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MADRAS

MUSINGS

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They filled Laughing Gas instead of Oxygen, Sir!!!

The joy of inhaling

We watched, concerned, as a familiar car halted in an uncharacteristically wobbly manner, and a friend staggered out.

"What's wrong?"

Clutching his head, he replied: "It's finally happened. A through-the-looking-glass moment. Things are upside down, inside out, back to front, topsy turvy...."

This looked like it could take a while, so we called him to order with a well-administered glass of cold water.

He gasped, then explained.

"I just saw a happy traffic cop. A cyclist and an auto almost landed beneath a speeding water tanker which, in turn, narrowly missed eight cars, one bus and a family of four on a two-wheeler with the distinct air of having recently indulged in masala dosais and degree coffee. And guess what? The cop smiled gently and advised everyone to stay calm and breathe slowly through the nose."

The mystery was solved.

The cop had obviously had his most recent snort of oxygen.

Ever since oxygen dispensers were placed at traffic junctions, there have been sightings of happy cops. Well, if they put a smile on the faces of our sorely-tried traffic police, dealing as they do with heat, dust, pollution and the sheer abysmal stupidity of road users, then more power to them.

Hurrah for good old oxygen – even if it has to be offered in dispensers, thanks to earnest human efforts to wipe out clean air.

Ranjitha Ashok

Now, sea solar power

Is there an opportunity for Tamil Nadu in this?

More than 300 times what the world now consumes in electricity is available from the solar energy that is constantly stored in the upper layers of the tropical ocean, say the advocates of sea solar power. Is there an opportunity for Tamil Nadu in this? What is significant for the State is that solar energy storage in the tropical ocean takes place throughout the equatorial zone around the world – about 20 degrees north and south of the equator, where most of the world's population lives. This area is also where the greatest increase in demand for new power exists, because population growth is greater in this region and where the standard of living has been rather low, and now more people with more wealth are demanding more electricity.

Sea solar power uses the basic technology known as Ocean Thermal Energy Conversion, or OTEC, which was invented in 1881 by a French scientist, Jacques Arsene D'Arsonval, who was years ahead of his time. Supporters of such technology contend that man-made solar collectors are very expensive to build, require enormous amounts of acreage and do not work at night when advanced societies require electricity around the clock. Contrary to this, there is the ocean, the largest solar collector in the world. Its riches can be tapped by OTEC.

To operate a sea solar power plant involves a heat source and a heat sink. The 80°F surface water in tropical oceans serves as the heat source. 3,000 feet below the surface is the heat sink or the cold bottom water, which is 40°F. This temperature difference is sufficient to operate vapour turbines, which drive generators and produce electricity, fresh water as a byproduct, electricity, with fresh water as a byproduct. This is the OTEC concept.

But while it is true that the ocean's free seawater can supply an infinite amount of energy and produce electricity for most of the world's population, the technical challenge is to design an OTEC plant that is economically efficient or at a reasonable capital cost. Two primary models currently available in the U.S. are a small 10-MW, land-based plant and a large 100-MW floating plantship, the former designed for small

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A reminder to our readers

It's going to be a year since *MADRAS Musings* began being a priced journal, offering readers a special annual subscription rate of Rs.100. With that year coming to an end, it is time to remind subscribers to renew their subscriptions and readers who have not yet sent in their subscriptions to do so.

All subscriptions acknowledged by us from January 1, 2005 and subscriptions that we receive between now and April 16th will be considered as annual subscriptions for the year April 16, 2005 to April 15, 2006. Volume XV. As for those who have sent in their subscriptions between April 16, 2004 and December 15, 2004, please renew your subscriptions as and when they fall due. *MADRAS Musings*, unfortunately, does not have any staff, but only a couple of part-time volunteers to help and, hence, is in no position to send you reminders.

When sending in your subscription, please send it to Chennai Heritage together with the coupon that appears on page 7, duly filled in, in full. We look forward to an enthusiastic response from readers old and new.

— THE EDITOR



Senate House in the days when its handsomeness was visible to the public. How soon will we see that handsomeness as strikingly again, wonders reader M.K. Chubby Raj whose album this picture is from.

Higher education – Problems of growth

India's global prestige until now has been upheld by the competence of the graduates of some of its pre-eminent higher educational institutions, the caliber of research by them and the academic links forged with premier institutions in other countries. Many of the products of the Indian higher education system during the past several decades have won national and international recognition including in the arts, sciences, technology, medicine, law, commerce, administration and so on.

Higher education is increasingly viewed in India as an instrument of upward social mobility and economic security and larger numbers of the population are seeking such opportunity. Together with the growth in numbers, there are also major changes in the disciplinary knowledge base and newer combinations of disciplines. The physical migration of knowledge seekers across the country and abroad is steadily increasing. The presence of foreign higher educational institutions in India is rapidly growing. The scope for open and distance learning through conventional modes is considerably enhanced by the new technologies for e-learning and

virtual classes. The flexibility in the configuration of courses and institutions is seamlessly available to learners.

Added to these changes in the academic domain, there are several major socioeconomic changes affecting the higher education sector. These include global economic integration, national economic reforms, changing demographic patterns, increased school enrolment and reduced drop-out rates, social norms favouring women and the weaker sections, increasing environmental consciousness, changing family finances, demands of labour market and so on. The strategy for development of higher education for tomorrow would have to take into account these trends in determining the future directions.

Historical perspective

In India, the University system originated about a century and half ago with the establishment of universities at Calcutta, Madras, Bombay, Allahabad and Lahore between 1857 and 1902. These were modelled after the British universities of the period. As the nation passed through major political, economic and social changes, there

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HIGHER EDUCATION – PROBLEMS OF GROWTH

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have been several reviews of the university system – especially after Independence – and many significant observations and recommendations to strengthen the system have been made.

At present we have about 265 university level institutions (excluding many operating as universities under notification by some State Governments) and about 13,150 colleges. But there are many nagging concerns about their roles and performance. Many of our universities and colleges of repute have lost their pre-eminent positions. Some are oscillating between precarious limits. Only a few manage to maintain their status and dignity in an environment of complex socioeconomic pressures and worldwide changes in approaches to the educational processes. It has therefore become necessary to identify those attributes which distinguish a first-rate institution from a mediocre one.

Socioeconomic relations

The interrelationships between economic and social development and educational attainments are well recognised. The state of evolution of the knowledge and skill base is highly dependent on the opportunity for higher levels of education. Hence it is imperative to recognise the development links of the educational chain from kindergarten to university (and note) the considerable differentials in the development of the higher education system among different States and regions of India.

The total enrolments as well as the enrolment of women in the higher education system as

a proportion of the population of each State in India show considerable differentials among the States and regions indicating the comparatively serious shortfalls in the educational opportunities in many States. These differentials are also attributed to the extent of urbanisation of the States as well as the proportion of the population below the poverty line. Generally, the States with higher enrolment in universities and colleges are those with higher ratios of urban population and lower percentage of population below poverty line.

Viewed in the light of per capita income, most States that show above-average enrolment are also those with per capita incomes above the national average. But some with lower-than-national average per capita have better enrolment than the national average, indicating the importance given by them to higher education, while many States with higher-than-national per capita income show significantly lower levels of enrolment indicating lower priority for university and college education in these states.

Growth pattern

For nearly four decades after Independence, the higher education system registered only a moderate growth rate. The growth was characterised by the expansion of the intake capacity of the existing institutions and opening of only a few new colleges and universities. These were mostly institutions fully or substantially funded by the governments of the States or the Centre. This was the period when the scope for career opportunities in the private sector was severely limited.

Since the late 1950s deliberate efforts were undertaken to provide higher education of much wider relevance compatible with the global trends in education, keeping in view the future needs of the country in the public as well as private sectors. In the latter half of this phase many new disciplines were started for the anticipated needs. Many graduates went abroad for higher studies and some returned with advance qualifications to engage in teaching and research or to participate in some of the new technological ventures, such as space and atomic energy.

In response to the growing demand for technical education during the 1980s and 1990s, there was a much higher growth rate in the number of technical institutions and in their intake capacities than the previous four decades. Since the governments were not able to meet this demand, the private sector investments were permitted in self-financing mode. The increase in demand arose as a result of higher enrolments in the high schools and the aspirations of increasing number of first generation learners for higher education as a means of upward social mobility and economic security.

These institutions functioned essentially under the conventional curricular structure, though many new disciplines were introduced in response to the emerging demands. For academic purposes, these were affiliated to various general universities or to the specially constituted Technological Universities in some states. At the same time the institutions started earlier by state

governments languished for want of adequate funds for development of facilities or filling of vacancies of the teaching staff and their quality deteriorated rapidly, in spite of the overwhelming preferences of the students for government institutions, partly for their affordability and historical reputation. The initiation of the accreditation system by the University Grants Commission (UGC) and the All India Council for Technical Education (AICTE) helped to introduce quality dimensions to many of these institutions.

The non-availability of adequate number of competent teaching staff began to emerge as a serious problem greatly undermining the quality of education. This alone should have alerted the policy makers to undertake a serious introspection of the policies for the growth and quality of academic institutions. On the other hand, the situation was allowed to escalate in an uncontrolled fashion with much steeper increase in the number of institutions and their intake capacities under many untenable considerations. The number of new engineering colleges increased from 838 in 2001 to 1265 in 2003. Of a total intake capacity of about 3,00,000 in 2003 in engineering colleges of India, the southern region alone, consisting of Andhra Pradesh, Tamil Nadu and Goa, has 1,39,527. The next largest are in Southwest and Western regions.

A serious implication of this growth relates to unfilled capacity in these institutions. Due to the proliferation of engineering colleges there is a sharp decrease in the number of students seeking admission to polytechnics, which are facing survival problems. The aggravation of the unemployment situation for trained technical manpower

has serious social and economic implications. As a result of high unemployment levels, many graduates tend to accept lower paid jobs incompatible with their qualifications. The engineering jobs tend to be undervalued. Many students from India, disenchanted with the present state of technical education, its access and quality, have started enrolling in programmes offered by several foreign institutions in India or abroad at considerable cost, even though many such programmes are far inferior to the ones offered by some of our better government or self-financing colleges.

The unplanned growth in engineering colleges has led to poor performance of students in the university examinations. The performance of students from the various engineering colleges in Tamil Nadu illustrates this phenomenon.

Only five colleges in 2003-4 had a pass percentage better than 70%, 43 had a pass record between 50 and 70%, 97 between 30 and 50% and the remainder, 84, had less than 30% passes.

In order to prevent such dismal situation it will be necessary for the Universities concerned in co-operation with the AICTE to put the engineering colleges with less than 30% pass rate on probation and deny any request form them for additional intake. If their performance does not improve at least to the level of the average pass rate of the concerned university within two years, they should be advised that their approval by AICTE and affiliation to the university would be withdrawn. Such regulation are urgently needed. — (Courtesy: *Business Mandate*, the journal of the Madras Management Association)

(To be concluded)

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