THERMAX

# FIRESIDE

The House Magazine of Thermax Limited

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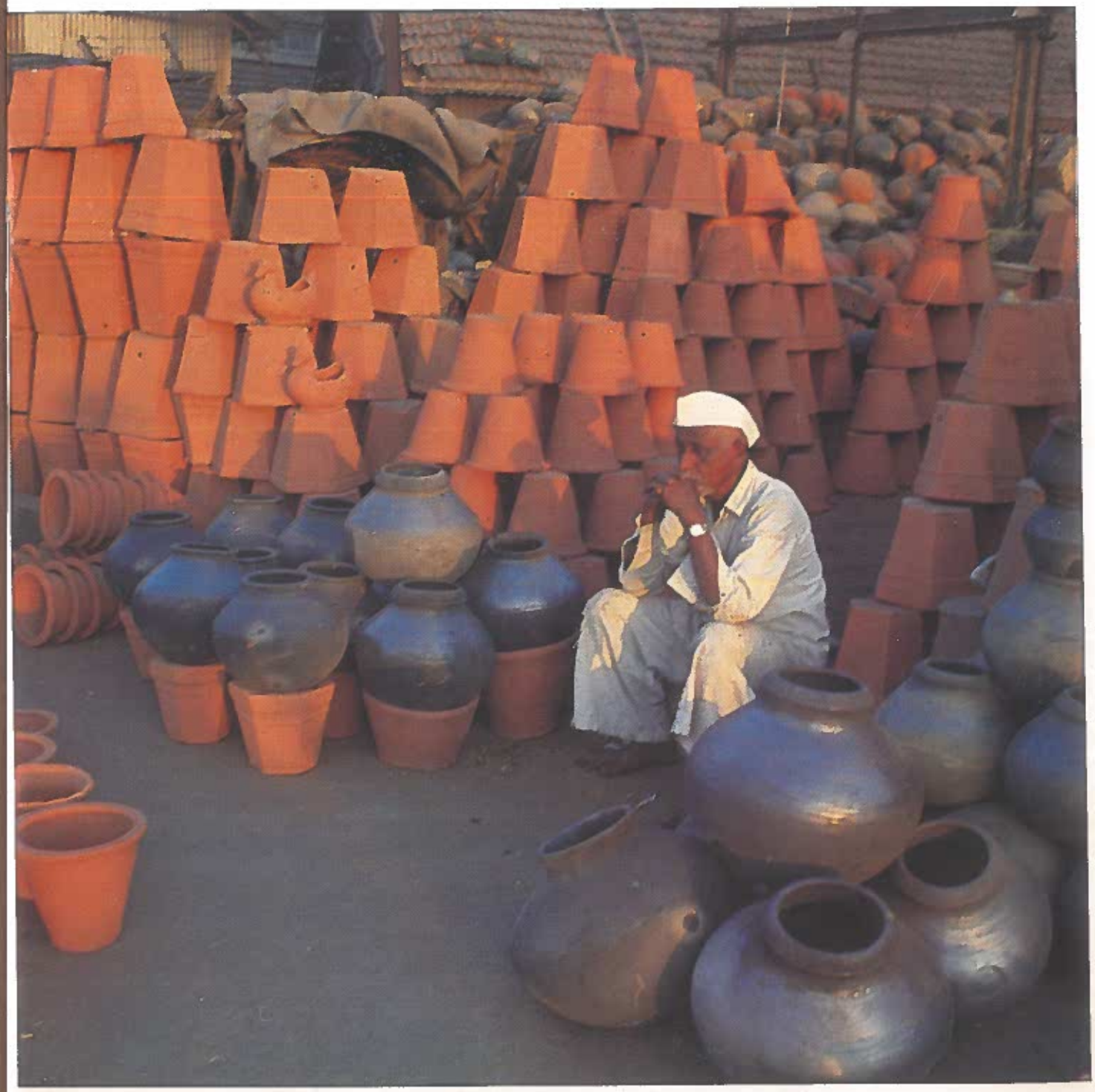

# FIRESIDE

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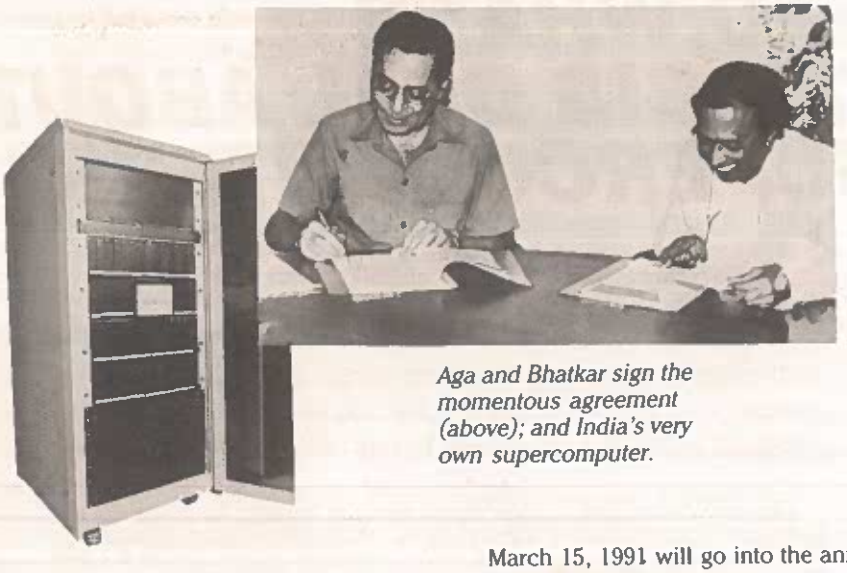
**Cover :**
*Who will buy my wares?*
An old man ponders this basic question of livelihood in Pune's 'matka' bazaar.
*(Pix by Vijay Kadapatti, Pune)*

**Into the Supercomputer League :**
With the technology transfer tie-up with C-DAC, Thermax is all set to usher in a new era in supercomputing power in India. Thermax will manufacture the PARAM series and market it in India and abroad.
*(See What's New?)*

WHAT'S NEW?

# FROM BOILERS TO SUPERCOMPUTERS



*Aga and Bhatkar sign the momentous agreement (above); and India's very own supercomputer.*

March 15, 1991 will go into the annals of Thermax history as a momentous day. R D Aga and Dr. Vijay Bhatkar of C-DAC signed a technology transfer agreement for commercial manufacture of Param – India's very own supercomputer.

An indigenous R&D product of the Centre for Development of Advanced Computing (C-DAC), Param has been justifiably called "a triumph of Indian minds in the global supercomputing thrust."

A supercomputing system based on the T-800 transputer, the Param series can be configured from 16 nodes to 256 nodes giving a peak performance of 1 Giga Flops. Which in simple language means that the machine can blast through a mind-bending 1000 million calculations per second.

Unlike supercomputers made by Cray and Convex, Param is a parallel processing system which has the same computing power at a fraction of the price. In terms of computing power, this is roughly 300 times faster than an average minicomputer or over 100 times quicker than a Cyber 170/730 mainframe.

Parallel processing has now become a frontier technology the world over for a dramatic improvement in price-performance ratios. Param, with an original architecture and modern technology, can be effectively used for solving complex problems in mechanics, physics, aerodynamics, ecology, medicine as well as problems in artificial intelligence.

The Electronics set-up in Bhosari will now wear a high-tech look with manufacturing of Param series about to get started. A special marketing team is also being geared up to push sales in

several areas of national importance which will benefit from supercomputing.

Some of the major applications include : seismic data processing and oil reservoir modelling for the oil industry, remote sensing and image processing for efficient resource exploration and disaster management, finite element modelling for design of complex engineering structures, weather forecasting and computational fluid dynamics.

Another important fallout of indigenous manufacture of the Param series is that India will no longer have to depend on imports of supercomputers. Not only is the Param series very competitively priced against the imported supers, they also have much lower operating costs.

For instance, the Param 64 node machine will cost Rs.1 crore, whereas the comparable Cray XMP will be a prohibitive Rs.14 crores. The peak performance of Param is 220 mega flops while that of the Cray machine is 210 mega flops. The operating requirement of the Cray is 50 Kilowatts while Param needs only 1 Kilowatt. What is more, the cooling cost of the Cray XMP (being very heat generating) is Rs. 3 crores, while that of Param is Rs. 25 lakhs per year only.

About 25-30 per cent of the Param production will be earmarked for export to countries in the Soviet Union, the East European block, Gulf and Africa which provide ready markets. A beginning has already been made in this important activity which will gain precious foreign exchange for the country. A Param machine was displayed at the Thermax Stall at the Cebit exhibition in Hanover held during March this year. A big seminar is also being planned in Moscow during April.

The merged division of CSD and Electronics now has a new zip in their operations with the challenging task of manufacture and marketing of Param – a super that pulls no punches.

# PARCOM-90

## POOLING RESOURCES

C-DAC, at the time of launching Param, organised a national conference on parallel computing to pool information and knowledge available in this field and to build foundations for future research in parallel computing in the Indian context. Keeping in view the growing interest of researchers in parallel computing as well as the advances that have been made by C-DAC and other parallel computing projects in the country, it was decided to organise a major parallel computing conference biannually and PARCOM-90 the "Conference on Parallel Computing" was born.

Thermax was one of the co-sponsors of the conference. There were delegates from various research institutions, universities and development establishments not only from India but also from Germany, U.K. and other countries. One of the most distinguished guests was Prof. W. Handler from Germany, whose pioneering efforts have significantly contributed to the growth of parallel computing.

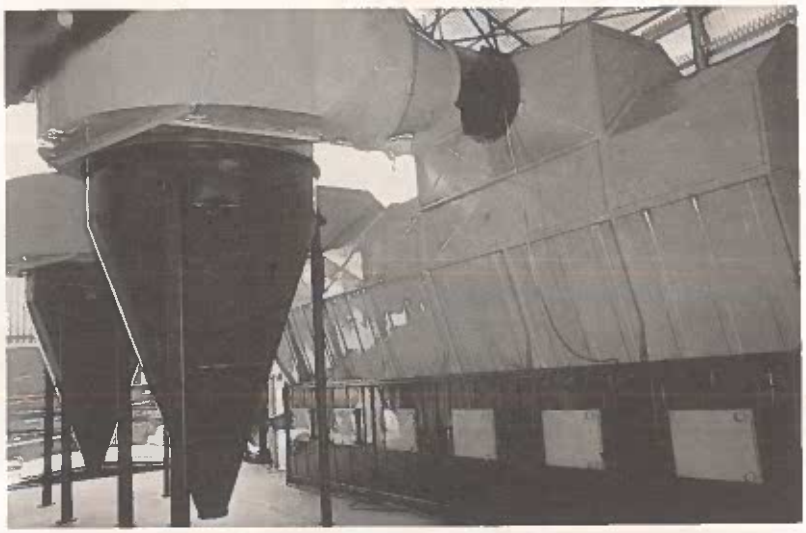
# SO, WHAT'S THE BIG DEAL ABOUT SUPERCOMPUTERS?

Supercomputers are hyper fast machines that can model virtually any phenomenon in the physical world that can be described with mathematical formulas – from subatomic collisions to the Earth's warming atmosphere to quasars at the edge of the universe. And they can explore some less exotic realms, too : Wall Street, for instance,is using them to pinpoint split-second trading opportunities.

Like any computer, supercomputers are brutes, as dumb as the proverbial doorknob. All they can do is simple arithmetic. It's just that supers can do billions of multiplications in one second – and with 20 digit accuracy. That's why they excel in tackling the lengthy, repetitive calculations often encountered in arcane technical work. The best way to simulate a bridge under stress, for example, is to break it down into a collection of simple elements. By assigning each element its own microprocessor to calculate how it responds to various pressures, the program as a whole can be greatly speeded-up.

*— Excerpted from International Business Week, April 30, 1990.*

# Tea Drying
# NEVER HAD IT SO GOOD!



*Thermax fluidised bed tea dryers: high outputs with attractive fuel savings.*

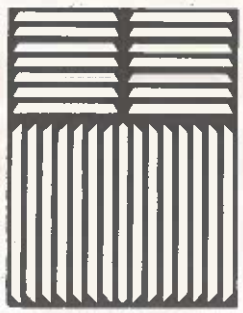
India is the largest tea producing country in the world. That's a known fact. What's not very well known is that the 2500 tea gardens in the Nilgiris and Assam use primitive and energy-guzzling tea drying methods.

It is to meet this need of updating tea drying equipment that Thermax has introduced Fluidised bed tea dryers. Having mastered the art of FBC technology for boilers, it just needed a few touches to adapt the technology to tea dryers.

Most tea gardens use conventional tray type dryers fired by direct air heaters. These systems have very low outputs of made tea (as less as 150-200 kgs/hr). The Thermax dryers are steam-based with outputs as high as 450 kgs/hr. of made tea. The fuel consumption can be reduced to half and due to negligible maintenance are virtually trouble-free. The dryers are also environmental friendly ensuring dust-free conditions.

Thermax had tied up with J.F. McCloy of Kenya for developing the dryers and are now planning for a major thrust in exports to tea gardens in Sri Lanka, Bangladesh, Papua New Guinea and Indonesia.

An inaugural order worth Rs.11 lakhs has already come in from Doloo Tea Estate near Silchar in Assam for a drying system.



# Custom-engineered Pulse Jet Fabric Filters for Gas Turbines

Thermax has introduced pulse jet fabric filter systems for gas turbine applications. Made in technical collaboration with General Electric Environmental Services Inc. USA, the filter system is designed to produce super clean air for gas turbine intake applications.

The bag filters are suitable for stationary or platform mounted gas turbines and are specially designed for low maintenance operation. With gas availability having improved considerably, many industries are going in for gas turbines to produce power cheaply. A ready market for the filter system.

The system features include – automation in operation, high cleaning efficiency, automatic self cleaning, top inlet to reduce congestion of ground level dust. These systems are suited for operation in severe environments.

The full scale testing of bag filters on site provides for reliable operation. The design is different from the conventional pulse jet bagfilters, in that, the bags are supported by wire cages and project vertically upward from the tube sheet at the bottom of the filtering chamber. Automatic on-line self cleaning of bags keeps the system operating efficiently.



# Thermax computer control system takes the drudgery out of boiler operation

*Easy-to-use computer control system on FBC boilers: a real customer benefit.*

Computer based control system in a boiler house? No way! That would be the typical response from a computer professional – used to working in an airconditioned, super-clean environment. Understandably so.

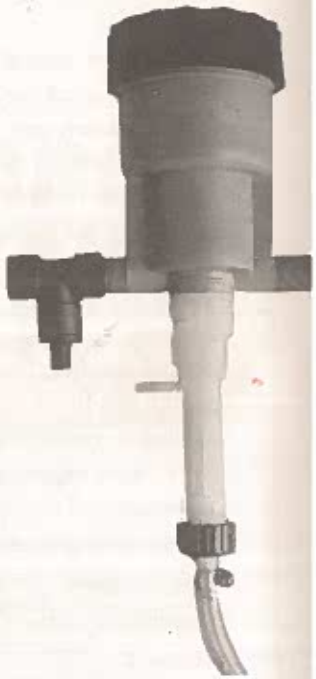
A boiler house is usually located a bit away from the real process facility in most industries. It is literally a hot house with high ambient temperatures and dusty atmosphere. Anathema for any computer control system.

However, Thermax in typical fashion ventured into this area. And now it is time to announce a path-breaking achievement. BOICON – is a Thermax computer hardware and software package for controlling boiler operations. The first of its kind installation has been successfully working on a Shellpac fluidised bed boiler of 3 Tons/hr capacity at Mahan Synthetics, Tarapur.

The specially manufactured hardware – which is hermetically sealed – is industrially ruggedized and has done away with conventional peripherals such as floppy disks and keyboards. *Boicon* controls the fuel screw feeder RPM relative to the bed temperatures. That is, when bed temperatures are high, *Boicon* automatically reduces the fuel feeding or cuts off the screw feeder. The computer screen constantly monitors and displays actual steam pressures, RPM of the fuel feeder, bed temperatures and sets off an alarm for low water levels in the boiler drum. The software package is designed for easy understanding by even uninitiated boiler operators. The keyboard controls have commonly understood symbols for use by the operators.

The screen has been specially designed to make available all relevant information at a glance. Graphical trend displays of temperature and pressure make it easy to visualize system performance during the last 24 hours.

# The right dose keeps your boiler shipshape



The most common cause of tube failure in water tube boilers is, of course, the water. Treatment of water necessarily involves softening, dissolved oxygen removal and pH adjustments. Alkalinity removal or demineralisation may be required in certain specific situations. While softening is done using ion exchange resin based feed softeners, dissolved oxygen removal normally entails pre-heating feed water or by catalysed sodium sulphite/hydrazine dosing. pH correction is done by caustic dosing.

Since inadequate dosing as well as overdosing are undesirable for obvious reasons, a reliable, accurate, proportional dosing device is required. As a solution to this need, Thermax has introduced DOSAMATIC – the automatic, proportioning, non-electric, precision doser.

*Dosamatic* is compact, portable and easy to install. Unlike other non-electric dosers, this dosing arrangement is separate from the chemical tank. Hence, the level of solution in the tank can be observed and fresh solution prepared on site when required.

# ORDER BOOK

## Breakthrough for Multimax in rice parboiling

K.J. International, reputed exporters of rice, have placed an order for a Multimax boiler for parboiling application in their rice mill in Karnal, Haryana. K.J. is the first rice mill to use our boiler for such an application in the northern region.

K.J. already has our husk-fired Thermopac for paddy drying application – and will soon be a good reference station for a Multimax and Thermopac working in tandem to produce export quality rice.

Meanwhile, the husk-fired Thermopacs continue to rule the roost in the northern region. Most of the orders finalised have come the Thermax way inspite of tough competition.

## Rs. 7-Crore Saudi order for TBW

Thermax Babcock & Wilcox (TBW) has made a grand entry in the Gulf market by bagging a prestigious Rs.7-crore (3.8 million US dollars) boiler export order from the Arabian Petroleum Company in Saudi Arabia.

The order won in the face of stiff international competition – which included the Japanese – is for a 100 tonnes per hour site erected boiler for an Olefins project coming up at Al-Jubail, 30 kms away from Damam port.

The boiler, to be commissioned within 22 months, has the latest single-drum design with pressures upwards of 100 bar and 510°C steam temperatures. The boiler design and manufacturing process at the TBW shop will follow procedures as per the ASME (American Society of Mechanical Engineers) codes.

The joint venture which started operations in early 1989 is currently on an export marketing programme and several orders totalling Rs.27 crores – from Thailand, Jordan, Abu Dhabi and Egypt – are expected to be finalised soon.

Meanwhile, the FM boilers of TBW are continuing their winning spree on the homefront. Finolex has placed a Rs.3.4 crore order for 3 FM boilers for their PVC resins project at Ratnagiri. Each boiler will have a steam output of 28.5 TPH, 17 kg/cm² pressure and 226°C temperature. Herdillia Unimers has also placed a Rs.97.8 lakh order for 2 FM boilers for their new project on Thane-Belapur Road. The boilers will have a capacity of 10 TPH each.

## Rs. 2.35-Crore ONGC order for CPPD

The oil field equipment group in CPPD got their first off-shore application order from ONGC for supplying oil, gas and water separators. The order worth Rs. 2.35 crores is for eight of these separators working on pressures upto 1440 psig and will be designed under NACE and API specifications and fabricated to the ASME 'U' stamp.

CPPD wrapped up the year with yet another Incinerator order from Armour Polymers, Tarapur. The Incineration system valued at Rs.15 lakhs, will burn highly toxic waste waters containing Pyridine.



## Boiler orders from Indonesia, Kenya & Tanzania

South Pacific Viscose – an Austrian group in Indonesia, manufacturing viscose fibre – reinforced their confidence in Thermax by placing an order worth Rs.10 lakhs. Thermax will supply 2 units of spray type deaerator of 32 tons/hr, a charcoal fired fluidised bed boiler and ion-exchange resins. Indo Bharat Rayons, an Aditya Birla group in Indonesia, has also finalised an order for a charcoal-fired FBC boiler for their viscose fibre plant.

The African continent continues to be a land of promise for Thermax. East Usumbura Tea Company, Tanzania has placed an order for two 3 tons/hr Woodpac steam boilers. Along with the boilers, Thermax will supply pressure sand filters, softening and dosing units with accessories.

Spinners & Spinners Textiles, Kenya, A to Z Textiles, Tanzania and Equator Bottlers, Kenya (a franchisee of Coca Cola) have placed orders for Revotherm boilers. Sunmanyatta Ltd., Kenya have ordered for a Deltatherm thermic fluid heater of 1 million Kcals/hr capacity.

## Reliance sold on Thermosol

Reliance Industries has placed a Rs. 33 lakhs repeat order for our fuel additive chemicals – Thermosol and Thermomix – after extensive trials on their oil-fired boilers.

In October '90 Reliance had placed a Rs. 12 lakhs trial order for the chemicals and extensive trials have shown a dramatic decrease in fuel consumption. The chemicals, used in three 70 TPH boilers at their Patalganga unit, also resulted in better boiler performance, improved steam to fuel ratios and clean boiler furnace.

Thermosol is a fuel oil additive to help better combustion. Thermomix is a post combustion treatment compound which cleans the combustion zone and keeps it free of deposits.

The Calgon range of cooling water management chemicals have also found a repeat order from Deepak Nitrite for their plant in Gujarat. Thermax was earlier entrusted with the complete responsibility of cooling water management – from design to pre-commissioning stage – for their nitric acid plant near Bombay.

## Thermax silos to store castor seeds

An order worth Rs.32 lakhs for two nos. 2300 MT silos for storing castor seeds was bagged by Post Harvest from Jayant Oil Mill, Baroda. This is the first silo order for storing castor seeds. Other notable silo orders came in from Rajasthan State Co-operative Marketing Federation and Kalyan Solvent Extraction Ltd. The total value of the three orders is Rs. 1.4 crores.

## Rs. 6.5-Crore order from Thailand

Phoenix Pulp and Paper, a Thapar group company in Thailand, has placed a Rs.6.5 – crore order on International Division – for a site erected boiler and water treatment system. Phoenix is currently on an expansion scheme for their project at Khon Kaen, near Bangkok.

The boiler, to be designed and supplied by TBW, will be a bi-drum with a capacity of generating 80 tonnes of steam per hour at 65.3 kgs/cm$^2$ pressure and superheat temperatures of 480°C. The boiler will be fired on heavy oil and eucalyptus bark.

Water Treatment will supply a two stream DM plant of 90 M$^3$/hr capacity and a single stream condensate polishing plant of 100 M$^3$/hr capacity. The deliveries are expected to be completed in 15 months.

DIALOGUE

In the last issue of *Fireside*, I shared with you some thoughts on our country's Export scenario :

- Our tiny share in World Exports – one half of one percent.
- Our engineering exports – one-eighth of one percent of the world's export of engineering products.
- Our export performance compared with some of the less developed countries : S. Korea's exports 3.5 times ours; China, 3 times ours; Brazil, twice and Malaysia, with a GNP one-eighth of ours, exports as much as we do.
- Our growth in exports in the last 5 years, though commendable in Rupee terms – 130% – is almost completely neutralised by the devaluation of the Rupee and the change in the Product mix.
- And, with no "real" growth in exports on the one hand, and with our increasing pressure on funds for servicing of old loans which have now come to roost, the Balance of Payment crunch is inevitable.

When I completed this exercise in amateur Economics, I little realised how close we were to the day of reckoning. A fortnight ago, the myth exploded. *The Emperor was naked.* Our foreign exchange reserves went down to panic levels. The RBI came in with a heavy hand and clamped down imports. All imports would now require a cover of 100% to 133%. The IMF loan of $ 4 billion awaits the outcome of the General Elections. But these are short-term palliatives. The future lies in a well-thought-out strategy on exports and that brings me to the second half of this presentation on our response to the Global Economic Challenge.

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*1. To start with, let us think International.*

I make a distinction between exporting and international marketing. Exporting is simply shipping goods from a home base to markets and customers abroad. International marketing, on the other hand, starts with an awareness that the world is your market and builds on a vision and a longer term strategy, choosing products where there is a

**" I hope as a result of this exercise, some of you will be infected by the 'International Mission.' I can assure you that it is good business and it is good fun."**

competitive advantage, not merely through cheap manpower, but through product differentiation, product development and, hopefully, in course of time, establishing a brand image.

I am sure many of you have heard of a company called Samsung. It is not a household name like Sony or Honda – but it is one of the largest companies in South Korea with a turnover of $ 40 billion. Bulk of its turnover is in home and office appliances – TVs, VCRs, washing machines, microwave ovens, radios, compact disk players, copiers, fax – you name it. Two-thirds of its manufacturing is for export.

I was recently presented a fascinating book called *The Silent War* by Magaziner and Patinkin (Random House). It gives case-studies in global strategies and starts with a case on "Korea – winning with Microwaves". I would strongly recommend it to anyone even remotely connected with international marketing. The microwave oven entered into the market in the early seventies and by the mid-seventies had become a multi-billion dollar business. Samsung saw it as an opportunity, using low-cost Korean labour. But it did not follow a route that is normally done in the Indian context – buying the technology for the domestic market. *In fact, when a Korean company considers a new product, the most common first question asked is : Can we export it ?* And when you ask that question, nobody will give you the technology for a sunrise product. Samsung starts right at the beginning. It buys a few competing units – strips them down – designs its own product – coming out with a product that is 40% lower in price – interesting one of the large retail chains in the U.S. : J.C. Penny. In a matter of 4 years, it is manufacturing 2,00,000 units a year. But it is not satisfied. It is still buying the magnetron tube from Japan. So it takes over a small American company making magnetron tubes. At this stage, GE – the largest manufacturer of microwave ovens – decides to source part of its output from Japan. Samsung makes a bid and convinces GE about Samsung's quality. At that time, Korea did not have the image for quality that it now has. Samsung satisfies GE on quality and price. Two years later, GE closes its plant – it finds it difficult to compete with GE's costs. Samsung becomes the largest supplier to GE. Samsung turns to the European market – adapts the product for European tastes.

Today, 10 years after it entered the microwave market, Samsung supplies 35% of the world market in microwave ovens. It markets in its own name, and it sources for a number of household brand makes as an OEM throughout the world. It makes 80,000 microwave ovens a week. *Its turnover in just this one product – microwave ovens – is over a billion and half dollars. More than India's entire engineering exports of Rs.2500 crores.* This is international marketing – going through the whole gamut from surveying the market to design to production to cost-control to quality to distribution and developing a brand image worldwide. Contrast this with our usual recipe of an industrial licence, a collaboration and a small sheltered market – no wonder they call us the "peasant" economy. If we have to rise to the global challenge, the first thing we have to do is to *think international: the world is your market.* In a small way, we have a few examples of companies that think international: Mafatlal and Century in Textiles, TELCO in the African market, Lakme and their presence in the USSR, Tata Consultants in Software, Kamanis in transmission towers, Western India Erectors in Saudi, Tata Exports in Leather – and there are some more – but they are few and far between.

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In a small way, Thermax has developed for the international market products which required major adaptations of anything we were doing in the domestic market: paint spraying and drying chambers – an adaptation of our hot air generator; Thermocontainer – a development of a boiler for Siberian winters; Hi-pressure mobile steam generator – a special purpose application for de-waxing of crude for the North American market. These are examples of products which we would never have sold if our perceptions were restricted to our national boundaries.

We have 10 business groups in our Company. Commencing this year, each business group is required, as part of our three-year plan, to take on a commitment of developing a product or a market outside of India.

So if we are to respond to the global challenge, my first exhortation to this group is : Think International.

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*2. Now, let us look for the Niches.*

Our Chemical Division manufactures a range of polymer resins for the last 15 years – and like all good Indian companies, our focus was the Indian market. In earlier years, we had a loose arrangement with a well-known manufacturer in the US, where we used to send our products for testing. Many years later, the R&D Manager of the US company, well after retirement, entered into a dialogue with us. He said something we had never known. He told us that while working in the applications research laboratory of this resin manufacturer, he was assigned to evaluate competitor products. This involved an 'accelerated life study test' to determine attrition resistance. Everything appeared to be operating as anticipated, until he started using Tulsion resins by Thermax. Curiously, the profile of the resin remained the same both before and after testing. This situation had never occurred in any of the previous candidates, so, after thoroughly checking the equipment, another set of samples was entered. The same thing occurred. Many times later, Tulsion resins were used as a standard.

Obviously we were on to a good thing. Whenever strength of the resin was an important factor in the application, our product would be a winner. We undertook a market survey with the support of the EXIM Bank, who shared 50% of the cost. The survey indicated that the 3 big manufacturers, who shared a market of around $ 360 million in the US, had no desire to adapt their products for specific market needs. We set up an office in Detroit. We also realised that if we are to do justice to the market, we must set up a laboratory, where prospective customers could run water columns and do pilot studies. More important, delivery of resins in the US is normally anywhere from 4 to 6 weeks. So, unless we carry stocks and warehouse the product, we would not have a chance of exporting from India. So we set up a laboratory and a warehouse.

The very first year, we did a turnover of one million dollars. But we realised that the costs of marketing in the US required that for a break-even, we would have to have a turnover of $2.5 million. Our plans for the coming year is $4 million. Our projections indicate that, all going well, we could reach a turnover of $10 million in the fourth year.

We have a Division marketing software. But so far as marketing software abroad is concerned, we have had to be content with what is euphemistically called "body shopping". This is true of a large number of well-known software companies. We have been trying very hard to make a breakthrough and move from body shopping to selling of software projects, but without success, until we hit upon a niche area where our expertise could be used to advantage – parallel processing and image processing. This is a highly sophisticated area which calls for expertise of a high order. We had built up a team for the Indian market and realised that there is a growing market in this area both in Europe and the US. We bagged our first project order in Germany, where bulk of the work could be done in India and market it at an attractive price. We realise now that this is a niche market which we can exploit to advantage, particularly as parallel processing is expanding in a very substantial way.

Our limited experience in exports has shown that one can get into the US with a good product and a competitive price. But in Europe, it is altogether different. There, country codes, loyalties, the old school ties, language, are all formidable barriers to breaking into a market. A buyer in Germany would almost certainly specify and insist on a boiler made in Germany. If he has to relent, he might just about accept a boiler from Switzerland, but nothing further. To break into such a parochial market is extremely difficult.

We have been looking at the emerging European market in 1992. We were examining our portfolio of products to decide which product would have the greatest chance of succeeding in the European market. As a result of a market survey, we realised that there is a product called the thermic fluid heater, which has, once again, a very specialised market for high temperature heating. It so happens that this product is one in which we have considerable expertise, but we realised that in Western Europe there are considerable reservations about buying such a sophisticated product like the *Thermopac* from India. The best course was to look for a European company, who would purchase component parts from us, complete the product to our specifications, and sell under their name. We would be supplying the crucial heat exchanger of the thermic fluid heater, they would purchase controls, instrumentation and pumps in the UK, assemble the units and market them. We would provide the detailed engineering and the application engineering – on both counts we have a competitive advantage. The product is being launched early this year.

***I am aware of several companies in India which have become sources for their collaborators abroad — Ingersol Rand, Mico, Alfa-Laval, Padmatex. We are happy to note that Suzuki are phasing out their 800 cc and Maruti are being given a clearance to export their products in various parts of the world. But much more can be done.***

Talking of niche markets, I was reading the Annual Report of Asian Paints. I was delighted to hear that they have small manufacturing set-ups in such remote areas as Fiji, Tonga and Solomon Islands. I know of a NRI operating from East Africa, who has a worldwide multi-million dollar business on aluminium extrusions for utensils and aluminium sections for the construction industry, with small manufacturing units in far flung areas like Papua New Guinea and Trinidad.

So, my second response to the global challenge is: Look for niche markets – wherever you can serve a market with your product or your marketing expertise.

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*3. Third, let us make India a base for International Sourcing.*

The Samsung case study has some startling figures: In 1983, it cost GE $ 218 to make a typical microwave oven; it cost Samsung only $155. If you see the break-up per oven :

| | GE | Samsung |
|---|---|---|
| Assembly Labour Cost | $ 8 | $0.63 |
| Material Handling | $ 4 | $0.12 |
| Manufacturing Overhead | $30 | $0.73 |
| Administrative Overhead | $10 | $0.02 |

And the most disturbing figure of all: Samsung workers were paid less, but delivered more. GE got 4 ovens per person each day. Samsung, 9. Part of the secret lies in a work ethic that defies description: 11 hours a day, 27 days a month, 5 days off in winter and 5 days off in summer.

But labour costs have been rising sharply. If you see US, Japan and Germany, labour costs today are in excess of $20 per hour. If you take the Less Developed Countries – Korea, Singapore, Taiwan – labour rates are about $3.5 to $4 an hour. The labour cost in India today for a semi-skilled worker can be reckoned at $0.80 to $1.00 per hour. Consider the potential for being competitive.

But far more important is the cost of overheads. A design engineer in the US, with, say, 15 years experience, costs the company $50,000 a year. His counterpart in India costs $6,000 – a factor of 8. Even allowing for a productivity of half (a figure I dispute), a design engineer costs a fourth of his US counterpart.

Let me share a thought from our own experience: Two years ago, we set up a joint venture with Babcock & Wilcox of USA. One of the objectives of the joint venture is to build up a base for export – throughout the world. B&W have joint ventures in China, Indonesia, Turkey and Mexico, and they have an avowed policy of sourcing from the most cost-effective source. We have just signed a $4 million contract with a Saudi customer against severe Japanese competition. We are making bids for SE Asia, Australia, and, of all places, Chile. We and our collaborators are increasingly convinced that India can emerge as a cost-effective source – with one reservation. China can become a formidable competitor.

I am aware of several companies in India which have become sources for their collaborators abroad – Ingersol Rand, Mico, Alfa-Laval, Padmatex. We are happy to note that Suzuki are phasing out their 800 cc and Maruti are being given a clearance to export their products in various parts of the world. But much more can be done. Each of our companies, who has a collaboration, financial or technical, must have a

continuing dialogue: how can we source their products in India to mutual advantage? There will be resistance. But the resistance has to be gently, but persistently, worked on. By improving efficiency, by careful costing, marginal pricing, the lure of a cash subsidy, and ultimately by the threat of survival. If we do not export, we would not be in a position to import.

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*4. International sourcing leads me to a related issue: Use the 100% EOU route to build a base for exports.*

Take a case in Electronics, which is quite typical.There are a host of items in the Electronics area, where the total market in India, today, is limited. And, yet, licensed capacity is many times the domestic market. As a result, units become sick or they survive on a minimal value-added using a screw-driver. Either alternative is undesirable. A 100% EOU arrangement, where upto 25% of the turnover is made available to the domestic market, makes everybody win. The collaborator is assured of a source at cost-effective prices; the 100% EOU is ensured capital equipment, raw material and components, duty-free, without the hassle of import licensing; the domestic market can have access to an internationally branded product, and the Government of India can look forward to a growing foreign exchange inflow. This is the strategy that has made Singapore a Silicon Island – AT&T, Hewlett Packard, GE, Texas Instruments, Apple Computers – there are over 200 hi-tech US companies manufacturing products in Singapore to export back home. They employ a hundred thousand Singaporeans mostly with high skills. This could be our heritage many times over: a skill base very much larger than Singapore; with an added attraction of a growing domestic market.

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*5. Give a serious consideration to People as a Resource.*

In the early 80's, at the heyday of the skill exodus to the Middle East, as many as one million Indians left home and went abroad for gainful employment. Repatriation of earnings back to India reached a high of Rs.2400 crores a year – *equal to all of India's engineering exports.* When you consider that engineering exports require an import content of around 30%, the Rs.2400 crores of invisible earnings represent an equivalent of Rs.3500 crores. And it was quietly done – by word of mouth. No export promotion council, no government hassle, no cash subsidy, no Top Exporters' Award, no Minister with his patronising smile.

Talking of people as a resource, I see a wonderful opportunity area in the field of computer software exports. It is estimated that the total market for software worldwide has reached $80 billion. It is also estimated that this figure would double by the year 2000 – to an astronomical $160 billion. Only 1% of that would suffice to wipe out our balance of payments deficit for a long time to come. We have the talent, we have no language barriers, we are cost-effective. What we need are entrepreneurs with a vision and a foresight to build the infrastructure through focussed education and training, state-of-the-art technology and equipment and satellite communication.

What is true of computer software is equally true of software in other areas – product design, detailed engineering, project management,R&D, and the like – where once again we can be cost-effective and competitive. Can we, perhaps, look upto companies in India, who have links abroad, to take the lead.

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*6. Get the right focus on bilateral trade with the USSR*

Our entry in the export market dates to 1973, when we received our first export order from the Soviet Union. Since then, we have substantially increased our presence in the USSR. We have a full-fledged office in Moscow with 10 Russian-speaking people.

But things are changing fast. Some indications of the new order :

(i) The buying organisations are being restructured and it is now increasingly possible to sign contracts with actual users. This makes a lot of sense, because one can understand what the user wants and give a product that meets his requirements. We are in the process of restructuring our own Moscow establishment and setting up representations in some of the Republics like Russia, Georgia, Uzbekistan, etc.

**Talking of people as a resource, I see a wonderful opportunity area in the field of computer software exports. It is estimated that the total market for software worldwide has reached $80 billion. It is also estimated that this figure would double by the year 2000 — to an astronomical $160 billion. Only 1% of that would suffice to wipe out our balance of payments deficit for a long time to come.**

(ii) A number of user organisations, who earn free foreign exchange, are now allowed to retain 30% of the free foreign exchange, which can be used for any purpose they choose.

(iii) Most important of all, the USSR used to buy a fair amount of raw materials and equipment from the COMECON countries. As a result of the opening up of Eastern Europe, the COMECON has collapsed. Countries like Poland, Hungary, Czechoslovakia, Bulgaria, are insisting on supplying goods to the Soviet Union only against the Dollar. This could open up a wonderful opportunity for procuring some of these products under the bilateral Rupee trade route.

On balance, I look at the USSR as an area of considerable opportunity. It is one of our large trading partners – Rs.7,000 crores this year. 25% of our imported crude comes from USSR. We enjoy a trade surplus with the USSR. Our exports to the USSR have a healthy composition – 50% of our exports cover manufactured goods – both consumer and capital goods. And the USSR is woefully short of free foreign exchange, and requires a host of manufactured goods of quality that we can supply – particularly after the collapse of the COMECON. All these have the making of a growing, meaningful bilateral trade arrangement. Can we react to the Perestroika and reorient the manner in which we can do our business in that changing market?

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7. One approach to international marketing, which has served us well in a specific geographical area, is the *setting up of a Service Centre.* We have been exporting our products to East Africa for the last 5 years. We soon realised the need for a service network for our range of products, and set up a Service Centre. Invariably, we would be approached to service competing boilers. After some initial resistance, we took a decision to service boilers of all suppliers and make our Service Network a Profit Centre. Apart from earning foreign exchange, it is paying good dividends by making us known in our line of activity and making our presence felt. We are planning to duplicate this approach in Nigeria, Bangladesh and Indonesia.

A related approach is the *setting up of training centres*. Some 20 years ago, TELCO set up a Tool Room and training facilities in Singapore. That one single gesture, I remember, did a great deal to boost the India image in that area. HMT did a similar exercise in Algeria.

Pune has been traditionally an educational centre. At any one time, there are a few hundred foreign students studying in our colleges – from the Middle East, from Africa and from South East Asia. Many of them can be potential ambassadors of goodwill. In one recent visit to Mauritius, I was introduced to their Energy Minister, and was delighted to hear that he had been an alumnus of Wadia College 10 years ago. He regaled us with his escapades at Wadia and I know he will always carry a soft corner for India. *In many different ways, India can provide technical leadership to the third world – without saying so.*

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8. One strategy of developing global exports, which has not been exploited by us in India, is *counter-trade*, which really means trading without money. It is estimated that somewhere between 10 to 20 per cent of the world's trade is now conducted on a non-monetary basis, and the volume is rapidly growing. Among the East European economies, more than 40% of their trade is conducted in this way. Admittedly, there are costs and risks involved. But we, as a traditional trading nation, have a great deal of expertise. Only, the expertise is now outside India, with the NRIs in Dubai, in Hongkong, and in the Canary Islands. If one has to take full advantage of counter-trade, the FERA regulations will have to be suitably bent and made flexible.

However, looking at counter-trade in a rather simplistic way, we import a fair amount of raw materials and equipment through canalised sources, where we can carry considerable clout by insisting that a part of the imports be offset by exports. It is difficult to estimate what is the potential for counter-trade, but if one looks at the canalised imports in 1989-90, fertilisers accounted for Rs.2000 crores, non-ferrous metals Rs.1200 crores, iron and steel Rs.2300 crores and edible oils about Rs.700 crores. That comes to around Rs.6200 crores. Add to that, Defence imports. A single purchase like the Bofors gun can carry a clout of a countervailing export of a few hundred crores. Similarly, large bulk imports of capital equipment like purchase of a fleet of Airbuses. I am aware that in some small way, organisations like the STC and MMTC make some attempt at insisting on a counter-export. But this can be done in a much more professional way. The leverage that counter-trade carries is much larger than the actual quantum of the imports involved.

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9. *International financial institutions can be a powerful potential source of exports*, if arranged in an organised way. The extent of the potential can be seen from the figures involved. For example, in 1989, the World Bank and the IDA approved projects to India of a value of just over Rs.2000 crores. India is one of the largest recipients of International financial lending. I read somewhere that it is of the order of about 10%. If that be so, the World Bank and the IDA lend funds for projects of a value around Rs.20,000 crores. Added to that is the Asian Development Bank, the African Development Bank and a number of other less known agencies. All of these agencies insist on member countries being allowed to participate in the supply, provided they meet certain criteria. Unfortunately, by far the bulk of that lending ends up in supplies by the developing countries. How can India take its rightful share? Our EXIM Bank is organised to provide complete data on projects which have been financed by these institutions. There is a monthly publication by the World Bank which lists out all the projects which are at the initial stages of consultation, projects which are likely to be tendered and projects which are actually tendered, and lists out details about the consultants involved. I would strongly recommend Indian companies, who have the requisite background and skills, to take advantage of this information. The World Bank at its headquarters has some 400 middle and senior officers from India. Our EXIM Bank has a well appointed office next to the World Bank headquarters. There is a fairly large number of qualified Indians who are on the roster of consultants, and more can be added. Bulk of the projects are of an infrastructural type – agricultural development, energy, transport, water supply and similar areas in which India has a fair amount of expertise. Can we use it to advantage?

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Finally, to sum up a rather disjointed story – if we are to respond to the global economic challenge, we might like to build on some of the following approaches and opportunities:

1. Think International – remember the Samsung story.
2. Look for niche markets – our resins in the US.
3. The potential for sourcing in India – a Silicon Valley in Pune and Bangalore ?
4. Our People Resource is our biggest strength – the 160 billion market for software.
5. Bilateral opportunities – with the COMECON collapse.
6. Service and training can give us the technical leadership of the Third World.
7. The counter-trade clout – think of Bofors.
8. International funding – let us get our rightful share as suppliers, as we do as borrowers.

Throughout this presentation, I have talked about the need for a sense of Mission. How would you define our Mission? Here is the Mission statement of our International Division:

> "It is our Mission to generate and fulfil the needs of markets around the world, through the export of goods and services in which we, as a country, enjoy a comparative or *competitive* advantage, and do so in a manner that brings glory to the words 'Made in India'."

I hope as a result of this exercise, some of you will be infected by the 'International Mission'. I can assure you that it is good business and it is good fun.

*(Concluded)*

Rohinton Aga



ROUND UP

# RELIABILITY by Design


*4th Design Engineers' Seminar: a good thing going.*

"We have been making quantum jumps in quality and reliability in the last 5 years. There are a host of products we manufacture which are, by far, better than competition. But we are no longer content with being better than our competitors in India. We have to be better than competition in the rest of the world."

That was the challenge that RDA put forward at the inaugural of the 4th Thermax Design Engineers' Seminar. And the design engineers took up the cue to make it their mission to design products that provide customer satisfaction worldwide. And appropriately, the theme this year was "Reliability by Design."

RDA further suggested the design engineers to select 20 per cent of the problems that account for 80 per cent of the fall in quality and reliability. And to remedy them – work out an action plan to build in quality and reliability – re-designing the product, the process, the function, the finish, the materials, the components, the packing, the despatch.

The seminar which was planned in 1988 to encourage exchange of experiences, expertise and improving interaction between different design departments within Thermax, has now become an institution. A brainchild of E.M. George, the seminar is conducted every year by heads of design in each division in turn. This year the seminar was efficiently conducted by K.K. Diwakar and Nitin Ambekar of TBW.

About 37 technical papers were presented this year during the 3-day seminar. Prizes for the best paper were given to D.D. Dhokre (Value Engineering – a case study), R.R. Vaidya (Material handling in paint shops) and D.W. Bapat (Fluid bed dryers).

The 5th seminar will be conducted by P.A. Rane of (WWWTD) and the theme will be an encore. No surprise. Not just design with a capital 'D' but reliability with a capital 'R'.

## "Don't just own a design. Own a product."

**That's what the Chief suggested at the design engineers' seminar – to change focus from owning a design to owning a product :**

**"When you own a product, you interact with Materials, with the shop-floor where the product is made, with the erection and commissioning engineer. When you own a product, you cannot say: it's a beautiful design but a lousy product. When you own a product, it is like your child – you cannot disown it. We lavish care and understanding and joy and tears. It is your offspring and you are proud. If you can own your product with pride – quality and reliability must follow."**

# 50 PROCESS HEAT CROSSES THE HALF CENTURY MARK

Process Heat had quite an achievement to celebrate at the Poona Club on March 30, 1991. The Division crossed the magic Rs.50 crore turnover figure for 1990-91 – and plans have already been chalked out for a dramatic improvement in the coming years.

Prakash Suryanarayan, however, is not charmed by turnover figures. He has a totally different outlook on performance. "We want to achieve Quality sales – which means sales through total customer service. In fact, for the coming year we have plans to internalise the 'Quality means, we care' concept – giving the customer a better, quicker and hard-to-forget deal."

What are the strengths of PHD that makes it a high flyer performer? Prakash's immediate answer is – "quick response to internal strategies." For all the PHD boys at the front, Prakash has one simple message for the coming year – The Customer is King.

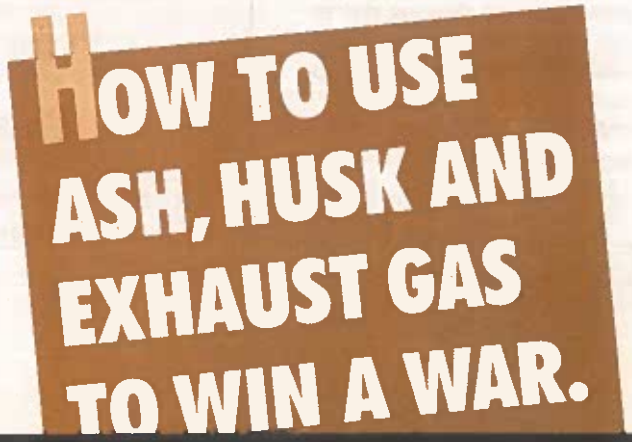
# Energy management cell gets into action

Process Heat, Heat Recovery and TBW – all have a range of energy generation and recovery systems for various applications in Industry. However, a single point access for customers to know about our range and capabilities was found lacking. And to fill this gap the Energy Management Cell (EMC) has been created to help customers use energy more efficiently.

Set up under Dr. N.D. Joshi, the EMC will offer a special service to customers to identify ways and means of saving energy by conducting utilization studies. Such studies of industrial processes will aim at uncovering hidden potentials for efficient energy management. These studies will, however, not carry an obligation for the customer to buy equipment from Thermax, though it would certainly inform them of what is available from various divisions.

The EMC has already got a major push in the market through the special advertisement – "How to use ash, husk and exhaust gases to win a war" – which was released in the national media recently. The EMC is flooded with enquiries generated by the ad. Though most of them pertain to divisional products, a significant number seek advice on how to manage energy better. The Cell is currently negotiating with a large multinational company to conduct an Energy Utilisation Study in two of their factories.

Shishir Athale has been specially recruited to head the Cell and will be assisted by P. Charles and A. George.



# TOTAL LOSS CONTROL PROGRAMME LAUNCHED

*Shedge receiving the trophy from RDA: safety awareness has come to stay.*

A Total Loss Control Programme – an advanced concept in safety management – has been launched at our Chinchwad works. Thermax will be the second Indian company to practise such a programme in the country. The new programme would aim at preventing property damage and unsafe practices. All machines, equipment, materials, semi-finished and finished products, installations and buildings will be covered under this programme.

The safety performance at Thermax during the last three years has been remarkably good and the Injury Rate Index in all its plants have registered very low or even zero percentages. Awareness of safety is given prime importance in the on-going programme. About 17 safety committees at Chinchwad meet regularly to discuss implementation of innovative safety methods.

As part of the Safety Week celebrations a Safety slogan and poster competition was held and the winners were given prizes for their creative work. Also, R.D. Aga presented prizes to B.G. Shedge of Plant II and D.D. Dhorge of Plant IV in the Inter-Department Safety Contest.

# POST-HARVEST SHOWS NEW SENSE OF PURPOSE

Performance has its own rewards. A breakeven for instance. Post Harvest Division has come the distance to achieve it – thanks to the unstinted efforts put in by a motivated team.

New products and applications have been introduced with a fresh strategy and purpose. The Sugar dryer cum cooler based on our established fluidised bed technology, mobile silos for transporting poultry feed, large capacity silos made of mild steel which are more economical than the conventional GIC silos – are some of the new successful products in their portfolio.

An international marketing thrust was also pursued. The silo system of 1000 MT alongwith conveyors and cleaning system for the storage of palm kernel was erected and commissioned in record time at Tip Top Industries, Nigeria.

Post Harvest has a lot of plans for the future. Large capacity precleaners, fluidised bed grain/pulse dryers, sugarcane harvestors and a range of conveying equipment – is just a sampling. The sun is shining full and bright at Post-Harvest.

## QUALITY IS-FOR-ME CONTEST

**DATE EXTENDED TO JUNE 15, 1991**

Quality is a person who answers the phone on the second ring (if not the first) .... Quality is a father who hugs his kids .... Quality is a husband who remembers to pick up the chicken on his way home .... Quality is a manager who shares information with his team .... Quality is an accountant who says "Yes" .... Quality is an assistant who can make things happen.... The examples are endless. Cull out the quality "examples" from your own personal and professional experience .... write 200/250 words on Quality-For-Me-Is .....

Remember, there are cash prizes of Rs.500/-, 300/- and 200/- for the best entries.

# Themes for our times:

# Synergy at work & Energy Maximisation

R.D. Aga put forward a vision of an organisation "where people take on ownership without owning," at a programme on 'Total employee involvement : Synergy at work,' conducted by CEI, Southern Region at Madras.

Elaborating on the point of the entrepreneurial culture within an organisation, he said that it starts with the articulation of a vision and a purpose that makes it worth while to belong to the organisation. The statement of a mission empowers people within small groups to stretch out and take on ownership for performance, results and growth.

RDA suggested a management culture which is informal, flexible and participative – retaining, at all times, the human touch. "The one single factor that breathes life into an organisation is the human resource – a resource expressed not in terms of numbers or in terms of costs, but in terms of the value it generates."

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At a two-day seminar on 'Review of Energy Conservation Decade in Industries' organised by the local chapter of the Institute of Engineers, RDA in his keynote address emphasised the need for co-generation and harnessing waste heat in the context of the prevailing energy situation.

# Thermax acquires space at the Software Technology Park

Pune's proposed Software Technology Park is a 100% export-oriented project for software development, and will be under the technical supervision of the Department of Electronics. The Park has acquired 10 acres of land at the Bhosari Block, Pimpri-Chinchwad Industrial Area,for the construction of the main building and creation of the necessary infrastructure facilities like high-speed communication. A dedicated satellite earth station is part of the plan.

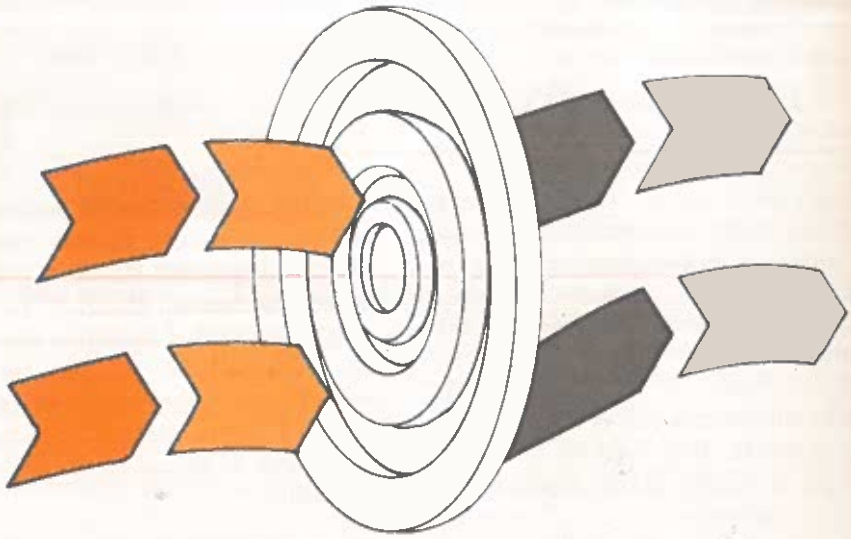
No import licence is required for the import of equipment into the Park. The Department of Electronics issues an import certificate, which enables the exporter to import duty-free equipment into the Technology Park area. The export commitment is based on factors such as the cost of the imported equipment, the type of software developed and the cost of manpower.

# First chemical effluent treatment plant successfully commissioned

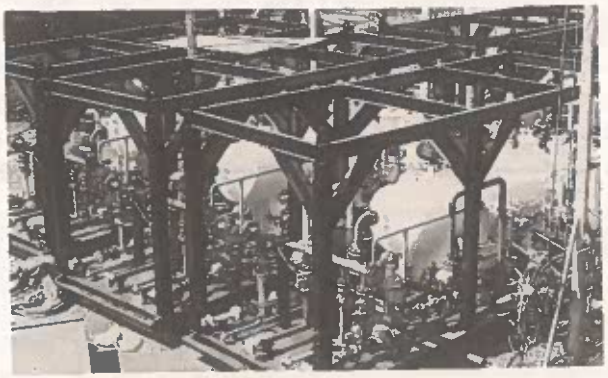
The first effluent treatment plant based on chemical processes for removal of toxic pollutants was successfully designed, engineered and commissioned by the Waste Water Treatment Group at Subros Limited, Delhi. The effluent treatment removes toxic metals like hexavalent chromium, zinc, fluoride along with other pollutants.

To meet the stringent standards of U.P. Pollution Control Board, the conventional two-stage precipitation of pollutants was achieved in single-stage reaction tanks with intermediate settling, due to space restrictions at site. Among other equipment, agitators with 3-meter long shafts were also designed and fabricated in-house for the first time.

Good show, and our congratulations to the Waste Water Treatment team.



# Quality is never having to say 'Sorry, we are late!'



*Skid-mounted separators: excellence in design and delivery.*

March 22nd saw a jubilant CPPD project team gear up to despatch five sleek, skid-mounted oil and gas separators to ONGC. The jubilation was justified. The separators were fabricated in record time and despatched well before the stipulated delivery date.

Manufactured to stringent ASME and NACE codes, these units are designed to separate 700 cu.m. of oil, 350 cu.m. of water and 0.75 million std. cu. m. of natural gas per day. They can operate upto pressures of 600 psig.

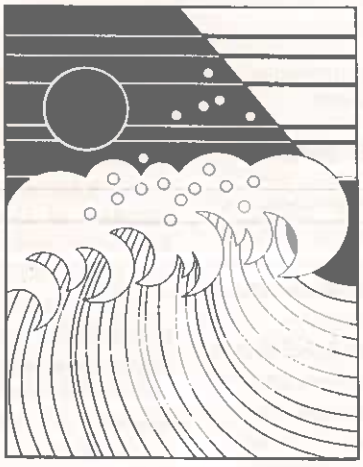
Since the units would be installed in remote areas, the separated natural gas itself is utilised for the operation of the pneumatic instrumentation. This has been achieved by installing in-built $H_2S$ scrubbers and driers, to sweeten and dry the natural gas – a process which has been utilised for the first time in India.

# INDIA'S FIRST SEA-WATER DESALINATION PLANT ON STREAM

Chemical Division has scored another first. India's first sea water desalination plant was successfully commissioned by Thermax at the Gujarat State Fertilizer Corporation for their Sikka unit.

GSFC had requested that the plant be commissioned before March 31, 1991 and after relentless effort by the project team, headed by A.R. Trivedi, the plant was on stream on March 28th.

The plant costing Rs. 1.4 crores,treats 50 $M^3$/hr of sea water with 30% product recovery. It incorporates high rejection TFC membranes which give treated quality of less than 500 ppm in a single stage operation. The plant is equipped with sophisticated controls and an energy recovery system to curtail power consumption.



# KHERDEKAR ELECTED TO THE NATIONAL COUNCIL OF IIIE

In the nation-wide elections of the Indian Institution of Industrial Engineers (IIIE), R.W. Kherdekar of Manufacturing was elected to the National Council. Next to Dr. Thomas Mathew of NITIE, who is currently the chairman of IIIE, Kherdekar won the maximum number of votes. Kherdekar will hold an important position for the next three years in this organising body of professional industrial engineers.

Our hearty congratulations !

# Bhide and Sandhya in the limelight

C.D. Bhide of International got an award for lighting effects and Sandhya Pandit of Electronics got a merit certificate for her acting talent in the one-act play competition held at Vai by Prateek Theatre.

Well done, folks !

# 2ND Quality Circle Convention marks renewed enthusiasm

Thirteen quality circles from Thermax made presentations at the Quality Circle Convention at the Turf Club on April 3, 1991. A variety of problems – from tackling the menace of redundant circulars to eliminating leakage in TOCs – and their innovative solutions were shared with the 200-strong participants.

Thermax today has 22 quality circles with a membership of 206 people. R.D. Aga and D.L. Shah of PMT spoke at the inaugural session and Mrs. Lila Poonawalla presented a brief on the Pune Chapter of QCFI.

*Quality Circle Convention: an all-round success.*

# Computer Systems and Electronics become ONE

The considerable synergy between Computer Systems and Electronics has led to their merger into one single integrated division. P.D. Chansarkar has taken overall charge of the new Computer Systems Division.

The major thrust areas for the merged division are :

- ★ Data communication systems, including the new activity of Microcom modems.
- ★ Parallel processing based supercomputer, for which Thermax has tied up with C-DAC.
- ★ Real time systems which provide on-line data acquisition/process control.
- ★ Software/hardware based products/ projects in domestic markets.
- ★ A separate focus on software exports by way of deputing consultants as well as taking projects abroad.
- ★ Electronics components such as carbon and metal film resistors.

The priorities for the new division are in the areas of high-competence development, product engineering and creative marketing. State-of-the-art manufacturing facilities to produce hi-tech, quality products will also be created. The merged division will function as a matrix organisation at a senior level and across the division.

Dr. R. Narayanasamy, who has a wealth of experience in computer hardware and software has joined the division. The new activities of C-DAC supercomputer and Microcom modems would be handled under his leadership.

R.D. Hinduja would shoulder the responsibility of development and engineering across the division, while continuing to be in full charge of software exports. S.S. Kittur will take on full responsibility of marketing and manufacturing, while retaining full charge of electronics components.

# THE SHOW GOES ON

Exhibitions, they like Thermax. No wonder that the exhibition programme was packed to capacity. The 9th Indian Engineering Trade Fair, (Delhi), India Trade Fair (Manila), Consumexpo (Moscow), Avtoservis (Moscow), Cebit '91 (Hanover) and the VIA Industrial Fair (Vapi) – they all had Thermax stalls standing big and proud.

The 9th IETF in Delhi aired our mission areas – Energy, Environment & Exports. The Manila fair displayed our boiler technology and trading flair. Consumexpo brought Indian consumer durables upfront for the Russian populace. Cebit '91 was the testing ground for our computer software expertise, datacom products and of course our supercomputer – Param.

The Vapi show opened up new avenues for energy products. Avtoservis – a garage equipment exhibition – is about to begin in Moscow.

The upshot – good business, contracts signed, enquiries generated.

*Thermax does it in style: in Delhi, Hanover, Manila, and more.*

# Our man in Bangkok

S.K. Vishwanathan from International Division has been posted in Bangkok to man the newly opened overseas office. Bangkok is the hub of one of the fastest growing markets in South East Asia – throwing up its own challenges. With this new addition, Thermax now has a network of 5 overseas offices. Here's wishing 'Vish' all the best.

# CSD extends a helping hand to two more divisions

The Business Application Group of CSD has developed two more systems for in-Company use :

**Company Leased Accommodation System**

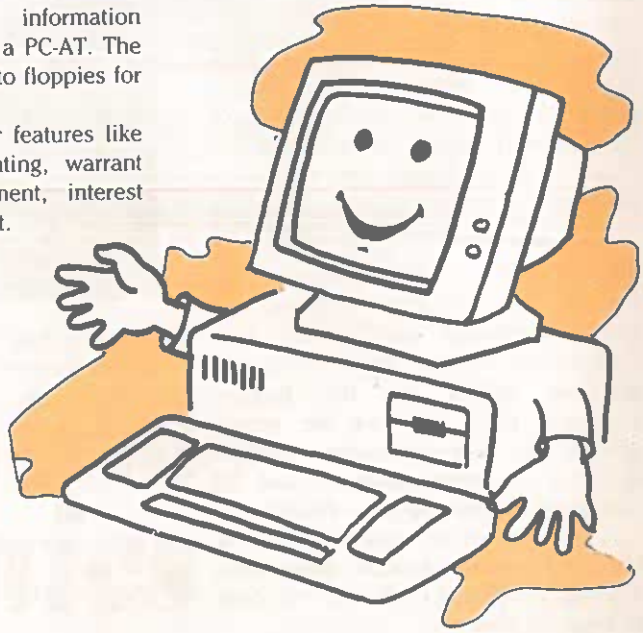
Thermax has a number of transit houses, holiday homes, offices and residential apartments that have been taken on lease in different parts of the country and abroad, for various durations of time. The software package – Company Leased Accommodation (CLA) – helps the Administration Department execute this marathon task as effectively as possible.

The system maintains a database on houses available for lease, employees waiting for a house, finalised leases, closed leases, a record of all payments made and agent details. Using this information, the system is able to print reports about Division-wise and Company-wise monetary outflow, expiring leases and salary deductions.

**Fixed Deposit System**

The Fixed Deposit System for Finance, processes information from the time a depositor comes to the company to invest upto the time that the deposit matures. The system captures all information regarding new deposits on a PC-AT. The data is then transferred on to floppies for processing on the VAX.

The system provides for features like fixed deposit receipt printing, warrant printing, brokerage statement, interest register and bank statement.



# International Shield of Honour

K.B. Gokhale received the EEPC Regional Top Exporters' Shield in the Trading and Export House category from Union Commerce Minister Subramaniam Swamy at a well-attended function in New Delhi, recently.

The award has been given to Thermax for its innovative spirit in finding first-time markets for Indian engineering goods in world markets. The company has secured large value contracts for a wide range of products such as castings, forgings, machine tools, plastic moulding machines, textile machinery, pumps, computers and computer software. And the list is ever growing.

# MATCH POINT

**The recently formed Thermax Tennis Team showed an impressive performance in the "Flood light Inter-Industry Tennis Tournament", conducted at Pune.**

**In the singles event K. Rajaram (WWWTD) and K. N. Gokhale (WWWTD) reached the quarter finals. In the doubles event, the pair of Dhaval Shirole (SCSD) and Naresh Kumar (Chesterton) reached the semi-finals.**

# *Hema Malini and Thermax contribute jointly to a noble cause*

The Blind Men's Association and Rotary Club of Downtown, Pune,organised a "Durga" ballet by the tinsel queen Hema Malini to help the cause of the blind. Thermax co-sponsored the programme to collect funds for a 50-bed hospital for the blind.

The ballet was a high point in the cultural calendar of Poona.

*Hema Malini gets a standing ovation: a good deed for a good cause.*

*What a relief from Mahableshwar and Ooty ! A holiday home in Goa is now a reality.*

# GOA
## WHAT A TERRIFIC IDEA!

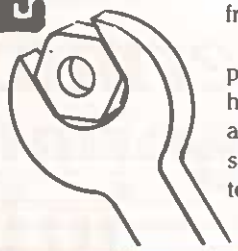
Seven kilometers from Panjim, is a cottage called La-Conchita – overseeing the Arabian sea. That's the new Thermax holiday home available to employees from April 28, 1991.

A two-bedroom affair, the cottage can take in 4-5 people for a 6-day break. Fully furnished with complete kitchen appliances, the cottage has a full time caretaker to help you make the holiday complete.

There are several eating houses nearby and what's more the cottage is a stone's throw away from the Dona Paula jetty which provides joy rides in motor boats. A very quiet lagoon is strategically located next to the cottage for a cool dip.

What are you waiting for? Pick up that phone and ring up Doctor or Ganga. That's if you heed the warning – "Book in advance to avoid disappointment."

# TECHNICAL TRAINING CENTRE TO BE SET UP



A Technical Training Centre will be set up at the R&D Complex in Chinchwad as a corporate resource for hands-on technical training for our engineers, customer operators, franchisees and agents. The Centre involves a workshop with live products, working models apart from tailor-made training aids.

The Centre is being planned to meet a pressing need for training of people who have to make the product, market it, erect and commission it, service it, trouble-shoot it and constantly update the technology and the product. The Centre will not only give the trainee engineers and operating personnel a feel for the product, but also provide well-thought out training inputs for our dedicated team of agents and franchisees.

While Dr. N.D. Joshi will manage the overall function, D.S. Kute (formerly Bombay Service Chief) will take charge of the Training Centre. Since the canvas is fairly large the Centre, in the first year, will focus on products and systems of PHD, HRD, WTD and Air Pollution. Gradually, the resource will be available to other divisions.

# The BIG Idea for the Quality Month

# Economix Dealers

# MIXING FUEL ADDITIVES WITH BUSINESS ACUMEN

Looking back, one can say that starting the Economix dealership network was a sound business decision. The dealer operation started in 1985 with a turnover of Rs.20 lakhs and has today crossed the Rs.3 crore mark.

We bring you five success snapshots from our dealer network.

*Nikhil Engineering, Kanpur* : Proprietors Ranjan and Sanjay Kulkshreshtha have a turnover of Rs. 55 lakhs. With 15 sales people and 8 service engineers, they have made their mark in the U.P. sugar industry. Their target is Rs.90 lakhs for the coming year.

*Thermochem Corporation, Bangalore* : With a turnover of Rs.30 lakhs, CNC Unny has been instrumental in getting the Rs.10 lakh Kudremukh order. His target for 1991-92 is Rs.45 lakhs.

*Optima Corporation, Thane* : Charu Devasthale left his job in Thermax Enviro, joined his elder brother Devendra (already a Thermax franchisee) to start Optima 2 years back. Today they have a turnover of Rs.22 lakhs. They were responsible for the largest order of Rs.43 lakhs from Reliance Industries for our Thermosol additives.

*Pioneer Erectors, Calcutta* : T.K. Bakshi's major contribution was to establish the Economix business at the Calcutta Electric Supply Corporation – resulting in an order of Rs.33 lakhs. He ended the last year with a turnover of Rs.24 lakhs.

*Micromeg Enterprises, Chandigarh* : P.S. Arora and Pahwa have been going great guns in the Punjab markets – a region with a majority of husk-fired boilers. Their turnover stands at Rs.22 lakhs.

With the fuel crunch showing signs of getting worse, this business has only one way to go – UP.

# ONE MORE GOLD FOR SANJAY LALWANI

Sanjay, son of K.D. Lalwani of HRD, who was featured in our Oct – Dec, 1988 issue of *Fireside* for his brilliant performance in the final year of medicine is currently doing his MD in Paediatrics. He was presented with the prestigious Pfizer post graduate medical award – medallion, scroll of honour and a scholarship – at a glittering function held in the Indian Academy of Paediatrics. This was for standing first in the Pune University in the final MBBS exams. Sanjay is planning to do his doctorate in Neonatology which is a very super special field.

Surprisingly, he is deeply interested in interior decoration and is an active partner of a firm which did up prestigious interiors like Thermax Chemicals, RIECO, etc.

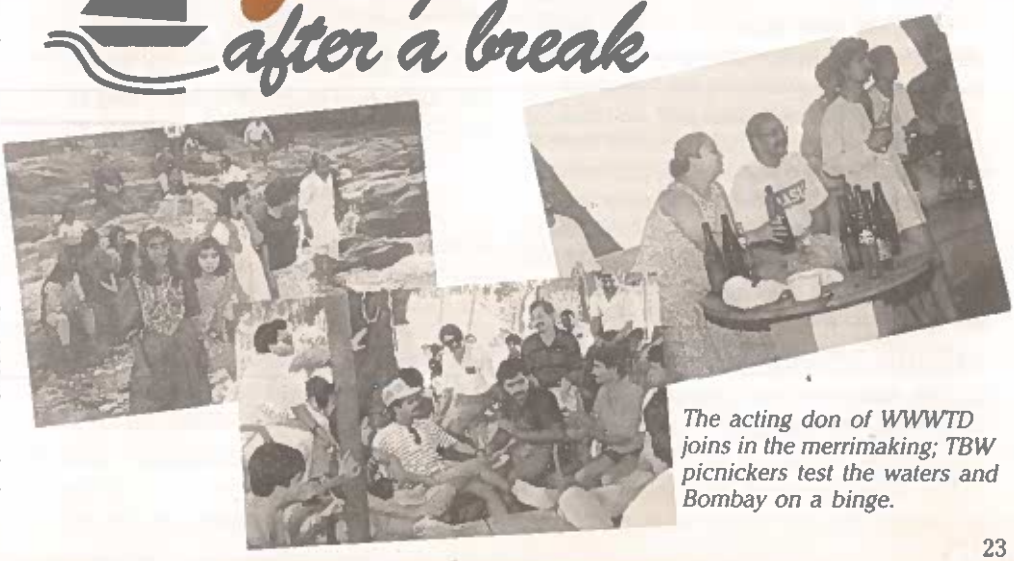
Keep up the hard work Sanjay !

# 7 things work better after a break

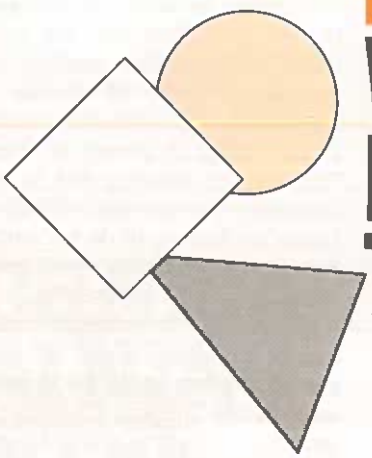
Not the chocolate variety. This time it was a real break for Bombay office, WTD and TBW – from the monotony of invoicing, despatches and year-end blues.

Bombay office did it in style. They sailed from the Gateway of India in a special launch headed for Kihim beach. They called it their "dawn to dusk freakout." The project and field engineering team of TBW sang, danced and generally had a good time in the natural surrounding of Baneshwar – trees, waterfalls, monkeys, birds .... et. al.

WTD planned a rather longer holiday – three days to be exact. Shaila Kumtha had it all organised. Pune to Lonavala – next stop – Murud Jhanjira – 2 days there – further down to Alibaug. It was fun and frolic all the way. Two bus loads had a 100-strong WTD team back in Pune on Sunday evening. Hic !



*The acting don of WWWTD joins in the merrimaking; TBW picnickers test the waters and Bombay on a binge.*



# WHY YOU NEED THE INDUSTRIAL DESIGNER

**Because he bridges the gap between engineering and the user, an industrial designer can help make products more attractive and saleable.**

Increased competition at home and abroad is putting the pressure on manufacturers to produce better products. While improved quality and cost control is part of the answer, the real challenge is to create products that are more in tune with what users want. This means that someone who speaks for the user must be heard at the start of the product-development process – which is where the industrial designer comes in.

## GET HIM INVOLVED EARLY

The traditional way that products are developed makes user advocacy difficult. It is basically a linear process. Someone gets an idea for a new product. If management thinks that the idea is sound, marketing conducts the preliminary research. If marketing approves the project, product engineers develop the product. After a working model is produced, manufacturing engineers find a way to produce the device. Only in the final stage of the project may an industrial designer be asked to create an attractive shell for the product.

By this time, the basic character and cost structure of the product have been set. If major discrepancies exist between the design and operation of the product on the one hand, and market requirements on the other, they will be discovered only after the product fails to sell or develops problems in the field. At this point, the only "fixes" are to redesign the product or replace it with a new model – options that are quite costly in terms of profits and the company's reputation.

Such debacles can be minimised by getting an industrial designer involved at the start of the development process. Whether he is tapped from an in-house department or brought in from outside, he should be made an integral part of the project team and encouraged to play an active role.

## CREATE A CONCEPT

As a member of the product development team, the designer's first task is to help to create the all-important product definition: how the product will work, interface with the user, and be manufactured. This is not a specification that describes the product in terms of

components, dimensions, and operational parameters. *Instead, it unites team members around a common conception of the product and serves as a roadmap for the project.*

The industrial designer's charge at this point is to help keep the definition as functionally general as possible, for as long as possible. Typically, the tendency of other members – especially technical participants – is to narrow the definition as quickly as possible. This puts the design on a specific course before all the possible user ramifications can be explored. And once this course is set, corrections are harder to make.

To illustrate the designer's role, suppose that the team is considering a product for ridding homes of mice. The usual approach would be to focus attention on existing products and to try to design a better version. By forcing team members to consider the function of the product, the designer may help to trigger new and more user-desirable options. Question that might be asked include: Does it matter if the product kills the mice? If not, would users take to the product more if it forces the mice to move away or attract them to a designated location?

This discussion about function – without getting particular about construction, manufacture, or operation – should continue until a consensus is reached. Once the most-general aspects of the product are decided, attention is shifted to new levels of enquiry: What various means are available for achieving the functional purpose? What resources are available for producing the product? Can the product be manufactured at existing in-house facilities?

Consensus at each level of inquiry provides additional details for the product definition. In its final form, the product definition should *not* be a list of features, parts and dimensions. It should state, in concise terms, the basic objective of the product in terms of function, the market to be served, usability, manufacturability, serviceability, aesthetics, and safety.

As work on the product definition proceeds, there will be a tendency for team members to stray from what was decided earlier. Certain "practical" considerations will come to the fore, putting pressure on the group to compromise with the basic user-oriented concept. But if the task of defining product function was done right, sticking to what was agreed on is vital to the product's success. *The job of the industrial designer is to gently remind other team member's of this fact.*

## SONY takes it seriously

Eighteen years ago, executives at Sony asked themselves how they could become more competitive in American markets. The result of their inquiry was the establishment of a Design Centre in Park Ridge, NJ. The purpose of the new centre was to translate what was learned about American needs and desires into new products. Examples of what was produced include Trinitron-tube TVs, Walkman cassette stereos, and handheld Watchman TVs. What accounts for Sony's astounding success? "Industrial designers at Sony have to be product planners, marketers and even advertising creators at times," explains Aki Amanuma, director of the Design Center. Also, job assignments are very flexible so that designers do not get locked into narrow projects or specialities. In addition, each designer has an opportunity to explain his own work and projects to top management. According to Amanuma, "These practices get management involved in the designer's work and helps to keep the designer's morale at a peak."

### STAY ON COURSE

Once the product definition is completed, the industrial designer may be asked to make initial sketches and drawings of the product. His presentation marks the transit from a stage in which the product is thought of in general terms to a stage in which it is thought of in specific terms. It is also the stage at which each member of the project team will be providing input from his own department, making co-ordination of the various efforts imperative. By virtue of his training and orientation, the industrial designer is aptly-qualified to provide such co-ordi'-nation.

In this role, the designer makes three major contributions to the subsequent development of the product.

- Assure that the product is as simple as possible and easy to use. His ideal in this regard is to help create a product that is so easy to use that a user's manual is not required.
- Oversee product aesthetics so that the product is made as attractive as possible to potential buyers.
- Make the product easy to manufacture – which has a direct bearing on the cost of the product and, thus, the competitive price of the product. Examples of the latter function include reducing the number of parts used, specifying more economical or more available parts and materials, designing the product to make more efficient use of existing manufacturing capabilities, and reducing the shipping weight of the product.

In the course of doing his work, the industrial designer acts as a concepts creator and facilitator when questions about executing the product definition are raised, and as the buyer's or end-user's representative when problems about the product's use and operation arise. Thus, he bridges the gap between marketing and engineering.

Efforts to make full use of the industrial designer is likely to run up against well-entrenched resistance. This is because industrial design is typically thought of as dealing only with "styling" especially in organisations that manage product development in a linear fashion. Naturally, this function is downgraded as secondary to "technical" design.

But, properly understood, the industrial designer's role goes far beyond styling to include all of those human elements that

# Creating a need CREATIVELY

Good design is much more than just a stylistic flourish – it's a competitive weapon. By using design as a strategic tool, companies can get back to basics; making quality products that people need to buy. Crown Equipment Corp, for example, virtually opened up a new market recently when it built a forklift truck with the help of Fitch Richardson Smith, an industrial-design firm. The Turret Stockpicker increased warehouse storage capacity dramatically by permitting loads to be stacked much higher. It created a need.

our products seem to be lacking in competition with foreign goods. In addition, styling, itself, should not be minimized when products for which appearance is important. While performance, reliability, and safety should not be compromised for the sake of aesthetics, styling should get more attention than is usually given to it.

On the basis of the industrial designer's initial drawings of the product, members of the development team critique the design and identify the challenges that it would present to their departments. They develop possible solutions and study the implications of executing them. This information is brought back to the conference table, where team members negotiate the best trade-offs.

Negotiations should be undertaken with frequent reference to the product definition. Whenever a proposed change deviates from the definition, the industrial designer should ask: Does this change improve or detract from the product as originally conceived ? Once trade-offs have been negotiated, rough cost estimates can be produced.

The next step is for the industrial designer to produce another series of drawings and, perhaps, a rough model of the design. Typically, this provokes a great deal of discussion. While discussion is good, there are pitfalls. For example, there is a tendency to resolve perceived problems too quickly. If this tendency is not checked, the product definition will be ignored and the final product will be a far cry from what was originally thought to be desirable. This does not mean that the product definition cannot be changed. But it should be changed with consciousness of what is being done and for the better of the end product.

From here on in the product development process – prototype design and construction, final design and manufacture, and redesign – the technical disciplines play a more active role and the role of industrial design is correspondingly reduced. This is the reverse of what usually happens in the traditional product-development process. At this stage, the industrial designer will either be creating engineering details or monitoring the project to make sure that it is carried out in accord with the product definition.

This does not mean that the importance of the designer's role is lessened as the project proceeds; only that he will probably have less to do. For example, in the final design for manufacture, the object is to begin a pilot run of the manufacturing process. This is a debugging process and is concerned mostly with technical details. However, whenever something does not work smoothly, the first temptation is to eliminate some non-functional aspect of the product – such as user-convenience or aesthetics. If this is allowed to happen, all of the effort to make the product more appealing and, therefore, more saleable will go out of the window. The industrial designer must make sure that this does not happen.

## ADVICE FROM THE FIRING LINE

Getting input from the field takes many forms. When consumer-preference surveys are too expensive, company efforts must be more personal. For example, NAD Electronics got its industrial designer to tap the views of retail sales people in the design of its new line of stereo equipment. "These people know what sells and why," explains John Dahl, manager of product planning and development. "As a result of their input, we went to a clean, less-complex looking design that paid special attention to details, such as controls that are easy to use and understand."

The extent to which some companies are going to assure that their products will be easy to use is epitomized by the efforts of Radiation Monitoring Devices (RMD) Inc., a manufacturer of nuclear instruments for making industrial and medical measurements. In responding to a government need for a portable narcotics scanner for monitoring vehicles at check points, RMD responded with a design based on what users believed was necessary. "We even made cardboard models of each design," says Gerald Entine, president of the company. "By being able to actually handle and 'use' a design, we were able to make decisions as to whether or not user needs and concerns were being properly met."

# NEW PRIORITIES FOR OLD

I had breakfast with a friend the morning after he had celebrated his fortieth birthday. He had that sense of regret coupled with the fairly profound wisdom of those who have celebrated over-well. He said to me, morosely pushing a morsel of poached eggs around his plate :

"You know, Stephen, as I get older I've had to reconsider the priorities in life."

I struck the pose of a credulous martyr, but inside I was resigned to a homily about the virtues of pastoral poetry, family life, experimental communion with the Godhead and 'philosophy'. Instead, my friend said to me :

"And I'm more than ever certain that they are sex, drink and fast cars".

The fantasies and aspirations and appetites of most of the world are summarized in that one bathetic sentence....

*– From 'Sex, Drink and Fast Cars' by Stephen Bayley*

# THE STOCK EXCHANGE OF LIFE

One day I sat down and tried to list out the various 'exchanges' that take place during our lifetime. Here are some of them :

In childhood we exchange cheeky smiles for chocolates
In school we exchange tuition fees for education
In extra-curricular activities we exchange talent for prizes
In college we exchange pleasantries for friendship
In competitions we exchange creativity for awards
In society we exchange affection for love
In industry we exchange ideas for growth
In retirement we exchange lifestyle for memories.

*– Achintya Lahiri (Bombay)*

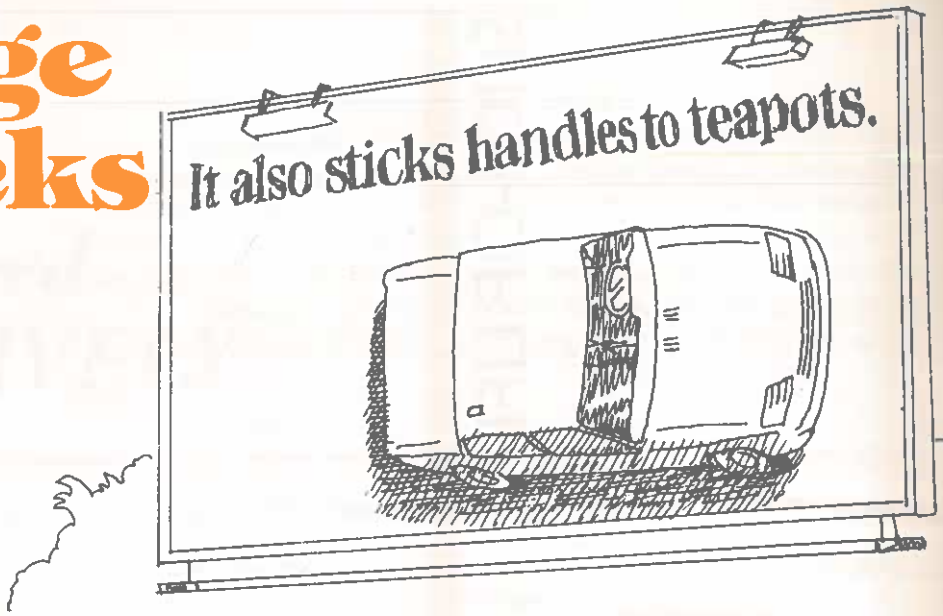
# A message that sticks

A UK resin-bond manufacturer wanted its advertising agency to produce a campaign which would say a little more than "this glue sticks anything to anything."

The ad agency came up with a dramatic idea – Let's stick a car to a hoarding. The campaign opened with a Ford Cortina stuck to a hoarding with the words, "It also sticks handles to teapots".

Touché !

*(Courtesy : Service for Communicators)*




# 1945

## TOYING WITH NEW IDEAS

Immediately after the devastation of WW II, the Japanese started rebuilding their society – brick by brick, emotion by emotion, idea by idea. And building and nurturing team spirit was uppermost on their agenda. An example : by a Government decree all children's toys and playthings were made *heavier*. This was pure Japanese pragmatic logic. Heavier toys would discourage children from monopolising them – and would encourage group play and sharing.

Amazing!

*– Contributed by R. Ramdas(relating his experiences at a TQM Seminar)*

We are survivors ! Consider the changes we have witnessed. We were before television, before penicillin, before polio shots, frozen foods, xerox, contact lenses and oral contraceptives.

We were before radar, credit cards, split atoms, laser beams and ball point pens; before dishwashers, clothes dryers, air conditioners, drip-dry clothing – and before man walked on the moon !

We got married first and then lived together. Having a meaningful relationship meant getting along well with our cousins. Outer space meant the back of the local theatre !

We were before house husbands, gay rights, computer dating, dual careers, group therapy, nursing homes. We never heard of FM radio, tape decks, electric typewriters, word processors, artificial hearts, kidney transplants, eye-banks.

Time-sharing meant togetherness – not computers or ownership flats. A chip meant a piece of wood; hardware meant hardware; and software was not even a word !

Pizza and instant coffee were unheard of. "Made in Japan" meant junk in 1940. Drugs meant medicines and grass was only for cattle, coke was just a cold drink and pot was something we cooked in.

Rock music was a grandmother's lullaby and aids were helpers in the office. We were before the sex change operations. We were the last generation that was so dumb to think that a husband was needed to have a baby !

But we survived !

What better reason to celebrate ?

*(Courtesy : Business India)*

## WORK IS THE GREATEST THING IN THE WORLD. WE SHOULD SAVE SOME OF IT FOR TOMORROW!

*– Discovered in the Publicity Department*

# The old must give way to the young

After spending 25 years with Thermax, of which the last 18 years in exports, and having turned 60 this month, I have decided to retire at the end of this month (March, 1991).

**A few reminiscences :**

As a Product Manager, first for the Vaporax boiler and later for Thermopac, I was associated in marketing these first two war-horses of the company in the years 1966-71. Almost looks like Methuselah's time.

Exports was started in 1973 by participating in an exhibition in Singapore, then an odyssey to 10 countries in South East Asia for finding buyers and agents, when very few in the territory welcomed Indian engineering products. Yet, the products displayed in the exhibition were sold, one Vaporax and one Thermopac.

The same year, a visiting delegation from the Soviet Union gave specifications for a car spray painting and drying chamber. A trial order for 10 was taken. The total value of the export orders in 1973 was about Rs.8 lacs. From that, to Rs.82 crores last year is a long way of strenuous efforts. The tally of paint booths has crossed the mark of 2000.

The first Thermocontainer order in 1979 was received after 3 years of struggle from 1976. We have crossed the 500 mark for Thermocontainers. In Trading, many products from many reputed companies.

Five foreign offices.

We are now one of the top five Indian engineering exporters and the leading one to the Soviet Union.

Many have helped in the effort and extended co-operation and friendship. The list is long. To name a few, working with Dr. N.D. Joshi and Prakash Kulkarni as a team for Thermopac design in 1968-73 was a great pleasure. For paint booths, Thermocontainers and MSGs, Kabby and Baji Gagrat – ably supported by Engineering and Purchase – were very co-operative.

From 1980-84, relation with Gagan Patwardhan became very warm in numerous visits to Moscow. Thereafter, when we opened an office in Moscow and he took charge and a year later, when Trading was started, the relationship continued till 1988 when he returned and soon left for starting his own business.

In Human Resources, Anu and Lalitha have been most helpful.

I thank Keshav Gokhale, Kanade, Gureja, Pradeep Sen, Abhay Nalawade and many others for their help and co-operation.

Exports is an expensive operation and, unless top management is willing to take the risk and spend money, no company can achieve success in exports. Mr. Aga personally involved himself and gave moral and financial support to the export activity. I was given a lot of freedom; otherwise, it would have been constraining.

Rajgopal and his team took responsibility for all commercial matters in exports most efficiently from day one.

And, finally, the unflinching loyalty and support given by my secretaries – first, Sheroo and then, Dolly – helped immensely.

The old must give way to the young. Dilip Badwe, who has taken over charge from me, has got long experience in exports and is meticulous. The depreciated value of the Indian Rupee will also help in opening up exports to new territories, such as Japan and Australia. Under his leadership, exports should grow further.

After such a long period, the self and the company become an "Advait". Parting is a sweet sorrow.

Goodbye to all of you.

*– M.P. Rao*


The deadline given by the highest authority was coming close. 15th February latest by 17.30 hours Indian Standard Time, the execution of 'Operation Park Plaza' was supposed to be successfully over.

Tension was mounting all around. Sanction for ammunition was already granted. But the question was asked whether it will reach in time at the right place. Three sets of action plans were kept ready to derive maximum effectiveness out of the whole operation.

Almost three years ago when we discovered this new "Promised Land" nobody ever dreamt that within such a short period we would have to face the consequences of unplanned population explosion ! As our community does not believe in birth control, and at the same time finding out new places is not always cost-effective, we had to look out for some other solutions. And this had given birth to 'Operation Park Plaza!' The whole idea was to maximise utilisation of every inch of our land for the benefit of our citizens as per their rank and file.

The first strategic move was to convert a big 'playground' into a concrete jungle accommodating eight long-deprived citizens. Communication facilities were also provided to them. "What about our valuable belongings ? Where to keep them ?" Very valid question. So, we raided almost all the supply stores in the city and carlifted whatever we required on a war-footing.

Another important development was the growing dissatisfaction amongst those well-placed citizens who had to forgo some small part of their earlier alloted space and to share a communication channel with another.

With this, we had one more problem. The fairer sex of our community was reluctant (as usual) to move into a protected place with their sophisticated word-processing equipment.

Both the cases were referred to our psychotherapy department, who after several rounds of sittings, reported that these two groups are now taken into confidence.

The whole operation – including the movement of heavy equipment and establishing communication facilities – was carried out in the darkness of night and 'multi-racial' forces were hired in a limited way for helping our existing taskforce.

The latest report received at Headquarters on 16th morning confirms that 'Operation Park Plaza' is an all-out success. Citizen's reaction over reform measures taken is quite satisfactory. Amidst smiling faces all around, only the highest authority is worried about the situation after another three years or so. When asked to comment on this spectacular success, the commander of the whole operation's reply was brief, "Never say never again".

– *Samil Pal (Calcutta)*

# My heart beats for Calcutta!

Calcutta! A name that conjures up images of the jostling milieu; of crowded bazaars and even more crowded buses; of heat and dust and of decaying political ideologies.

And yet, the city has entwined in its hypnotic spell, thousands of intellectuals and thinkers of all ages. Possibly one of the most controversial cities, Calcutta has withstood the spite of time. It has borne the venom of the critic with a patience that has been pushed beyond imagination. But held on to the vestiges of a heritage that stretches two and a half centuries.

So allow me to take you down memory lane to briefly blow away the dust from this former jewel of the Crown and capture glimpses that would make every Indian proud.

The days of British Calcutta had seen the glitteratti of Europe descend on this city. Calcutta's avenues had witnessed the passing of as many parading troops and as many high society ladies in palanquins or carriages as the Champs – Elysee of Paris or the London Mall. Did you know that the boards of the old Empire theatre have borne the ballet shoes of the great Anna Pavlova in an unforgettable recital? Of all the symbols of past glory, none is more striking than the mighty archaeological masterpiece in marble called the Victoria Memorial. Erected to commemorate the sixty three year reign of the Empress, it conserves the most

fabulous collection of treasures ever assembled within the confines of a colonial theme, that include the cloak of Albuquerque and a sword of Tipu Sultan.

It is here, in Calcutta's General Hospital that Surgeon Major Ronald Ross discovered how Malaria is transmitted by mosquitoes – way back in 1878.

It is in this city, on January 2, 1804, the Calcutta cricket team, led by the grandson of the British Prime Minister, had opened the batting against a team of Etonians in the first cricket match ever played in the Orient. The stadium, now known as Eden Gardens, is one of the largest in the world, with a capacity to hold over a hundred thousand spectators. The city beholds one of the wonders of the world and an engineering marvel of all times – the Howrah Bridge. One of the largest single span bridges in the world, it has been constructed without using a single nut and bolt! And today, the city boasts of an underground railway system – the Metro – comparable to the best in Asia.

But what really gets a Calcutta heart aflutter is its pride on being the artistic and intellectual capital of Asia. It is a land of nobel prize winners – Tagore, J.C. Bose and Mother Teresa, including Dr. C.V. Raman who discovered the Raman effect in his laboratory at the Calcutta University. It is also the home of Swami Vivekananda, one of the most venerated modern saints; of Satyajit Ray, one of the most highly acclaimed figures of world cinema; of Ravi Shankar, for his mastery of the sitar; of Sri Aurobindo, one of the giants of universal spirituality; of Satyen Bose, the only scientist in the world to have thrown more light on the concepts of the Theory of Relativity.

The list is endless; the glory unending. But now the city cries. Bursting at the seams with an ever burgeoning populace (12.1 million) that has taken an inhuman toll on its resources. But so much love and goodness cannot die. It will survive the test of time and the Sun. With a gusto only to rise like the Phoenix.

*– S. Chatterjee (CPPD)*

# A letter from a Parent to a Headmaster

He will have to learn, I know, that all men are not just, all men are not true, but teach him also that for every scoundrel there is a hero, that for every selfish politician there is a dedicated leader. Teach him that for every enemy there is a friend. It will take time, I know, but teach him if you can, that a dollar earned is of far more value than five found. Teach him to learn to lose ..... and also to enjoy winning. Steer him away from envy, if you can, teach him the secret of quiet laughter. Let him learn early that the bullies are the easiest to lick. Teach him, if you can, the wonder of books ..... But also give him quiet time to ponder over the eternal mystery of birds in the sky, bees in the sun, and flowers on a green hillside.

In school teach him that it is far more honourable to fail than to cheat. Teach him to have faith in his own ideas even if everyone tells him they are wrong. Teach him to be gentle with gentle people and tough with the tough. Try to give my son the strength not to follow the crowd when everyone is getting on the bandwagon. Teach him to listen to all men ..... But teach him also to filter all he hears on a screen of truth and take only the good that comes through.

Teach him, if you can, how to laugh when he is sad. Teach him that there is no shame in tears. Teach him to scoff at cynics and to beware of too much sweetness. Teach him to sell his brawn and brain to the highest bidder but never to put a price-tag on his heart and soul. Teach him to close his ears to a howling mob ..... And to stand and fight if he thinks he's right.

Teach him gently, but do not cuddle him, because only the test of fire makes fine steel. Let him have the courage to be impatient ..... let him have the patience to be brave. Teach him always to have sublime faith in himself, because then he will always have sublime faith in mankind.

This is a big order, but see what you can do ..... He is such a little fellow, my son.

*– by Abraham Lincoln*

*(Contributed by A Basu – WWWTD)*

# The after effects of Shorty Gomes on Bharat Kumar

At Modern, Manney's and Popular in Poona and scores of other bookshops all over India – a 'midnight blue' paperback beckons you.

You pick it up and start reading the back-cover blurb: "Shorty Gomes takes you on a fascinating tour of the crime nexus – where beautiful women, ugly politics, rancid cults, soulless business and crooked law are inextricably mixed. Deftly blending social comment and sardonic wit – these three hand crafted detective stories are guaranteed to put the fun back into reading".

In a moment of willing suspension of disbelief you buy the book for Rs.60/- (your pulse racing). On reaching home, the wife asks you : "How was the day at the office, dear ?"

"I am trying to put the fun back into working."

She looks at you – puzzled.

You settle down on the divan and start reading the first novella in the trilogy.

"As the sun was setting on the great Indian Peninsula, I was doing nothing more important than trying to figure out whether there were more Patels or Shahs in the city phonebook. And the Shahs were winning by a comfortable margin....."

You are hooked.

"Coffee is served," the wife calls out.

"Don't T.S. Eliot me," you answer and go back to reading.

■■■

Next morning you arrive bleary-eyed, late for office. Your boss barks at you :

"What's the big idea of turning up at high noon, Bharatkumar?"

"Boss, it's this guy Shorty Gomes....."

"Who's this Shorty Gomes?"

"A gumshoe, private eye, shamus, you know...."

"I see. Now, get these GRRs out before closing time."

"OK, Bulbul Tarang. I mean, Boss."

"What's this Bulbul Tarang business?"

"He's the hooch king of Bombay who provides protection muscle for Madam Flora...."

"Are you feeling alright Bharatkumar? Why don't you go and see Dr. Karani?"

"I'm fine, Boss. Just give me a couple of minutes to say hello to Anita Deshraj."

"You mean Anita Deshpande – our steno?"

"No. No. Forget it, Boss. I'll get these parking tickets cancelled right away!"

"Parking tickets? These are GRRs for God's sake!"

"OK. But before I do the GRRs, I need a gesture of appreciation from you. Give me a big smile like Raju Halbe's."

"I'm getting worried about you, Bharatkumar."

"Don't worry, its just my wisdom tooth – I'll make my own trusted gargling solution."

"With salt?" the boss asks.

"No. No. With a slice of lime, warm water and a slug of XXX."

"Listen, why don't you drop in at my place. We'll talk this thing over."

"Sure," you say. "At sundown?"

"Yeah," the boss growls. "I can hardly expect you to turn up at sunrise!"

*– Ahmed Bunglowala*

# LOVE UNLIMITED

These are but little moments
That show how much we care,
For whenever we need you,
You both are always there.

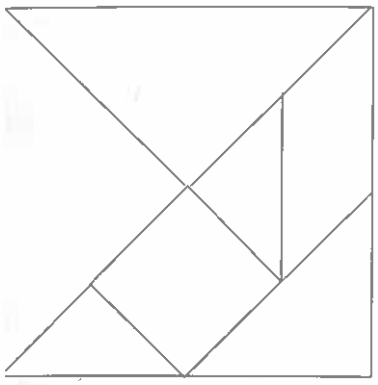
To scold us when we deserve it,
To kiss away our tears
To smile in times of misery,
To chase away our fears.

And even if the future
Acts to make us part,
Your love will stay as fresh
As a daisy in our hearts.

*– Anusha Suryanarayan (13 years)*

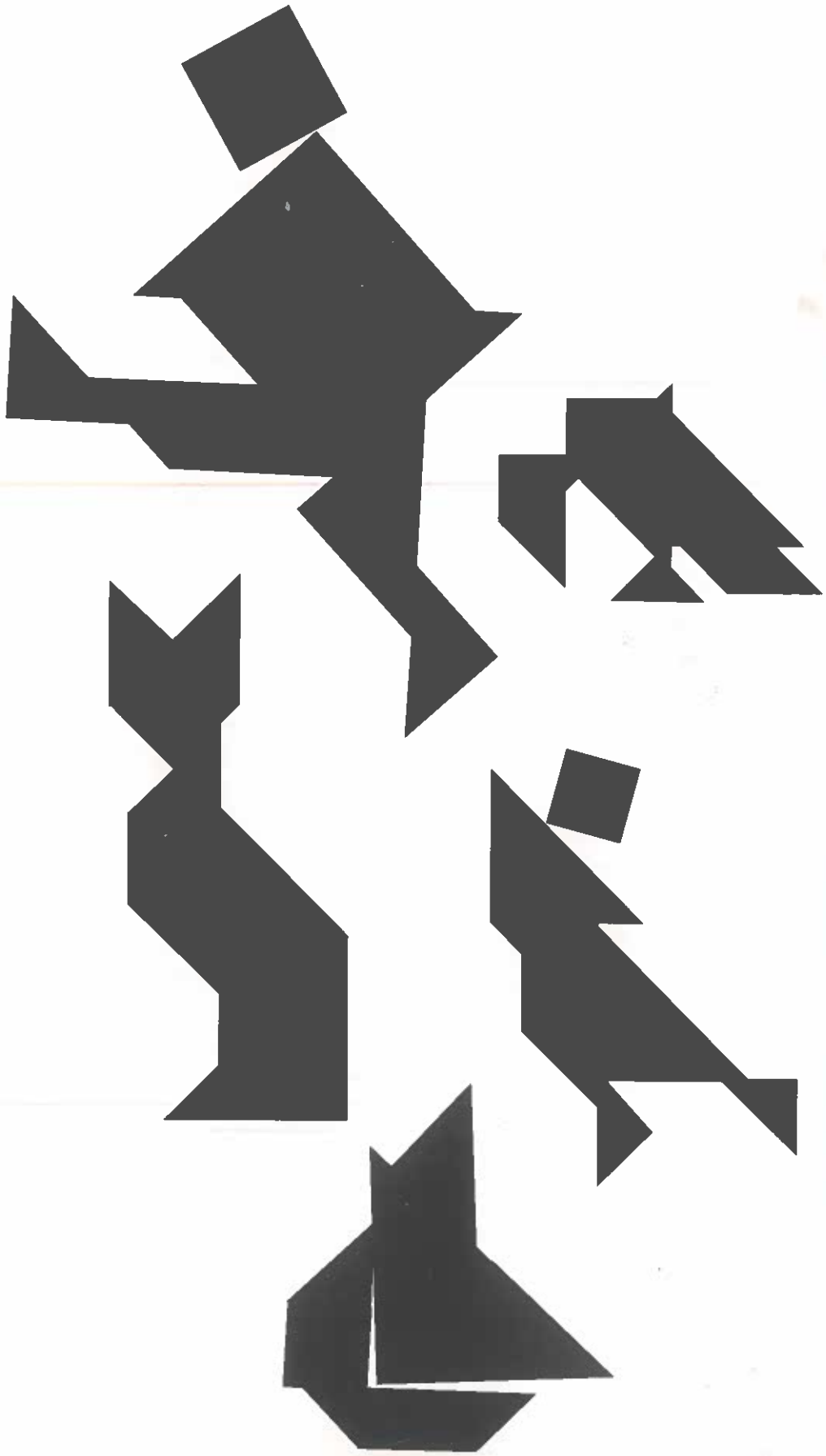
# TANGRAM

## Or how to stay indoors this summer to beat the heat while figuring out the cosmos.



Okay, last summer vacation your child learnt swimming and the summer before that – skating. This vacation, you can introduce her or him to the ancient Chinese game of TANGRAM* and watch the hours roll by! The effect on adults is equally fascinating; as the game grabs you with its infinite variety and creative challenge.

A sampling of the shapes you can create (1600 on record) with the seven Tangram pieces – 5 triangles, one square and one parallelogram. All pieces to be used in any given shape. Ready to explore the cosmos? (as P M Kumar would have said).



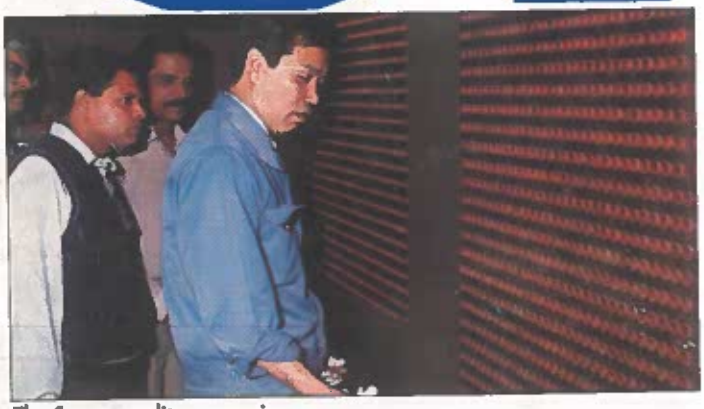
*Available in Penguin Books and also in a local illustrated version at book shops and toy shops).

As India's largest refrigeration machine rolled out of our Chinchwad works in February, there was jubilation and pride in a difficult task well accomplished.

The 1400 TR Vapour Absorption Machine for the Bhilai Steel Plant will replace their existing steam jet refrigeration system.

Kudos to HRD and the Chiller plant for their fine accomplishment.

# THE BIG Chill



The Sanyo quality connexion.

Painstaking craftsmanship paid off.

The finer details of assembly.

The painted beauty ready to roll out.