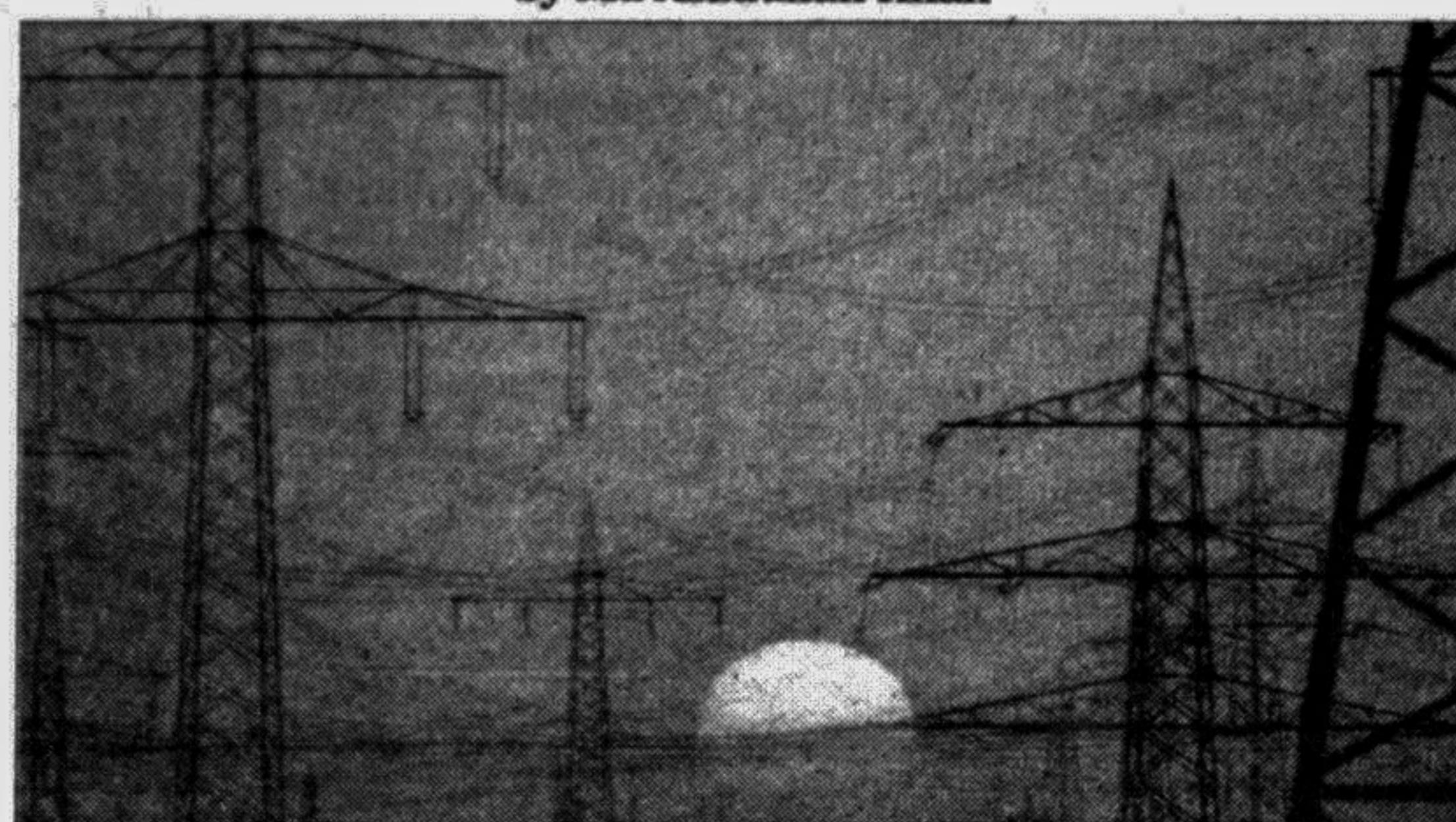


FOCUS

CANCER FROM ELECTRICITY

A Cause of Concern for Hi-tech Countries

by Md Asadullah Khan



Prolonged exposure to high-voltage power lines like these has been associated with increased risk of several types of human cancer

THE report circulated in the US that electricity can cause cancer has reportedly come as a shocking revelation to people in the technologically advanced countries. Without a shadow of a doubt and contradiction, in a society that literally runs on electric power, the very idea seems preposterous. Scientists, for more than a decade, have pointed to studies that seem to link exposure to electromagnetic fields with increased risk of leukemia and other malignancies. The implications are very much upsetting since almost every one, without exception, comes into contact with such fields, which are generated by everything electrical, from power lines to personal computers and microwave ovens. But since evidence on the subject is still inconclusive, people have second thought about accepting the alarming signal that electricity pose to mankind.

But the qualified support gained from the US Environmental Protection Agency (EPA) confirms the apprehension. With the data gleaned from the scientific review the EPA has put forward facts that amounts to the most serious government warning to date. The agency tentatively concludes that scientific evidence suggests that there is a causal link between extremely low frequency electromagnetic fields (ELF) -- those having very long wavelengths and leukemia, lymphoma and brain cancer. While the report falls short of classifying ELF fields as probable carcinogens, it does identify the common 60 Hertz (unit of frequency also known as cycle per second) magnetic fields as a possible but not proven, cause of cancer in humans.

The report, substantially worrisome, has caused shock and panic in public mind. Things have come to such a pass that people tend to lose their sleep. But the issue is still controversial and needs much more research.

Let us try to understand the simple physical phenomenon underlying the threat. When an electric current passes through a wire, it generates an electromagnetic field that exerts forces in surrounding objects. For many years, scientists dismissed any suggestion that such forces might be harmful, primarily because they are so extra-ordinarily

weak. The ELF (extremely low frequency) magnetic field generated by a video-terminal measure only a few milligauss (unit of magnetic induction, magnetic field of one oersted produces an induction of 1 gauss in air) about one-hundredth the strength of the earth's own magnetic field. The electric fields surrounding a power line can be as high as 10 kilovolts per metre but the corresponding field induced in human cells will be only about 1 millivolt per metre. This is far less than the electric fields that the cells themselves generate.

Scientists are by now sure that such a minuscule force can hardly pose a health hazard. Rather, scientists concentrated on more powerful kinds of radiation, like X-rays that pack sufficient wallop (heavy sounding force) to knock electrons out of the molecules that make up human body. Such "ionising" radiations have been clearly linked to increased cancer risks, and there are regulations to control emissions.

One interesting finding in 1979 greatly perturbed the scientists and people in general in the US. The findings revealed that in Colorado, school children who lived near the power line had two to three times as great a chance

of developing cancer. This made people quite wary and doubts about weak, so-called non-ionising radiations began to deepen. Most worrisome, subsequent study supported the original findings which have since been buttressed by reports showing increased cancer rates among electrical workers.

Although experts have expressed skepticism, scientific community has shown a definite link. Happily although there are lot of laboratory works showing that exposure to ELF fields can have biological effects on animal tissues but this mechanism has never confirmed that these effects could lead to cancerous growth. More assuring, US Air Force scientists and Pentagon experts are almost convinced that there is no such suggestion that electromagnetic fields present in the environment induce or promote cancer.

The Pentagon's concern is quite understandable. There is hardly a unit in the modern military that does not depend on the heavy use of some kind of electronic equipment, from huge ground-based radar towers to the defence systems built into every warship and plane.

EPA's conclusion classifying ELF fields as a "probable carcinogen" was deleted after the

report was reviewed by the White House science adviser. It has been stressed that EPA's findings of a "positive association" between electromagnetic fields and childhood cancer are quite incorrect. The report further said that there is no scientific basis for that statement at all. What we are doing is unnecessarily frightening millions of parents.

Despite all these findings the nightmare still haunts people and the stakes are high.

Recently, a study in the *American Journal of Industrial Medicine* reports a steep rise in the brain cancer rates over the past dozen years. Unsurprisingly, if the increased incidence of such cancers could be linked to electromagnetism either at homes or workplaces, liability suits could clog the courts. More worrisome, in the US property values near power lines and electric substations are plummeting. Obviously, if the utilities have to bury or re-route those systems, the cost of doing business could take a sharp jump.

However, most people have dismissed the risk of being affected with cancer because of being exposed to electromagnetic fields. By contrast, the risk of lung cancer for a chain smoker is 20 times higher than it is for the public at large.

Unquestionably, people have to live near the power lines and have to work with the computers in this technological age with every part of their body in close contact with machines. Researchers have urged that more detailed study is essential. Research conducted by the National Institute for Health pin-points more areas like less-studied radiation having shorter wavelength such as radio and TV waves other than ELF fields.

The best remedy to keep this nightmare at bay is through prudent avoidance -- doing relatively easy things to minimise a possible risk. We should not go for selling, tearing apart or rebuilding a home. But it might make sense to shift a child's bed away from the electric line that brings power to the house. Or to move the phone-answering machine away from the side of the bed. At the same time, one should not find it too hard to take a step back from the TV or computer screen.

Extremely low frequency fields (ELF) that one may come across in one's day-to-day life, allowing exposure to hazards, as listed below, can be tackled in the way proposed.

High tension electric transmission lines: Strung along high towers, these lines carry large amounts of electricity over long distances. Homes, schools and playgrounds should not be built anywhere near them.

Electric distribution lines: This is the kind that carry electric current down local streets. Undoubtedly they generate fields less powerful than those from transmission lines. But distribution wires, it is observed, are much closer to most homes. In our country, PDB or REB can think of burying or relocating the lines.

Video-display terminals: People spend whole workdays close to computer screens. They should stay 75 cm (30 inches) from the front and 90 and 100 cm (3 ft) from the sides and back. The same rules should apply for TVs.

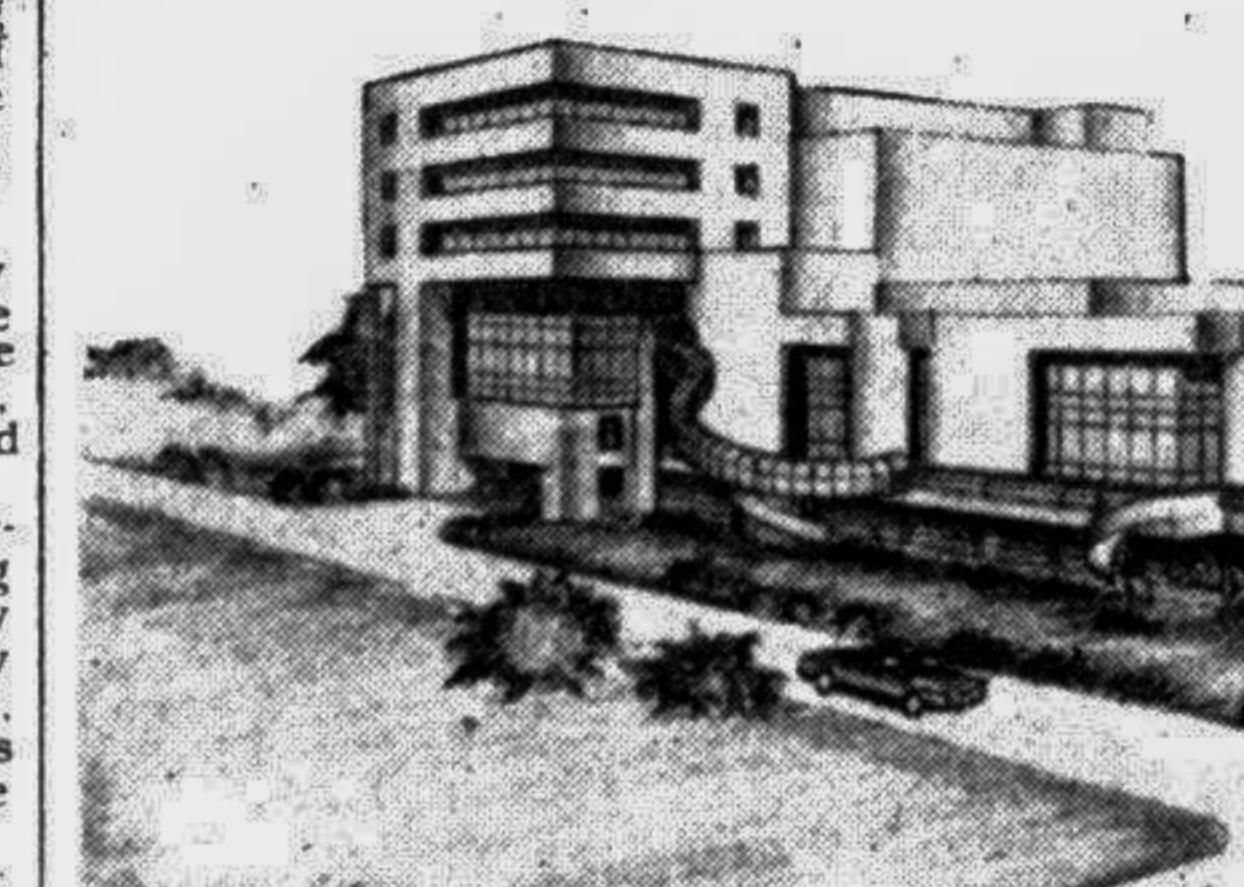
Bedside appliances: Electric clocks and fans usually run continuously. They should be kept at least 75 cm (30 inch) from the head.

Other appliances: Shavers, hair dryers, microwave ovens all generate powerful fields and people should be careful to use them for only short periods of time.

On September 1, 1974, the Bangladesh Shilpa-kala Academy (BSA) held its first assembly and the idea of constructing a national theatre at the courtyard of BSA was conceived. It was proposed that an open compound along with a small theatre should be built with the limited money the academy could provide. Until now the idea of creating a separate arena entirely devoted to drama has either been sup-

ported for completion within 5 years has been designed to have a main theatre hall consisting of 750 seats coupled with a 300-seated convertible hall. The main hall will be in the form of a conventional proscenium for general use with the necessary amenities. The convertible hall will be built like an open-thrust theatre hall so that it can be interchanged accordingly. Basically, the hall is designed to be experimentally converted into

vide for the main hall (downstairs) with lighting arrangements, sound-controls, stage implements, acoustics, sitting arrangements along with rooms for administrative and technical work. Dressing, theatre museum, library, seminar hall, training, conference, fitness, rehearsal rooms, audio-video and photography labs, inquiries, and a lounge will also be included. Moreover, an open-air amphitheatre is going to be built in the courtyard.



Drawing of the National Theatre

pressed or merely ignored. But at the inauguration of 'The National Drama Festival - '91' the Prime Minister gave the go-ahead for the construction.

On December 28, 1995, the Prime Minister laid down the foundation at the back of the BSA. After twenty-one years, the long-awaited expectations of the artistes of this country to have their own to have a modern theatre had finally materialised. With the objective of getting innovative ideas of specialists from the Finance Ministry, Planning Commission, consulting firms were sent to Hong Kong, South Korea and the Philippines says S M Mohsin, Director of the Dramatic Arts Department (DAD) and a member of that delegation later, the model for the theatre was designed by Prokolpo Upadesha Ltd. The building which has been tar-

different forms to cater to the demands of playwrights and directors.

Consisting of an area of 1,04,000 sq ft the construction of the building will be carried out in two phases. A three-storeyed building of 50,000 sq ft will be erected in the first phase and expected to be completed by mid-'98. It will comprise of the main hall, the convertible hall with a power sub-station, VIP room, lounge, booking office, stage implements, sound controls partly with a dressing room and a furniture store-room etc. The construction of the first-phase is estimated to cost Tk 20 crore.

On the second phase, another four-storeyed building of 58,000 sq ft will be built on top of that. This part will pro-

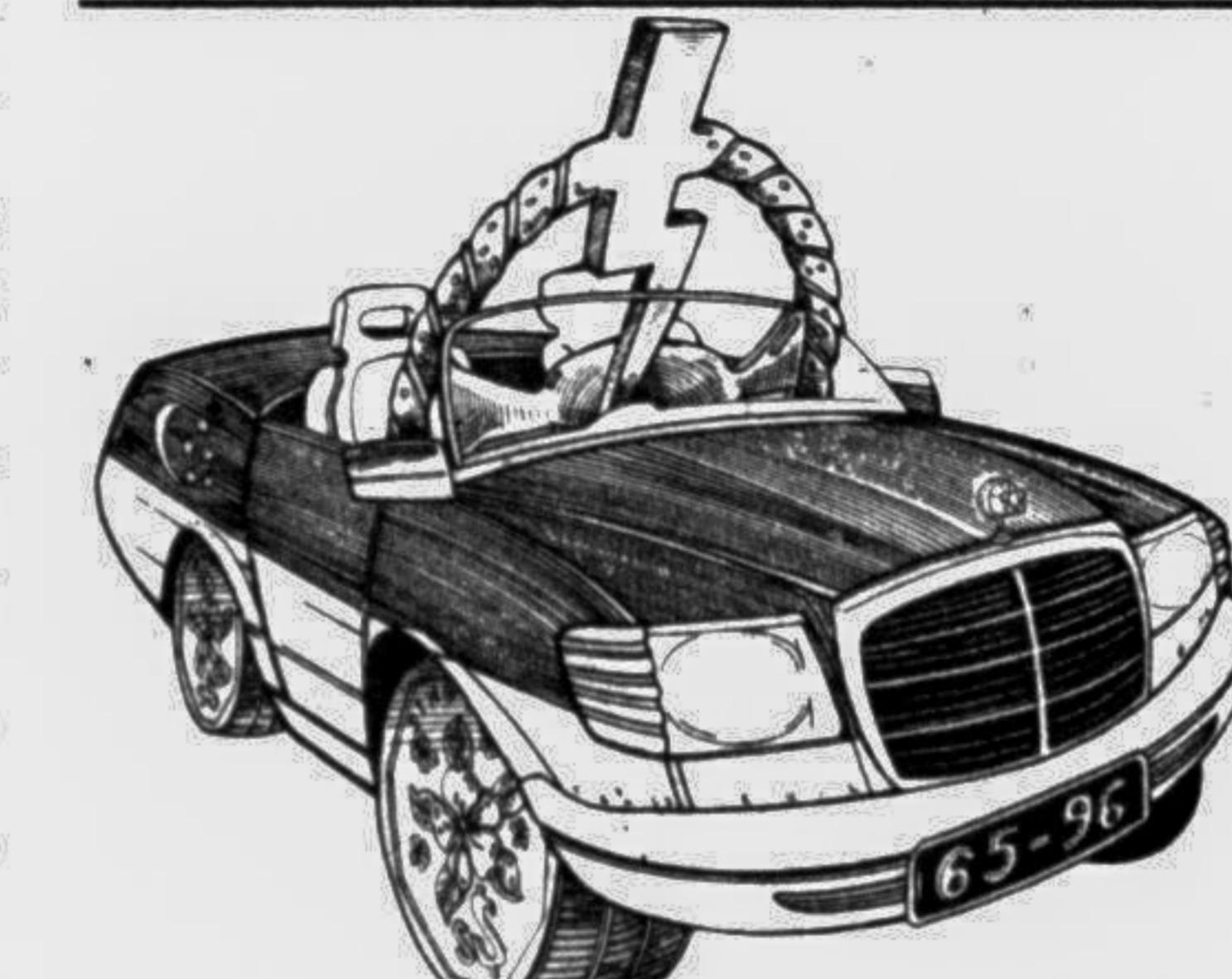
vide for the main hall (downstairs) with lighting arrangements, sound-controls, stage implements, acoustics, sitting arrangements along with rooms for administrative and technical work. Dressing, theatre museum, library, seminar hall, training, conference, fitness, rehearsal rooms, audio-video and photography labs, inquiries, and a lounge will also be included. Moreover, an open-air amphitheatre is going to be built in the courtyard.

Theatre will play an important role in bringing theatre to international standards and encouraging artistes to take drama as a profession.

SINGAPORE

It's Official : We're Rich!

Tiny Singapore is now officially in the economic Big League, but its leaders are still cautious about the future. Kunda Dixit of Inter Press Service reports from Singapore



On January 1, the Organisation for Economic Cooperation and Development (OECD) officially recognised Singapore as a Developed Country. "So what is new?" would be the response of many visitors to this affluent city-state.

Singapore marked its 30th anniversary of statehood in 1995. It split from Malaysia in 1965 -- an event that put the country on the launching pad for economic lift off. Since then, Singapore's annual per capita income has soared 20-fold to US \$23,000.

The country is today the second richest nation in Asia after Japan, and a role-model for many of its neighbours.

The architect of this economic miracle is Lee Kuan Yew who, until November 1990, was Singapore's prime minister. After handing office to his protege Goh Chok Tong, Lee, now senior minister, still exerts a strong influence in the running of the country's affairs.

That is also why he now feels the need to launch the new friendliness drive. Aimed at making Malaysian society "more stable, closer and productive", the campaign is called MESRA, an acronym for the Malay words for consensus, warm relations, friendship, people and closeness.

It may be little more than, literally, public relations, but it demonstrates that maintaining social cohesion is still a major concern.

At the moment, it looks as though Malaysia may have got the formula right: keeping the nation together but giving its people breathing space. The test will come when growth slows. It is a test this once-frail society looks increasingly capable of passing.

— GEMINI NEWS

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training and investments abroad.

Singapore's success has also been tempered by the strong debate this year that followed the publication of an article by economist Paul Krugman in the *Foreign Affairs Journal* that East Asian growth is mainly due to labour and capital inputs — and not improvement in productivity.

Krugman took Singapore as a case study and said that its experiment could not be replicated.

Singapore's foreign investment-led growth is dominated by transnational companies and local state-run monopolies, Krugman wrote, adding his now-famous line: "The miracle turns out to be based on perspiration rather than on inspiration."

Faced with limits to its domestic growth, Singapore is increasingly using foreign markets as a prop: going the way the Taiwanese and Koreans went boldly before. Singaporean companies' investments abroad shot past the US \$35 billion mark in 1994, and continues to grow in leaps and bounds.

Previously, Indonesia was the main target for investors, but Lee's pet projects close to Shanghai have seen China take over that spot slot. Goh, meanwhile, has been making forays into India, while the country invested US \$272 million in Burma in 1994, being the main investor in that country.

Still, some critics say the government has proceeded too cautiously, and this may have resulted in missing out in some lucrative contracts abroad.

In the words of some business men, government controls have indeed stifled creativity. What is lacking, said one, is that "killer instinct" that is characteristic of Chinese businessmen from Hong Kong or Taiwan.

Away from economics, Lee is a leading proponent of Asian Values, hitting out at any Western attempts to foist democratic and human rights rules on the region.

For standing up to the West, Singapore is held in high esteem by almost all of its East Asian neighbours. So that while the 1994 flogging of US teenager Michael Fay for vandalism may have given Singapore bad press in the West, in Asia most nodded their heads in admiration.

But last year, Singapore rubbed one of its neighbours the wrong way by a similar application of its rigid rules. It convicted a Filipino domestic worker for murdering a four-year-old boy and his baby-sitter and hanged her despite the request for a stay of execution from Philippine President Fidel Ramos.

Some analysts look at the outpouring of freedom in Taiwan's December elections, and the dramatic trials of former leaders in South Korea, and say Singapore will inevitably have to loosen up.

James Bond

BY IM REED

DRAWING BY ERIC

IN THE AIRPORT

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CRAZED

FROM THE MESSAGE RACK

IS NOT SEALED!

THE STYLING

MESSAGE

FOR G.C. PRESTON

FROM LIMA

SINGAPORE

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