

## ENERGY OPTIONS FOR BANGLADESH

## Coal, Renewable Energy Sources, and Conservation

Houses, factories, and other structures can be designed and landscaped to minimize temperature variations by taking advantage of the motion of the earth as the seasons change. In fact, one should study the designs of building by the Moghuls or even the British. Structures built by them were much more energy-efficient than structures being erected now.

by Dr Ahmed Badruzzaman

In Bangladesh coal was first discovered in Bogra in the late fifties. Subsequent discoveries of coal deposits include an estimated one billion tons in Jamalpur at approximately 1000 meters (m) below the surface, 450 million tons at Pirganj in Rangpur at 150m, and 350 million tons in Barapukuria in Dinajpur at approximately 240m. The Jamalpur deposit is economically unfeasible to exploit at present and the Pirganj deposit needs further assessment. A project was undertaken at Barapukuria to construct an underground mine.

While the above are considerable deposits, exploitation of a coal will be a challenging undertaking in Bangladesh. Even in the US which produces a million tons of coal per year, oil and natural gas offer a less demanding alternative. Coal is one of the most polluting fuels. The 1979 Harvard University study states, "serious environmental problems exist at practically every part of the coal system," from mining to transportation to burning. In underground mining that would be needed to produce coal in Bangladesh, one would face acid drainage and subsidence of the ground. Miners would suffer from the "black lung disease" that has caused disease and death among generations of miners around the world. Transportation of coal will require a large number of trains. If a pipeline is used to transport coal after it is made into slurry, a large amount of water will be needed.

In addition to producing carbon dioxide that arises in using fossil fuels, burning of coal generates such hazardous substances as sulfur dioxide, nitrogen oxide, and trace elements like arsenic, cadmium, lead, mercury, etc. The coal ash produced has to be disposed off. Using scrubbers can reduce the amount of sulfur dioxide, but that would produce sludge, another pollutant. According to the Harvard study referred to previously, it will be

difficult to mitigate all of the negative environmental effects of coal. Gasification of coal has been studied but its long-term feasibility and costs are unclear.

## Renewable Sources

**Solar and Wind:** There has been a considerable interest in renewable and alternative energy sources in Bangladesh. Solar and wind are two likely candidates. There are a substantial number of days with sunlight available to Bangladesh and the sun has always played a significant role in several areas of economic activities in the country. These include drying of paddy, raw jute, fish, washed clothes, etc. If these activities can be performed more efficiently, solar energy can be a key component of Bangladesh's future economic growth.

The first photovoltaic (solar cell) project in Bangladesh (solar cell) project in Bangladesh was opened at the offshore island of Sandwip in 1989 to provide power for two different applications, namely, the communication link in a hurricane shelter and medicine preservation. Solar panels to meet power needs of individual buildings and small business establishments may now be economically viable in Bangladesh, especially in view of the uncertain availability of electricity from the central grid that often is subject to blackouts. However, the economics of modern solar energy collection systems for large plants will have to improve further.

Windmills can be used to produce electricity locally, especially in coastal regions. However, this needs further exploration. For example, design of windmills that can survive a cyclone or a tornado, that are common in Bangladesh, or design of energy storage capabilities to store excess energy produced in such conditions.

**Efficient utilization of traditional sources:** Use of twigs and jute sticks can be made much more efficient by using specially designed stoves instead of open hearth first that are used cur-

rently in villages to cook. Also, raw materials can possibly be reformed, for example, pellets can be made from jute sticks by compressing them to increase their transportability and energy density. More efficient bio-gas plants can better utilize the huge amount of cow-dung available. Efficient utilization of traditional energy sources will reduce the growing demand for natural gas as a cooking fuel, making it available for industrial development.

**Cow Methane:** Bangladesh has a large number of cows which are a source of a large amount of methane, the primary component of natural gas. Currently, this methane escapes into the environment and contributes to the greenhouse effect. However, it can be a source of fuel if it can be collected. This is an old concept. One would have to house the cows in interior structures and design collection and piping systems for the methane. Recently, such a system was tested in Nepal by Anil Chitrakar with funding from Ashoka Foundation, a non-profit organization based in Arlington, Virginia. However, a large-scale implementation of this concept in the near-term appears unfeasible.

## Energy Conservation

Finally, a much-overlooked source of energy is energy conservation. The 1979 Harvard study, referred to previously in the article, estimated that at time, the energy consumption in the US could have been reduced by 30 to 40 per cent by reducing energy waste without diminishing the standard of living. Since then, considerable improvement has occurred in the US ranging from design of energy-efficient automobiles and home appliances to better insulation in housing, etc. The air quality has improved, even in such high-smog areas as Los Angeles, and the standard of living in the country has improved significantly in the past 20 years. Government mandates for more efficient cars and appliances, tax incentives offered for

alternate energy sources, and a strong environmental movement, coupled with market forces, have reshaped energy usage in the US and, indeed, in much of the West.

Of course, at first glance, conservation may not be a realistic goal in a country like Bangladesh where energy consumption is low. However, several avenues exist for energy conservation in the country. For example, improved stove designs can significantly improve the efficiency of using traditional fuels. In addition, the cooking habits of natural gas users should be assessed to reduce waste.

"System loss" prevention in the electrical grid constitutes another important energy conservation measure. A 1975 study sponsored by Asian Development Bank estimated that a large fraction, perhaps over 30 per cent, of the electrical energy produced in Bangladesh, is unavailable due to loss in power stations and transmission lines. Add suspected unauthorized connections to this and the toll would be much higher. Sporadic attempts have been made to arrest system loss. The recent decision by the World Bank to provide assistance in this sector after a twenty-year absence in welcome news.

Another source of energy wastage is the design of high rises, glass structures, and low-ceiling houses in Bangladesh that demand massive air-conditioning. Houses, factories, and other structures can be designed and landscaped to minimize temperature variations by taking advantage of the motion of the earth as the seasons change. In fact, one should study the designs of building by the Moghuls or even the British. Structures built by them were much more energy-efficient than structures being erected now.

The author is Coordinator of Bangla Energy Forum. Opinions expressed are his personal and not intended to reflect those of the organisations he is or has been affiliated with.

## The Political Greenhouse Effect

by Abul M Ahmad

The politicians in the third world often talk glibly about the natural atmospheric Greenhouse Effect, so scientifically publicised by the international agencies, but they are always silent about the political pollution by bad and crude political culture they are creating themselves, when trying to govern their own countries for welfare of their own people. The political leaders consider themselves above criticism, and ridicule their critics in no uncertain terms. Why this one-way communication? Why criticism against them is termed by them as anti-national and anti-patriotic? Why and how a party becomes a judge?

In Dhaka, the situation and the attitude are not different. The ruling regime (human, but not divine) is bent on a ridiculous propaganda of branding the combined opponents (the Opposition is regarded as "the government in waiting") as indulging in subversive activities and all types of conspiracies, with the worn-out "country-in-danger" theme. Such negative attitude by political leaders cannot push the country forward, while they try to remain in power by finding fault in others. The greatest weakness in local politics is the holler-than-thou mental make-up; as it is a

sign of inferiority complex. Due to weak political leadership and poor decision-making mechanism, and short-sighted foresight and judgement, the country's political progress has been stalled, and the politicians are not willing to take the responsibility for this lapse (no awareness perhaps of this responsibility). This is not a secret accusation but an open challenge. Now, since the 1990s, these 'democratic' politicians are playing undemocratic games to hoodwink the public through alibis; and they expect it should not be pointed out!

The voters generally do not care for the name of a political party, but notice the performance of the politicians when they are in power; that is, the governance, and whether it is good, bad, or indifferent. If the politicians are under the impression that their public performance, transparent or non-transparent, cannot be judged by the man in the street, they are sadly mistaken, as the rise and fall of the political parties (all over the world) would reveal.

Basking in past charisma cannot deliver. The politics of the present moulds the image of the future. The past is for record in the history books, and is relevant in the history class rooms and

research centres. Past history may not be mixed up with day to day politics, as it is not essential. The government, any successive government, has the same people-oriented objectives for development, and the name of the party is immaterial. Why bank on names and personalities, when the dividend and interest are not forthcoming? The politicians seem to be employing the wrong marketing strategies for political continuance. Why we cannot practice sustainable political culture?

More question: Why personalities are directly involved in government activities, although considering that the government is anonymous, and its output is the combined effect of the teams or system? Every successive government cannot be revolutionary, because it is expected to be evolutionary, working in layer upon layer.

This tendency to usurp all the credit by a single regime is to be deplored, as it is not in public interest. Why do we lack normal thinking process, employing normal attitude towards life and activities? Why the ego comes before national interest? Party propaganda is inward looking, while national objectives are outward looking and open-ended. Why we cannot have open-ended

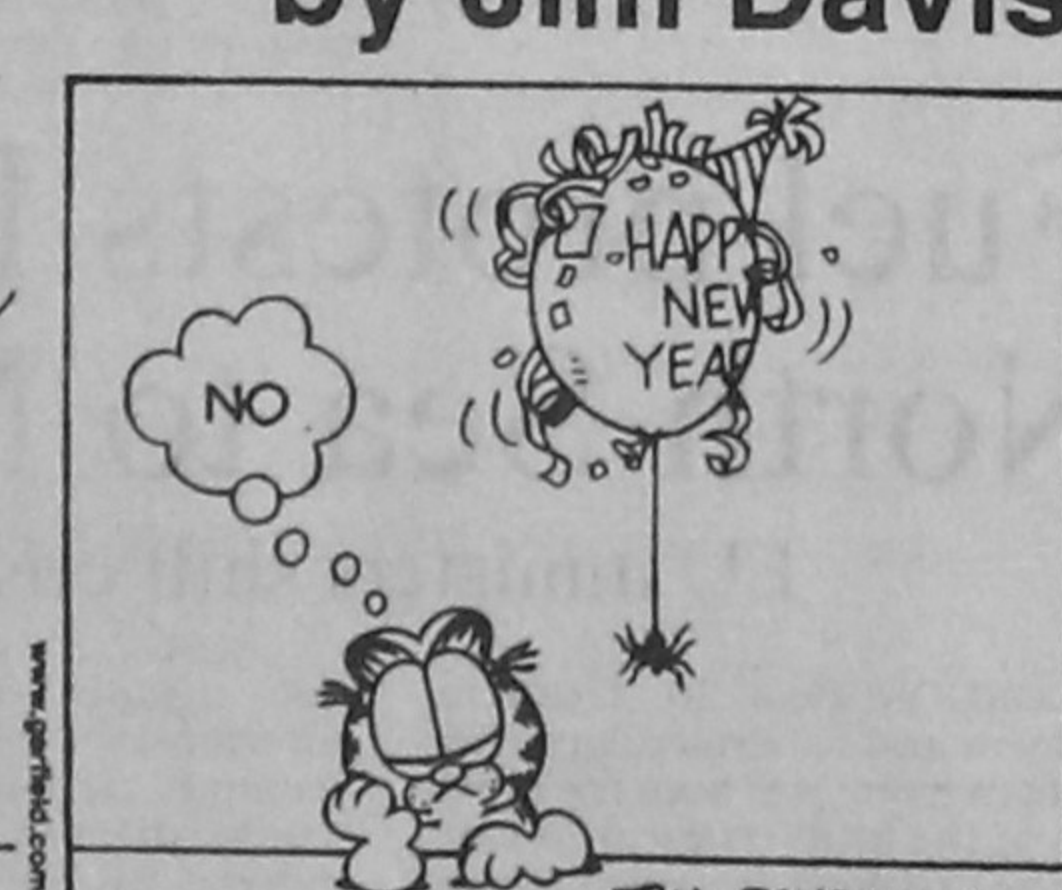
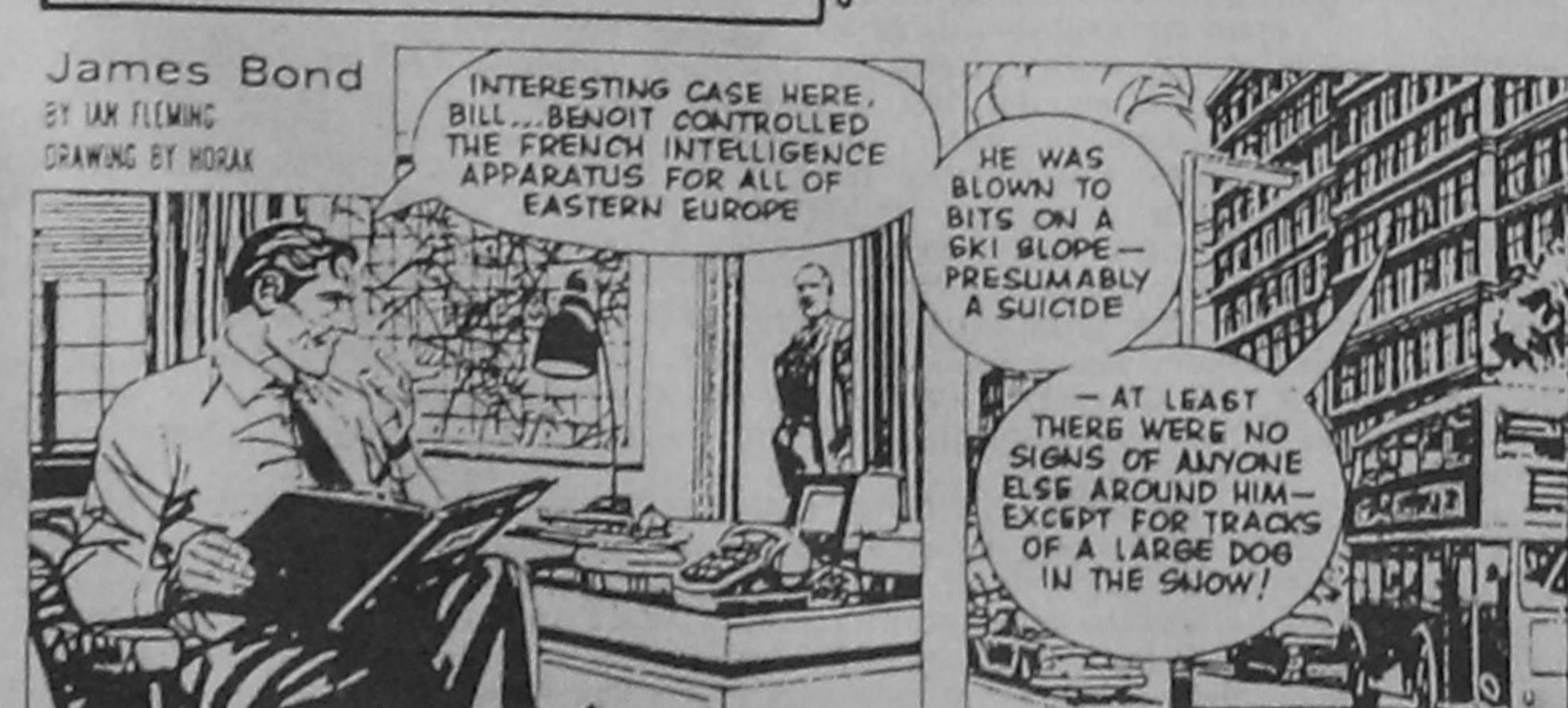
politics? Perhaps it has to be defined first.

The followers are not being properly coached or reprimanded for over-praise. Sycophancy is our bane, but it is very much there in a have not society (ask the academics). Too few supervisors are looking after too many citizens; and most of them are under-qualified and under-experienced, and in addition, do not have the right motivation for public service. The politicians consider themselves to be too healthy to heal themselves first, before prescribing for others.

Politics cannot improve in the newly emerging nations until and unless the leadership is strict in controlling moral lapses and undesirable practices in the followers (notice the undercurrents of internal rifts). Internal criticism within a party must be encouraged for better teamwork, and keeping ambitious top leaders under leash. Political waywardness is a local weakness, and is damaging when power and influence are misused.

Internal cleanliness comes first, before applying the external cosmetics for public display. We do not have spartan leadership. What has happened to plain living and high thinking? Is democracy materialism? Let the politicians respond to this quiz.

## Garfield®



by Jim Davis

James Bond

BY IAN FLEMING

DRAWING BY MORAN

INTERESTING CASE HERE. BILL... BENJAMIN... THE FRENCH INTELLIGENCE APPARATUS FOR ALL OF EASTERN EUROPE

HE WAS BLOWN TO BITS ON A SKI SLOPE - PRESUMABLY A SUICIDE

AT LEAST THERE WERE NO SIGNS OF ANYONE ELSE AROUND HIM - EXCEPT FOR TRACKS OF A LARGE DOG IN THE SNOW!

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VERY INTERESTING INDEED, JAMES... IT'S THE THIRD ODD CASE IN FIVE MONTHS INVOLVING AN ANIMAL!

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## Washington Twins Face Protestors' Bleak September

The IMF and World Bank have moved the venue of their annual meetings from Washington for the first time. (IMF/World Bank annual meeting in Prague from September 26-28). But this will not stop their many vociferous critics from following them to Prague to continue the protests against the institutions' support for economic globalisation. A Gemini News Service correspondent reports on an autumn of discontent that began with the Battle of Seattle last winter.

Ken Laidlaw writes from London

## Globalisation: troubling trends

**We need your money**

- Foreign direct investment (FDI) in 1997 totalled \$400 billion - seven times the 1970's level. But 58% went to industrialised countries, 37% to developing countries and 5% to the transition economies of Eastern Europe and CIS
- More than 80% of FDI in developing and transition economies went to just 20 countries, mainly China
- Only 25 developing countries have access to private markets for bonds, commercial bank loans and portfolio equity
- The top fifth of the people in the richest countries enjoy 82% of the expanding export trade and 68% of FDI

more anti-globalisation demonstration.

The Prague 'Initiative' states that some 40,000 members of the global financial oligarchy financial and corporate institutions control 80 per cent of the world's trade. Possessions of the world's 200 richest people are worth more than the total income of 41 per cent of the population of this planet.

Protesters argue that any successful large-scale debt relief or anti-poverty programme would require more resources from the wealthy nations. Yet, the United States in the throes of an economic boom gives little more than one-tenth of one percentage point of its total economic output as non-military aid.

Even the World Bank admits there is little hope for improvement.

Its World Development Report released last year concludes that, "if current trends continue, the international development goals of reducing by half the proportion of people in extreme poverty by 2015 will not be met." Nor would the primary education target of

full enrolment by the same year, a goal set by the United Nations social summit in Copenhagen in 1995.

Protesters blame the three organisations for encouraging economic globalisation, which they say has blocked efforts to reduce poverty.

"Within the framework of the so-called Structural Adjustment Programmes, the IMF and the World Bank enforce strict conditions for providing loans to developing countries (economic) deregulation, liberalisation and privatisation," said Prague-based 'Initiative'.

Economists, environmentalists, trade unionists and many others argue that World Bank projects have destroyed the environment and caused immeasurable human suffering and that IMF policies increase poverty by requiring cutbacks in social services.

"These institutions have turned countries... into 'colonies' of multinational corporations that want access to cheap labour and natural resources," said Juliette Beck.

The anti-WTO movement, after its success in Seattle, has expanded its sights to take on the IMF and the World Bank as the main agencies promoting globalisation.

"Globalisation is not happening. It is being made to happen through IMF and World Bank conditionalities and the coercive rules of the WTO," said Vandana Shiva, director of the Research Foundation for Science, Technology and Natural Resource Policy in New Delhi.

"Every time the World Bank lends, it is lending for destruction, it's lending for the transfer of the assets of the poor," Shiva, a high-profile critic of Western economic policies, told US Online Newshour.

Protesters also claim that the IMF and World Bank are too busy promoting the interests of multinational corporations to care about the poor. Fifty-one of the 100 largest economies in the world are corporations.

"It's clear that these institutions are about promoting corporate welfare and not eliminating poverty," Beck said.

The protesters' message in Prague is very clear: globalisation has not led to economic benefits for all, as was promised by its advocates.

Rather, poverty, hunger and landlessness have risen. Social unrest is unprecedented, the economies of most countries are in shambles and the planet is on the brink of environmental catastrophe, according to the Sienna Declaration signed by over 40 organisations from 20 countries.

The question is not about closed or open trading systems, said Beck. What needs to be questioned are the values being promoted by the global rule makers.

As the protesters in Seattle and Washington said and those in Prague are set to, maximisation of corporate profits for a few is what is being encouraged. This is being done at the expense of meeting wide-ranging human needs and environmental protection.

The author is a freelance journalist who specialises in world trade and development issues.

## The Looming Threat of Asteroid

by Ekram Kabir

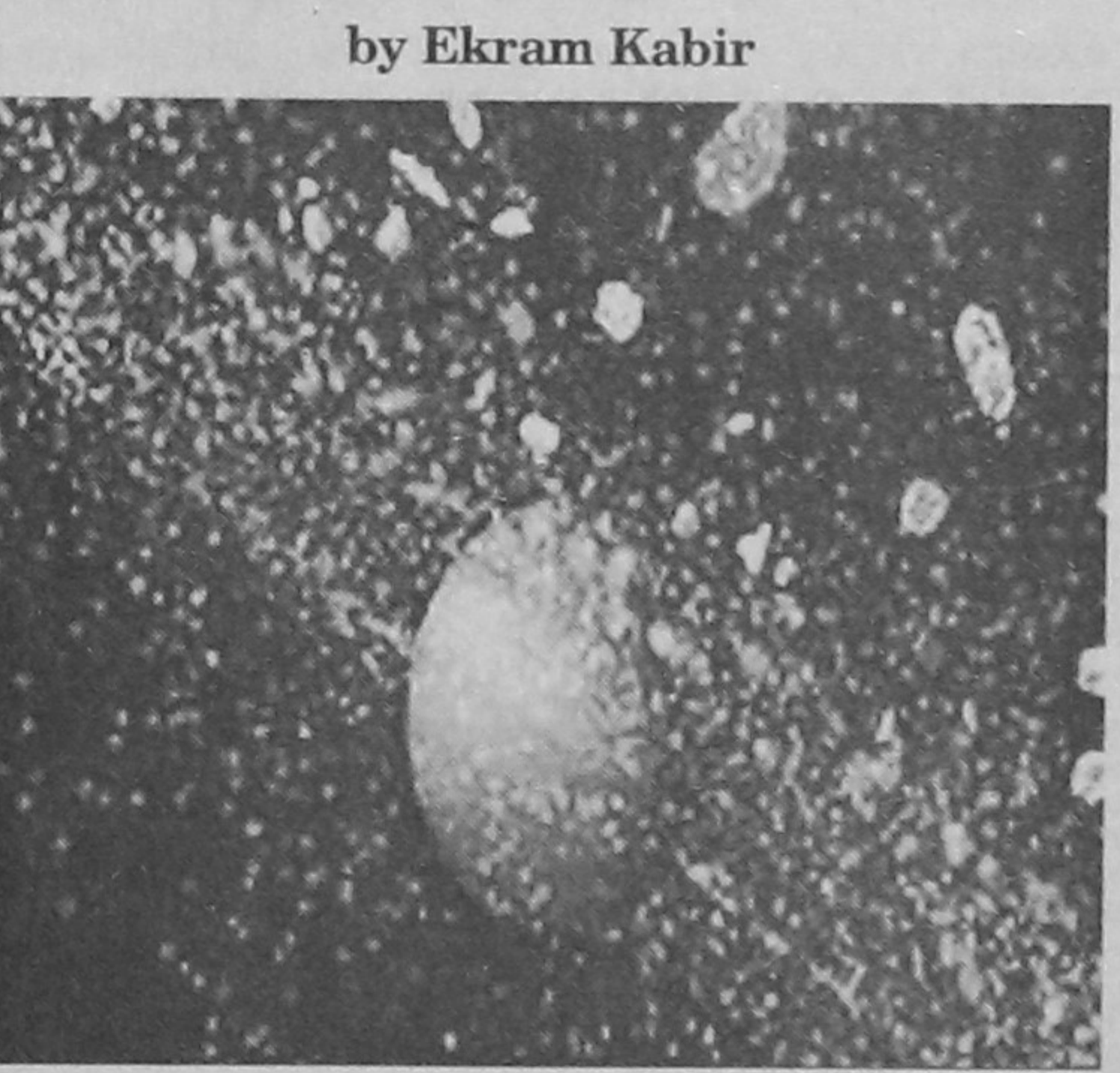
SCIENTISTS say that a large asteroid will miss the Earth by only 38,000 kilometres in 2027. This may be quite scary for the planet. This is an extremely close shave the Moon orbits 10 times further from Earth! Calculations by scientists suggest that an impact is not possible that year but, in theory, the Earth's gravity can perturb the asteroid's path, possibly leading to an impact in 2039. The near-miss trajectory of a newly discovered asteroid, called 1999 AN10, was announced recently.

But now what scientists, especially the British, became worried about is that an asteroid named 2000 RD 53 came within 1.5 million miles of the Earth on September 17 last. It was approximately 400 metres in diameter and although not visible to the naked eye was capable of being seen by amateur astronomers using 8-inch telescopes. The asteroid will continue to be observed for some time as it passes harmlessly into the depths of the Solar System.

But if the object had collided with the planet it would have caused considerable devastation with millions of casualties. "The 2000 RD 53 is a relatively small asteroid, yet still capable of doing enormous damage," Zelda Stark of London-based "Atlantis Publishing" said while informing The Daily Star.

Formed in 1990, Atlantis Publishing distributes a whole range of material to the press all over the world. Its aim is to increase awareness of the circumstances that cause global disasters in the hope that one day they will be better understood. Members of "Atlantis Publishing" also believe that the climate, as well as earthquakes and volcanic eruptions, are influenced by factors such as planetary alignments, solar storms, and a whole range of other contributory factors. The pioneering work of the organisation is intended to show a connection between these events and eventually pinpoint when and where they will occur.

So, how can an asteroid destroy the Earth? It would be most unlikely, if not



impossible, for an asteroid to destroy the planet, says Zelda Stark. The Earth is many times larger than the biggest asteroid and quite capable of absorbing the consequences for life on the planet are a different matter. There is a definite possibility that a hit from a large enough asteroid (one greater than 2 kilometres in diameter) can extinguish much of life on Earth.

Interestingly, Planet Earth has been under this kind of threat for a long time one can trek. Ever since the human race existed, the danger from comets and asteroids has been a reality. It is estimated that a major asteroid impact occurs every 25,000 years. Scientists believe the next strike is long overdue, and this has increased fears for the future. The fact is that eventually the planet will be threatened by another global disaster and governments everywhere are finally beginning to wake up to the threat. The unhappy truth is that as things stand at present we could be hit with absolutely no warning at all!

The Earth must have escaped catastrophes in the past. Although it is difficult to quote

reliable figures for the past, it is certain that even within the last hundred years the Earth has been very lucky. Only weeks ago there was a near-miss with an asteroid measuring over a kilometre in diameter.

There were many notable near-misses within the last 10 years. In these cases, the asteroids although they were still capable of destroying large cities here on Earth. In 1991, a small asteroid passed just 100,000 miles from the Earth. Two years later in May 1993, another asteroid missed us by just 80,000 miles. The year 1994 saw two close shaves with asteroids that hurtled by at a distance of only 100,000 miles. Although these distances may seem vast, in astronomical terms they represent no more than a cosmic wink that sometimes separates us from outright disaster.

In the early years of the 1900s a fragment of a meteorite devastated hundreds of square metres of a remote Siberian forest. A similar strike over a heavily populated city would produce millions of casualties in a catastrophe almost too fearful to contemplate. Now, what if one asteroid actually hits the Earth?

It depends very much on the size of the asteroid. It also depends on where the asteroid strikes. For instance if a 2-kilometre asteroid were to hit the sea it would raise tidal waves of unimaginable proportions up to 10 kilometres high. This would naturally pour across continents washing away towns and cities regardless of their method of construction.

On the other hand if the impact were on land it could, according to some scientists, release enough energy to remove the entire Earth's atmosphere. Some experts believe this may have already happened to the Moon and the planet Mars. Both are once believed to have had rivers of flowing water, yet are now barren and lifeless.

In the aftermath of such a strike it is debatable if life could survive. In the final analysis it all depends on the size of the asteroid. Small ones can destroy great cities. Major ones can destroy all life on the planet.

Can we protect ourselves from this looming catastrophe?

The human race is finally waking up to the fact that unless they do something soon they shall eventually (within the next 500 years) be exterminated by either a comet or an asteroid. With this in mind, the US and UK are attempting to set up an early warning system that will attempt to plot the orbit of every Earth-threatening asteroid. There are currently believed to be around 2000 of these objects, yet only 100 have been discovered.

If an asteroid were on a collision course to hit us then scientists would be under extreme time pressure to deal with it. If one had 10 years warning it is likely astronomers might be able to deflect it with specially designed missiles. Unfortunately this capability would be short-lived if the asteroid were detected much later. Even worse is the realisation that if scientists discovered an asteroid scheduled to hit the Earth within two years there is certainly nothing they could do about it.