

LETTER FROM HARVARD

"Indochine"

HANOI: The first thing that struck me on driving from Hanoi International Airport to the city centre was how similar the terrain and the weather was to Bangladesh, the same lush greenery, the tropical foliage, the sudden thunder-bursts, the flat delta landscape of the Red river valley. If you didn't pay attention to the billboards in Vietnamese, you could easily imagine yourself in Bangladesh.



REFLECTIONS by Dr Omar Rahman

above 50 still speak French as their second language, those between 30 and 50 know Russian, but are rapidly trying to forget it and finally those below 30 care only about English. The irony of this situation did not escape some American colleagues of mine, who commented that the Americans instead of bombing the Vietnamese should have instead blitzed them with television programmes and movies, in this post-Cold War era, the whole 'domino theory' (whereby the fall of Vietnam to the communists was seen by American Defence Planners as opening up the flood gates to communism in Asia) seems so ridiculous. But I suppose that the cold light of hindsight is that true for many a historical action.

(with women participating relatively equally with men in almost all phases of national life), the existence of a very politically conscious but disciplined population, the presence of an egalitarian distribution of public services, particularly in the health and education sectors, and last but not least, an indomitable national will forged and tempered by two decades of war.

The Vietnamese 'doi moi' or transformation from a socialist centrally planned economy to an increasingly open market one is especially interesting in that it exists side by side with a still fervently communist political power structure. The relative merits of this 'Asian' model of transformation which retains tight political control while allowing significant economic liberalisation vis-à-vis the eastern European model of radical symmetric transformation of both political and economic systems are currently a hot issue of debate.

While it is still too early to say which model will end up with greater permanent prosperity for countries going through this kind of change, comparing the Russian and Vietnamese experience, the latter certainly seems less disruptive at least in the short run. It is, of course, quite possible that the Vietnamese, with their experience may be reflective of some deep-seated Asian cultural acceptance of a duality between political and economic freedoms.

Finally, the Vietnamese are not only good businessmen as shown by their rapid adoption of market behaviour, but also very hospitable. I found them to be polite but not servile. They seem to have mastered the trick of being hospitable to everyone, even their former enemies, the French and the Americans. I suppose it is easier to be gracious in victory than in defeat.

Prospects and Importance of Energy Production

by Dr Amir M Shamsul Hoque

BANGLADESH has been successful, to some extent, to produce some electricity from Kaptai hydro-electric project, Ghorashal gas-electric project and a few diesel-electric generators provide electric energy to the urban population up to about 50-60 per cent, but the coverage of electricity supply to the rural population is very limited. It is still below 20 per cent. The supplied energy is used mostly for domestic and municipal needs such as house and street lightings, operation of electrical gazette etc. A considerable portion, however, is used in industrial consumption. Assessing the overall situation, it is observed that there is an acute crisis of electricity in the country.

The second type of energy available and widely used in Bangladesh is the natural gas obtained from the gas fields of Titus, Bakhrabad, Ghorashal and Haripur. The total available reserve of gas as reported by the authority concerned will last for the next 20/30 years if used at the present rate. But the rate of use as observed, is being increased day by day and hence the reserve will be exhausted much earlier than the end of the predicted period. However, two new gas fields have been discovered recently according to newspaper reports, and among them, one is in Barisal district and the other in the sea to the south coast of Bhola. In spite of all these the fossil gas is always found in limited quantity and it will be exhausted, say, within next 30, 40 or at best 50 years.

Much of our natural gas is also used in brick fields. As a result, only a little percentage of the people get gas for cooking. Energy needs for cooking and brick-making purposes are now mostly met by burning trees which are very precious for the survival of Bangladesh and its people, because trees are the natural factories of oxygen by which all human beings and animals live on earth. For keeping the environment healthy, the people, both rural and urban, should not burn trees for cooking and in the brick fields. Because, in spite of the needed percentage of forest cover for maintaining ecological balance for environmental protection is 25-30 per cent trees have been burnt to such an extent that the forest cover of Bangladesh has now come down to as low as 6-7 per cent. Now the question is: how then to cook food within burning fuelwood? Yes, there are cheap alternative sources of non-conventional energy available for cooking and similar other purposes. These are biogas, sunrays etc., which are being experimentally produced and successfully used in countries such as India, China, Thailand, etc.

The Fuel Research Centre of BCSIR has undertaken a country-wide research project of installing 6000 biogas plants in selected rural houses and the study is likely to complete by next year. The advantage of biogas use is that it not only saves the natural gas reserve of the country, but also gives free cooking energy, improves the environment, provides first class organic manure of increasing food production, help stop the desertification process and retards greenhouse effect, thus slowing down the sea-level rise.

It has been observed that many experiments were done abroad and also in Bangladesh on solar energy for direct heating of water, manufacturing distilled water, and lifting water from tubewells by pumps operated by the electricity generated from solar panels containing network of photovoltaic cells. It may be mentioned here that in India they have developed solar energy to such an extent that the streets and offices of 'Gramen Panchayat' all over the country are lighted at night by solar energy exacted during daytime. The result of research on solar energy has attained to such an extent that Bangladesh can take up a large-scale research-cum-implementation project on solar energy covering all the 64 districts.

The third alternative probable source of energy of non-conventional type is the wind. This source is being used successfully by many countries in the world and we also should follow suit with them. It is mentioned as an example that of India through its separate 'Ministry of Non-conventional and Renewable Energies' has been producing about 700 MW electricity per year from the wind and they are planning to

raise the production upto 3000 MW by 2000 (Ibrahim Mia, Editorial, Engineering News, IEB, April, 1995). Experts of wind energy in India have also shown in an account that it is possible to save 1100 tons of fossil fuel by constructing a wind turbine of capacity of a MW (D Sarker, Possibility of Wind Energy, Engineering News, April, 1995). The suitable locations for installing experimental wind turbines in Bangladesh are recommended by D Sarker for generation of wind energy are Patenga, Cox's Bazar, Companiganj (Noakhali) and the islands of Sandwip, Hatiya and Kutubdia, as continuously available wind in those areas has velocity between 7 to 75m per second which is suitable for wind energy production. The exploration of non-conventional sources of energy in Bangladesh has vast scope. Bangladesh can use these in agriculture, shrimp cultivation, silk cultivation, salt production, ice industries, poultry farming and lighting of houses and streets. The above renewable energies are also good in the senses that these will not pollute the environment, minimise the import of fossil fuel, reduce the use of country's funds and maintenance of plants is simple and less costly. It is reported that by using wind energy in the production of salt from the sea-water, Bangladesh can save Taka 300 crore yearly in salt import only. Bangladesh should ask the Ministry of Science and Technology to initiate a new centre named the 'Centre for Research and Development of Non-conventional Renewable Energies' and experienced local experts be employed for its management and technological development. The writer is an environmental civil engineer.

Vulture Population Increasing!



This picture of the Whitebacked Vulture (Gyps bengalensis), taken on the 12th January this year, shows some of a flock of about 60 vultures (others fled away on the approach of a dog just before snap), feeding on the carcass of a cattle.

Today's teenagers may not know it. But people over forty may well recall that, once very common all over Bangladesh, the Whitebacked Vulture population started declining in the sixties and early seventies, much to the dismay of the wildlife biologists as well as general public. Another vulture, the King Vulture, which was to be found in twos or threes in a flock of Whitebacked Vultures till the early forties, was not seen during the last few decades, and is thought to be extinct from Bangladesh. If anybody finds it, he may contact the Wildlife Society of Bangladesh at Department of Zoology, University of Dhaka. In 1973-74, there was severe flood and famine, followed by serious epidemic disease killing hundreds of cattlehead. As usual, farmers left the dead bodies in the field. Three/four days passed, but no vulture came. Bad smell of decomposed carcases, polluted the environment almost beyond tolerance. Farmers were obliged to cover the carcases with soil, which was almost an impossible task. They began to ask the pertinent burning question, 'What happened to the vultures? Where are they?' That was perhaps for the first time that people realised from their bitter experience the vital importance of vultures in our ecosystem! From the mid-seventies vultures started reappearing in our environment. The mystery of their decline and incline still remains unsolved. But, much to the delight of everyone, vultures in small numbers became visible all over the country in the eighties. A team of wildlife biologists myself Dr M K Rahman and Mr M N Haque of the Wildlife Society of Bangladesh, while returning from a field trip, spotted the vultures of this picture in village Karati para near Tangail by the Dhaka - Tangail Road. Most of the vultures in the flock in question were juveniles, clearly and happily indicating that the vulture population is, once again, on the rise!

Prof. KZ Husain, President, Wildlife Society of Bangladesh, Department of Zoology, University of Dhaka

The Search in the Dark Sky

by M. Ismail

THE star, a general term for the celestial body, consists of a large, self-luminous mass of hot gas held together by its own gravity. The sun is a typical star. The heat and light generated in the star is created by the conversion of lighter elements into heavier elements by fusion process. For thousands of years the light from the celestial has been observed by astronomers around the world to study the characters of those bodies. In 1696 Isaac Newton discovered that the sunlight is composed of light of several colours which can be resolved into respective components by prism. The astronomers used these components for more data in their observations.

The Infrared World In April of 1800, William Herschel, a German born English astronomer discovered that there were 'heat rays' which human eyes could not see in the form of light. The performance of optical instruments were greatly affected by the temperature created by 'heat rays'. While exploring the sunlight with an ordinary mercury thermometer, he found that heat was highest beyond the red part of the spectrum where no light was visible. The discovery of 'dark rays' or 'heat rays' greatly contributed to the spectacular progress in astronomy. The heat rays behave like light rays as far as reflection and refraction are concerned which are completely independent of visible light. In 1895 Wilhem Wien proved that

the maximum intensity of radiation emitted by a heated body was inversely proportional to absolute temperature, in other words, the higher the temperature, the shorter the wavelengths. The discovery of invisible light in the infrared, produced by relatively cool bodies, gave a new direction to research of heat radiation.

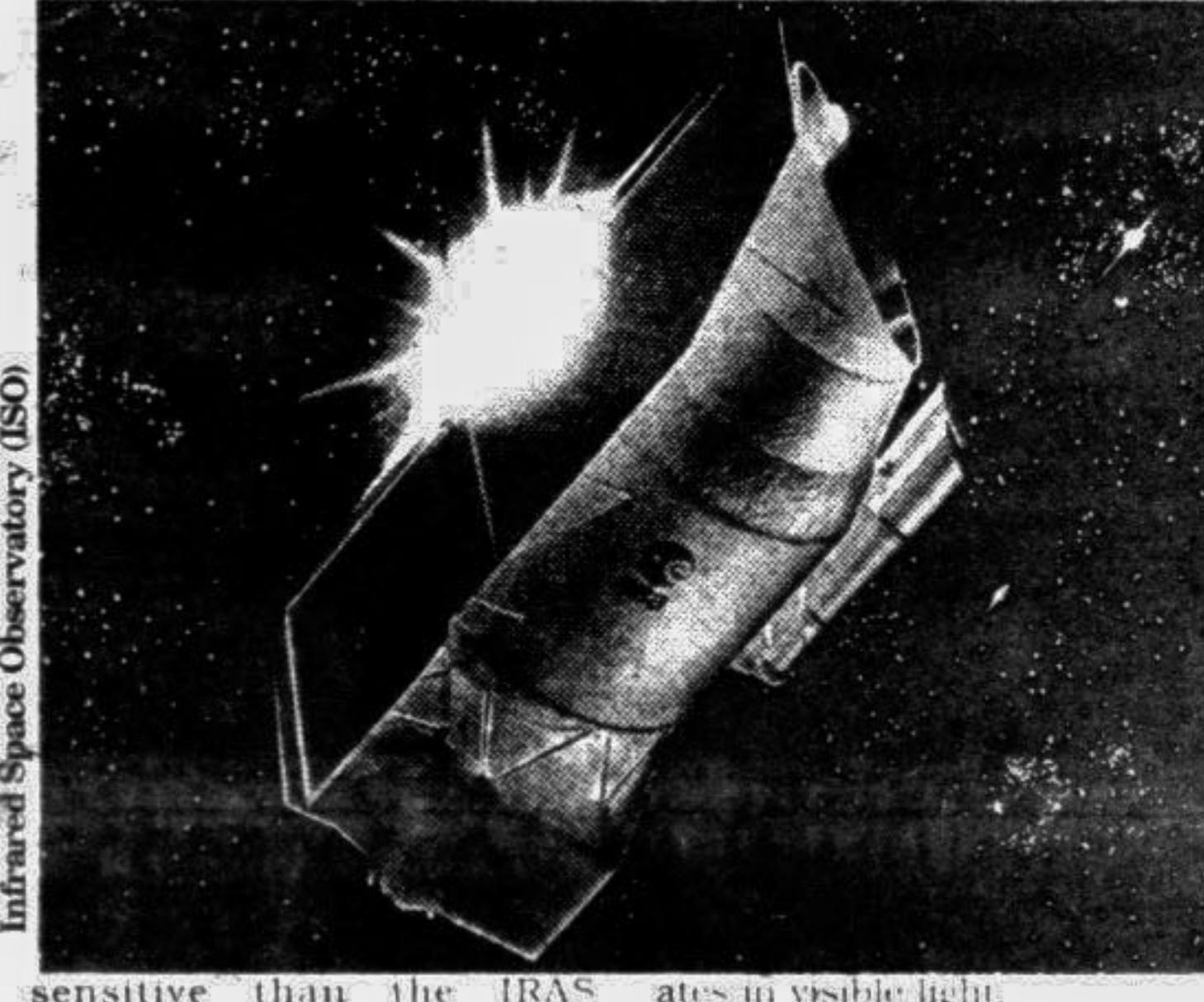
Search from Earth The observation of infrared radiation presents a twofold problem. First, most of it is absorbed by the earth's atmosphere, so conventional observation methods cannot be used. There are just a few 'windows' through which these 'heat rays' can pass. These windows are around 2.2 microns (a micron or micrometer is the thousandth part of a millimetre), 3 to 5 microns, 8 to 12 microns and around 20 microns. Second, since all bodies radiate 'heat rays' in the infrared, they pollute the incoming radiations from stellar bodies making it difficult to pinpoint the required signal from dense thermal background noise. To overcome the difficulty, the earth based instruments have to be located in a place where the 'windows' are available, and the telescope is cooled in the infrared.

Initial observations in the infrared were directed at cold stars. Eventually as many as 5000 bright stars were detected at 2 microns. During the period of 1960 to 1970, astronomers used atmospheric

windows to detect the heart of our galaxy and also to discover other galaxies emitting more radiation in the infrared than in the other wavelengths. But the detection of much colder objects, such as interstellar matter, dusts which only emit larger wavelengths, could not be detected from earth till then.

Search from Sky Observation methods were subsequently improved by the use of small balloon-mounted telescopes, then by infrared observatory installed on a NASA aircraft. Space-based telescope made significant progress in the study of those objects operating in wavelengths inaccessible from the Earth's atmosphere such as 12, 25, 60 and 100 microns. In the space-based study it is important to keep the body of the telescope cool, in order to keep incoming signals free from infrared pollution created by their own body.

Infrared Space Observatory European Space Administration (ESA) recently have launched an Infrared Space Observatory (ISO) which will study the region where stars are born, the environment of certain stars, the infrared galaxies, and certain phases in the evaluation of matter and the formations of stars. It is also a further step in the great quest to understand more about the universe and about its genesis. It will be much



sensitive than the IRAS telescope launched in 1983 which have inventoried infrared objects. ISO will make more close-up examination in details of each infrared source, such as the cold objects, newly born stars whose heats are still too tenuous to be observable in the visible region of the spectrum, stillborn stars too small to trigger thermonuclear fusion, etc. It will also enrich our knowledge of our own solar system by scrutinizing asteroids, comets and the moons of the planets revolving around the sun. It will also study the Saturn's satellite Titan. The mapping of the areas where Europe's interplanetary probe Huygens is to land early next century, will also be studied by it. The ISO will be a powerful complement to the Hubble Space Telescope which oper-

The Daily Star Entertainment Guide

Table with columns for TV, EL TV, ZEE CINEMA, STAR MOVIES, PTV, and ZEE TV, listing various programs and their times.

Garfield® by Jim Davis

Garfield comic strip panels with dialogue. Panel 1: 'YOU ARE A DOLT. YOU ARE UGLY. AND YOU ARE GENERALLY UNACCEPTABLE.' Panel 2: 'THEY LOVE ATTENTION.' Panel 3: 'WHAT'S WITH ELMON AND THE DAME?' Panel 4: 'NO PROBLEM SENOR - HE WILL HAVE HER AT CHANGING OVER IN AMPLI TIME FOR THE FUN!' Panel 5: 'WE'RE LEAVING AT NOON, SO BE ON DECK AT 12:00 SHARP!' Panel 6: 'THANKS FOR THE TIP, MR. HENDRICKS, BUT DON'T GIVE THIS BOND A THOUGHT - WHEN OUR CHOO-CHOO LEAVES OFF, I'LL BE RIDING ON A ONE-WAY TICKET.'