socially - through associating with others.

Spiritually - through satisfaction, contentment and a sense of inner peace.

FUNDAMENTAL TECHNIQUES INVOLVED IN SWIMMING

Mr. Sunil Bhilare, swimming instructor of TMI, states that swimming is absolutely essential for all marine personnel. Knowledge of swimming is deemed necessary for personal safety and survival on board ships.

Before you jump up, go to the pool and swim, there are many things that you should be aware of. While swimming serves to boost your health and stamina, it must be done carefully. Getting started in a swimming routine should be a slow process. You should start off with easy breathing exercises, and learning the basic strokes. Knowing these strokes will enable you to begin lap swimming, synchronized swimming, and other forms of swimming- based exercises.

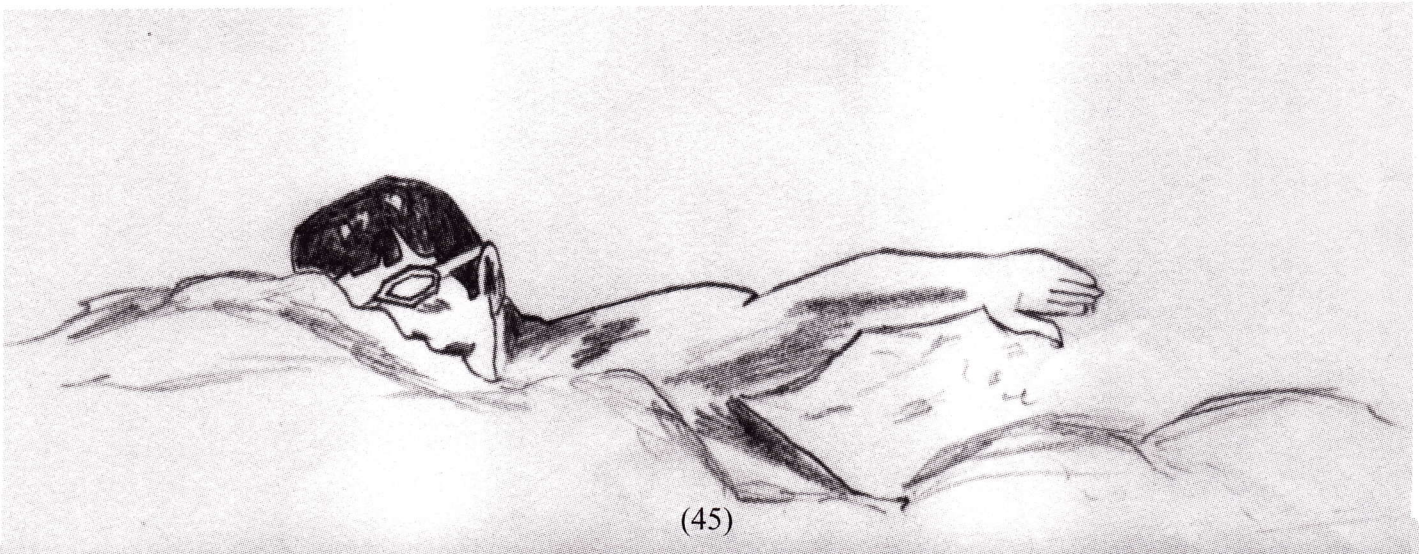
When you swim, regardless of the type of exercises you are doing, it is important that you understand how your body reacts to the exercise. Because of the nature of swimming, it can be a rather deceitful activity. It is very easy to do, and makes it appear as if you are not straining yourself. However, every stroke you make, exercises muscle groups and works your lungs and heart. If you have any cardiovascular or other conditions, you will need to ensure that you do not strain any portions of your body. This is even more important if you are recovering from a serious injury.

There are a variety of swimming exercises that you can use to improve your stamina and general health. The first of these is lap exercises. By swimming laps, either leisurely or paced, you can exert your body to the level that is appropriate for you. Leisurely laps are especially good for those who need to start off slowly. By augmenting laps with floats and other swimming aides, even beginning swimmers can start making progress at little risk.

When swimming laps, either over shallow or deep water, make certain that you are not the only one in the swimming pool, or near the pool. Cramps, muscle strains, and other injuries can happen to anyone, even the professional swimmer. While this is unlikely, it is not a risk you should take.

The other types of exercises are most commonly used with synchronized swimming. By swimming in a variety of repeated patterns in shallow or deep water, you can work all of the muscles of the body without the strain associated with lap swimming. This style of swimming should always be done with an instructor who can guide you through the basics and ensure that you do not cause yourself any injury.

Swimming is probably the most nearly perfect form of exercise. It uses most of the major muscle groups, and strengthens both the upper and lower body. It is non-weight bearing and imposes no stress on the bones and joints; it improves cardiovascular conditioning; it is an effective weight-control exercise one hour of swimming burns about as many calories as running six miles in one hour. Moreover, it is a form of meditation that helps calm the nerves.



SPORTS TEAMS OF TMI (2004-05)

TMI BASKETBALL TEAM:

- Himanshu Maheshwari(C)
- Abhijat Chahal (VC)
- Jimmy Jose
- Hartej Singh
- Jasmeet Singh
- Vikram Sandhu
- Jatin Kaushik
- Arjun Narayanan
- Rahul Maini
- Chirag Shetty
- Saket Kumar
- Nikhil Joseph
- Eddie George
- Hersh Kochar

TMI SQUASH TEAM:

- Venkat Subramaniam (C)
- Gaurav Deb (VC)
- Anupam Mittal
- Srikrishna
- Rochit Das
- Sameer Singh
- Dev Bhargava
- Bharat Khanna

TMI BADMINTON TEAM:

- Anupam Mittal (C)
- Nikhil Mahajan (VC)
- Pallab Sarkar
- Shalabh
- Prateek Singh
- Akshat Bhargava
- Akhil Jaiswal
- Siddharth Mahadik

TMI TABLE TENNIS TEAM:

- Mohit Kshatriya (C)
- Raghav Khanna (VC)
- Devershee Pandit
- Vishal Sharma
- Varun Uppal
- Babeesh Nair
- Tejaswi Pawar

TMI VOLLEYBALL TEAM:

- Fardin Nawaz (C)
- Gaurav Malkoti (VC)
- J. Vijay Krishna
- Ajit Pandey
- Kumarjeet Chell
- Nitin Juneja
- Kiran Pothugunta
- Gautam Kumar
- Akhil Jaiswal
- Manish Samaiyar
- Nikhil Joseph
- Prakhar Singh

TMI FOOTBALL TEAM:

- Taksh Sood (C)
- Brijesh Mongia (VC)
- Shalabh
- Blain D' Lyma
- Riyaz Inamdar
- Sahil Madan
- Jatin Kaushik
- Justin Jose
- Rahul Baberwal
- Abhishek Vaish
- Gaurav Malkoti
- Nimesh Mall
- Vijeth Shetty
- Akshat Bhargava
- Devashish Joshi
- Vishal Rajput

TMI CRICKET TEAM:

- Nikhil Arora (C)
- Siddharth Banduni (VC)
- Pallab Sarkar
- Taksh Sood
- Mohit Kshatriya
- Brijesh Mongia
- Rohan Yadav
- Gaurav Sheel
- Mannan Puri
- Akshat Bhargava
- Nikhil Garg
- Harshad Devaskar
- Ankit Poonia
- Vijeth Shetty
- Nimesh Mall
- Ali Hasan Rizvi

Contributions Of TMI Cadets Towards Their Institute (2004-05)

Classes for Juniors

Written and Spoken English :
Cadet Sandeepan Raha, IIIrd year M.E.

Mechanics (Theory) :
Cadet Anil Roy, IInd year N.T.

Workshop (Theory) :
Cadet Raj Kamal, IInd year N.T.

Lifeguard Duty

Cadet Mehul Nagda, IIIrd year M.E.
Cadet Neil Bhatnagar, IIIrd year M.E.
Cadet Parag Deshpande, Ist year M.E.

Sound System Maintenance

Cadet Kunal Ojha, IIIrd year M.E.
Cadet Joel Pereira, IIIrd year M.E.

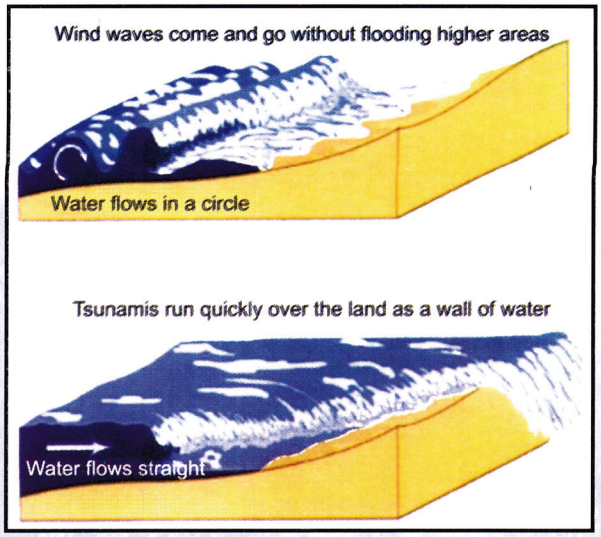
Electrical Maintenance

Cadet Vasant Madhav, IIIrd year M.E.
Cadet Sunil Bozza, IIIrd year M.E.
Cadet Nachiket Kesarkar, IIIrd year M.E.
Cadet Amandeep Singh, Ist year M.E.
Cadet Amol Mathur, Ist year M.E.
Cadet Aditya Mathur, Ist year M.E.
Cadet Swapnil Chaudhary, Ist year M.E.
Cadet Karan Ahuja, Ist year M.E.
Cadet Vinit Kashikar, Ist year M.E.

Note : The above listed are permanent members of the electrical team. The electrical team also makes temporary inclusions depending upon the requirements.

THE SCIENCE BEHIND TSUNAMI

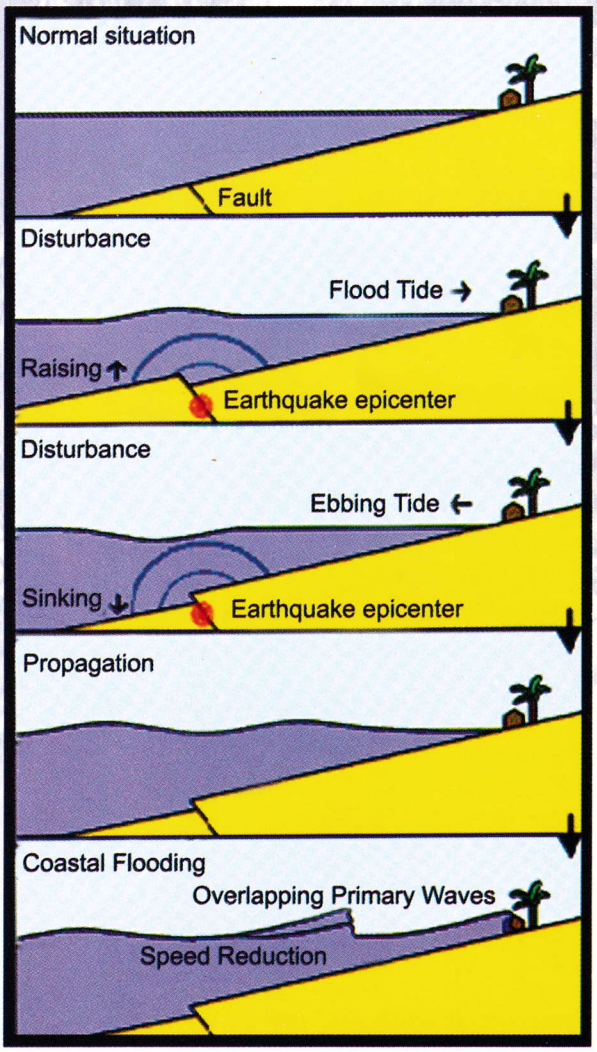
The term *"tsunami"* comes from the Japanese language, meaning harbor *("tsu")* and wave *("nami")*. The term was coined by fishermen who returned to port to find the area surrounding the harbor devastated, although they had not been aware of any wave or any major disturbance in the open water.



It is a series of catastrophic ocean waves generated by submarine movements, which may be caused by earthquakes, volcanic eruptions, landslides beneath the ocean, or an asteroid striking the earth. Tsunamis are also called seismic sea waves or, popularly, tidal waves.

Tsunamis act quite differently from typical surf swells; they propagate at high speeds and can travel great trans-oceanic distances with little energy loss.

Compared to the typical wind-generated swell one sees at a surf beach, which might be spawned by a faraway storm or strong sea winds, they rhythmically roll in, one wave after another, with a period of about 10 seconds and a wavelength of 150 m.



A tsunami can be generated by any disturbance that displaces a large mass of water, such as an earthquake, landslide or a meteor impact. However, the most common cause is an undersea earthquake. An earthquake, which is too small to create a tsunami by itself, may trigger an undersea landslide quite capable of generating a tsunami.

Tsunamis can also be generated when the sea floor abruptly deforms and vertically displaces the overlying water. Large vertical movements of the earth's crust can occur at plate boundaries. Denser oceanic plates slip under continental plates in a process known as subduction, and subduction earthquakes are particularly effective in generating tsunamis.

Submarine landslides (which sometimes accompany large earthquakes) as well as collapses of volcanic edifices, can also disturb the overlying water column as sediment and rocks slump down a slope and are redistributed across the sea floor.

In open water, tsunamis have extremely long periods (the time for the next wave top to pass a point after the previous one), varying from minutes to hours, and long wavelengths of up to several hundred kilometers. The actual height of a tsunami wave in open water is often less than one meter; practically unnoticeable to people on ships. The wave travels across the ocean at speeds from 500 to 1,000 km/hr.

As the wave approaches land, the sea shallows and the wave no longer travels as quickly, so it begins to "pile-up"; the wave becomes steeper and taller, and there is a less distance between crests. While a person at the surface of deep water would probably not even notice the tsunami, the wave can increase to a height of 30 m or more as it approaches the coastline and compresses. Tsunamis propagate outward from their source, so coasts in the "shadow" of affected landmasses are usually fairly safe.

Signs...

There is little warning of approach; when a train of tsunami waves approaches a coastline, the first indication is often a sharp swell, not unlike an ordinary storm swell, followed by a sudden out rush of water that often exposes offshore areas as the first wave trough reaches the coast. After several minutes, the first huge wave crests strike, rushing inland to flood the coast.

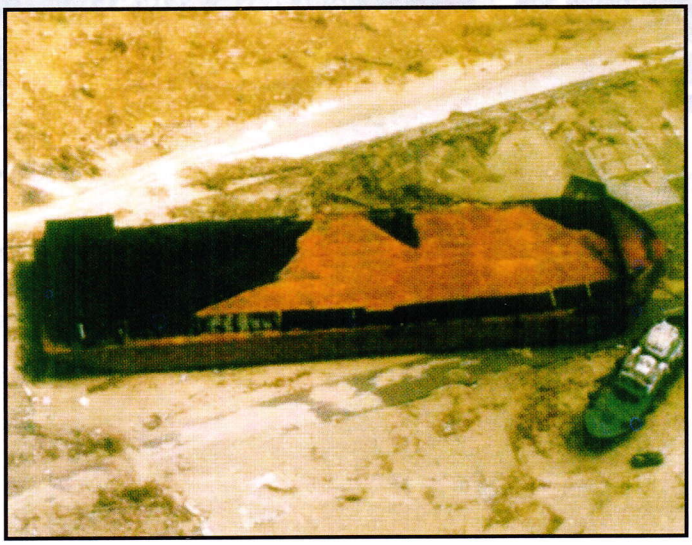
In instances where the leading edge of the tsunami is its trough, the sea will recede from the coast half the wave's period before the wave's arrival. If the slope is shallow, this recession can exceed 800 m. People unaware of the danger may remain at the shore due to curiosity, or for collecting fish from the dry sea bottom.

Tsunami Re-shapes Shipping Lanes...

One of the hidden costs of the tsunami disaster in Southeast Asia has been the damage to the Malacca Straits, one of the most important trade routes in the world. The channel between Sumatra and the Malay Peninsula that connects the Andaman Sea with the South China Sea is traditionally one of the most active shipping lanes on the globe. According to the Malacca Strait's Research and Development Centre, as much as $1 trillion in cargo and services passes through it each year.

Scattered across the world's oceans are a handful of these rare geological time-bombs. Once unleashed, they create an extraordinary phenomenon, a gigantic tidal wave, which can leave huge ships just as these stranded on land.

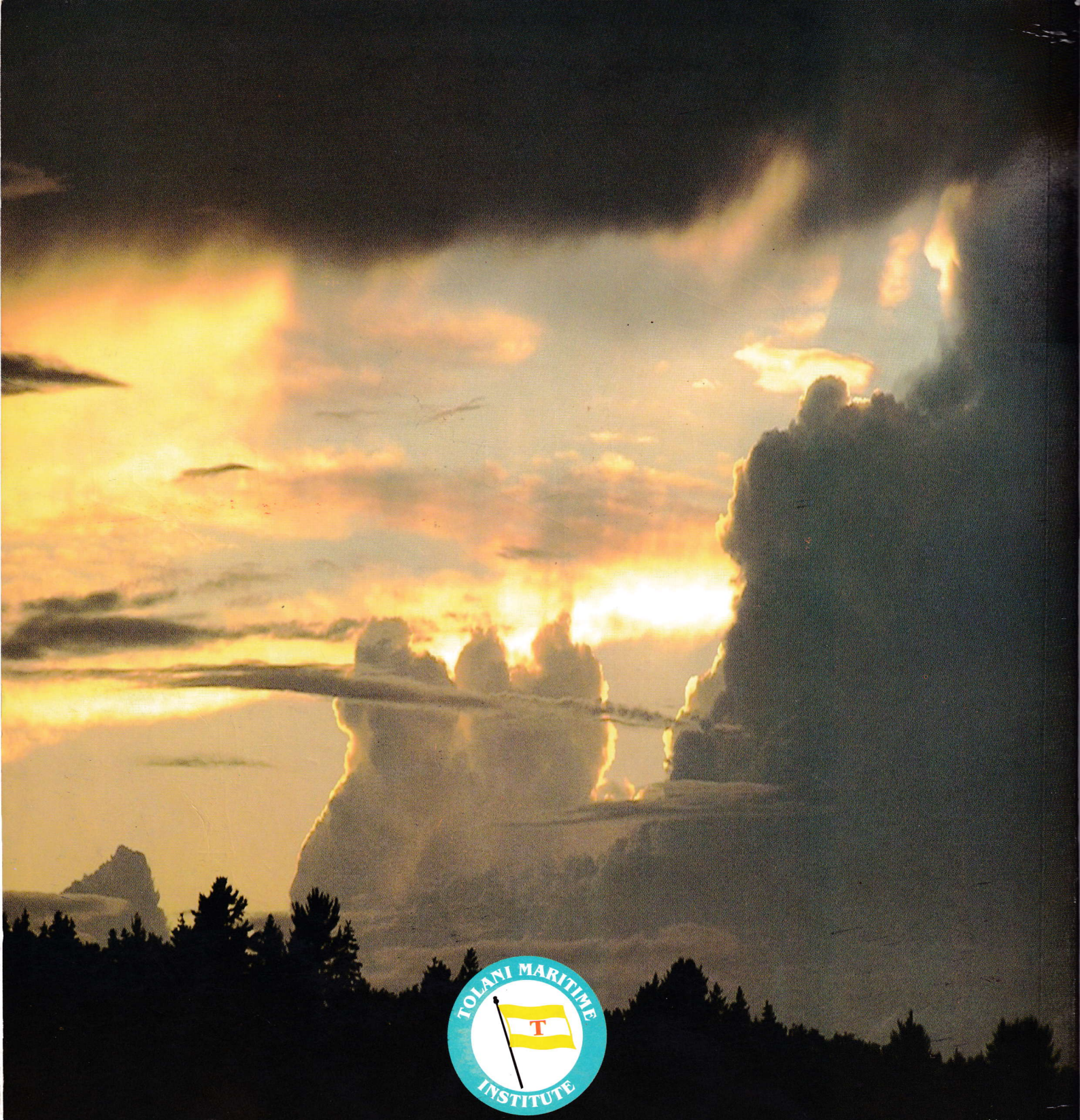
God Forbid we do not come across one of those ships!



Nachiket Kesarkar,
III[rd] year M.E.

Tolani Maritime Institute

Propelling towards glorious heights ...



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