

Feature

Development

Machinery Manufacturing and Economic Development

by M M Huq, K M N Islam, and N Islam

TECHNOLOGICAL change generates improvements in the transformation of inputs into outputs and is central to the development process. Adam Smith was aware of the importance of technical change and productivity improvement and he devoted the first chapters of the *Wealth of Nations* to these issues. Many development economists, including Lall, firmly believe however that failure to consider LDC innovation and generation of technology is a missing link in contemporary analysis of Third World industrialisation.

In recent years the machinery manufacturing sector in developing countries has attracted increasing attention on the grounds that "machine production lies at the heart of the processes involving the generation and diffusion of technological change". Rosenberg, a pioneer in technology studies, believes that most forms of technological change, whether they involve process or product change, require the production of new or modified machinery. The use of such machinery enables the diffusion of technological change within the economy. Dahlman and Westphal have also advocated the need for a local machine-producing capability in promoting minor forms of technological change such as the modification and adoption of products and processes. According to Frances Stewart, any successful industrial expansion is likely to be associated with some local technological activity, because adoption to local conditions is part of the process of successful industrial activity. Forsyth argues for the promotion of local production of plant and machinery while advancing the case for technology policy in developing countries. He strongly believes that the development of the machinery manufacturing sector should be a specific objective of developing countries seeking to ensure technology absorption, since he holds that there is a "symbiotic relationship between machinery producers and users".

Pack, Amsden, Dahlman, Westphal and Lall, among others, have examined the capital goods sector in developing countries and agree, almost unanimously, that in order to develop indigenous technological capability a developing country must take measures to expand the capital goods sector, including machinery manufacturing. It is felt that absence of a capital goods industry is a

serious hindrance to rapid capital accumulation and sustained economic growth. Moreover, the capital goods sector is one of the few sectors which has strong dynamic elements: firstly, it lays the foundation for raising the basic engineering skill of the workforce; secondly, besides producing machinery and other equipment, it is capable of producing much needed spare parts for a large number of industries; thirdly, an R & D capability, which is an integral part of the capital goods sector, is of considerable assistance in the adaptation of imported technologies and, thus, contributes greatly to the diffusion of technology; and finally, the process of import substitution, with its attendant demands for machinery and equipment, is likely to be constrained where the local capital goods sector does not develop.

The machinery producing sector, considered as being central to the production and diffusion of technical change, has received priority in the industrialisation strategies of almost all developing countries

which are now considered as newly industrialised or semi-industrialised. Indeed, in countries such as Argentina, Brazil, India, China, South Korea and Taiwan which have become important producers of machinery. Government policies have actively sought to promote the growth of the machinery manufacturing sector. The emphasis on machinery manufacturing in these countries reflects strong belief that the growth of the capital goods sector is a precondition for achieving indigenous technological capability.

To date no extensive study has been undertaken of the machinery manufacturing sector in Bangladesh and there is a serious lack of evidence on the state of current indigenous technological capability. Some specific studies, mainly to help develop an appropriate tax-structure, were undertaken by the TIP of the Bangladesh Planning Commission in the mid-1980s. For example, separate studies were conducted, one on metal working industries by Norbye, and two studies by Warner, — one on electric mo-

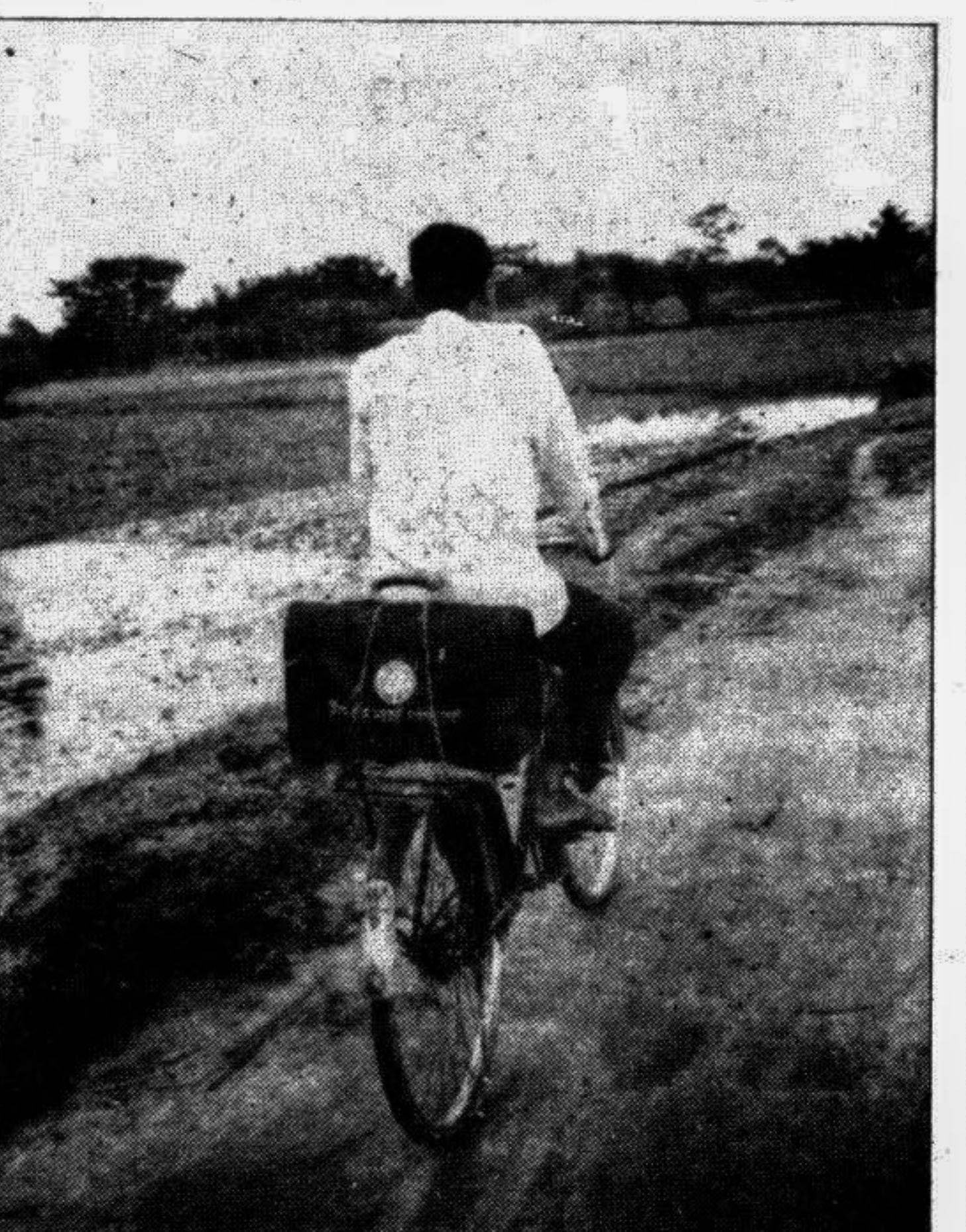
tors, and the other on diesel engines. An important message coming out of these studies is the need for correcting tax anomalies so as to enable capacity utilisation and also to expand exports. According to Norbye, "exports are important for the development of the local engineering industries because they permit large scale operations and better utilisation of machinery, equipment and skilled labour.... Moreover, subcontracting of fabrication of parts is also possible and in many cases necessary. In any case, local markets are small for many engineering products, and thus exports may prove to be necessary to reach an economical level of output." By comparing the policies pursued by South Korea and Taiwan with those in Bangladesh, Amsden found that "the Government of Bangladesh appears infinitely less supportive of the exporting efforts of local firms, including public enterprises. This appears particularly so in the case of subsidising local firms in their efforts to win international tenders for the foreign exchange component of aid financed projects." Warner identifies a number of basic problems which are also common to other capital goods producing in Bangladesh including high rates of taxation of imported raw materials, concessionary rates of duty on competing imports; fragmentation of the markets dominated by project aid financed procurement; and inadequacy of incentives to supply international tenders against foreign exchange. Siddiqui has also been very critical of government policy in the engineering sector. He examined the performance of the large engineering plants, particularly those in the public sector involved in production technology (foundry, press work, fabrication, heat treatment), product design and subcontracting, and found the performance of the sector highly disturbing.

In the recent past, the Bangladesh Steel and Engineering Corporation examined the issue of local participation in the construction of Jamuna and Karnaphuli Fertilizer Projects. While it was found that as much as 37 per cent of the total project work of large scale fertilizer plants could have been completed locally, there was nil or negligible actual local involvement.

The writers were associated with BIDS' technology project.

Profile of a Village Vet

by Kumar Rabi Deb



Profulla Kumar was a boy in class 8, his father died, leaving the family penniless. From then on, Profulla toiled alone on the 0.45 acres of land that provided a simple livelihood and shelter for him and his mother. A lonely widow, Profulla's mother persuaded her son to marry, and his new wife soon joined them on their plot in Bharatpara village in Kurigram, northern Bangladesh. Over the next few years she presented Profulla with three beautiful daughters.

With a family of five to feed, Profulla found it difficult to make ends meet. On his small plot he grew vegetables to sell at the local market, but he earned too little to buy food and clothes. Profulla tried hard to expand his business but, as a poor peasant without land or capital, that was impossible. Then, in 1990, his luck changed.

For many years, non-governmental organisation Rangpur-Dinajpur Rural Service (RDRS) has been working with the poorest rural people in Kurigram District and five other Districts of northern Bangladesh. In 1990, Profulla became a member of an RDRS-organised group of 15 landless and marginal farmers from around his village. Since he already has some business experience, Profulla was elected Treasurer, keeping the Groups, accounts and working closely with the Chairperson and Secretary. As well as attending regular Group meeting supported by an RDRS Organiser, he attended social awareness and other classes that widened his horizons and gave him confidence to tackle his own problems.

Motivated by his Organiser, and using credit obtained from RDRS, Profulla began vegetable

gardening, planted saplings around his home as well as rearing ducks and chickens. The chickens caused Profulla a few problems as rearing them went against his community's Hindu customs. Despite this, Profulla persevered and bought two goats. A year later, he was able to invest in two cows costing Tk 6,900 (\$170) from the in-

come of his vegetable, fruit and poultry sales.

Profulla encountered a second problem rearing poultry and livestock — they often suffered from disease. The nearest veterinary clinic was 12 kilometres away and vaccines were seldom available. A far-sighted individual, Profulla went to his group's Organiser and sug-

gested he should be trained in livestock care. After a one-month course organised by RDRS, Profulla acquired the skills and knowledge necessary to be able to look after his own animals and those of his neighbours.

Using his group training in how to organise a business, Profulla maintains a register about the animals he cares for. In contact with the vet in Ulipar, he goes to the clinic for advice on complicated cases and to purchase medicines. Those the vet does not have, he buys from the marketplace.

In his community Profulla is now known as 'the veterinary doctor'. He has a small office in the local bazaar where he sits from 4 to 9 pm every day, where everybody knows he can be approached for advice and medicine. During the day, Profulla works his land and makes calls to other homesteads to tend sick livestock. Carrying his doctor's bag on his bicycle he is a welcome sight in the village — the bag containing a few essential medicines was provided by RDRS. A good businessman, Profulla now has a monthly income of Tk 2,300 (\$58) from his veterinary work and has bought or leased a total of another 0.43 acres of land for his family, costing him Tk 14,800 (\$350).

From a penniless boy, Profulla has become a respected and important member of his community, thanks to his own commitment and some help from RDRS. His village now enjoys low-cost veterinary services by a trained local man. But he is not someone to sit back and make do with what he has. Profulla's ambition is to receive more training for, as he says, "there are many more problems here than I can solve just now." — RDRS



Caritas Works in Promoting Universal Solidarity

by Sharier Khan

Caritas works to help people, which means we have totally employed 6,600 persons in the 66 construction sites.

The mother organisation of the Caritas organisations around the world is the Caritas International in Vatican City which was set up in 1945. The purpose of this non-government organisation is to maintain the link between different Caritas organisations and set up new ones in different countries.

The fund we are using in Bangladesh has exclusively been raised from the people of Italy following the devastating cyclone in Bangladesh which killed more than 130,000 people in late April 1991." Pasini told the Daily Star in an interview in the city.

Besides the Red Crescent Society the Caritas is the only NGO in Bangladesh that built 12 well fortified, highly durable cyclone shelters in 1986-87. Eight came into use and offered protection to 2,500 persons each on the deadly night of 29 April 1991.

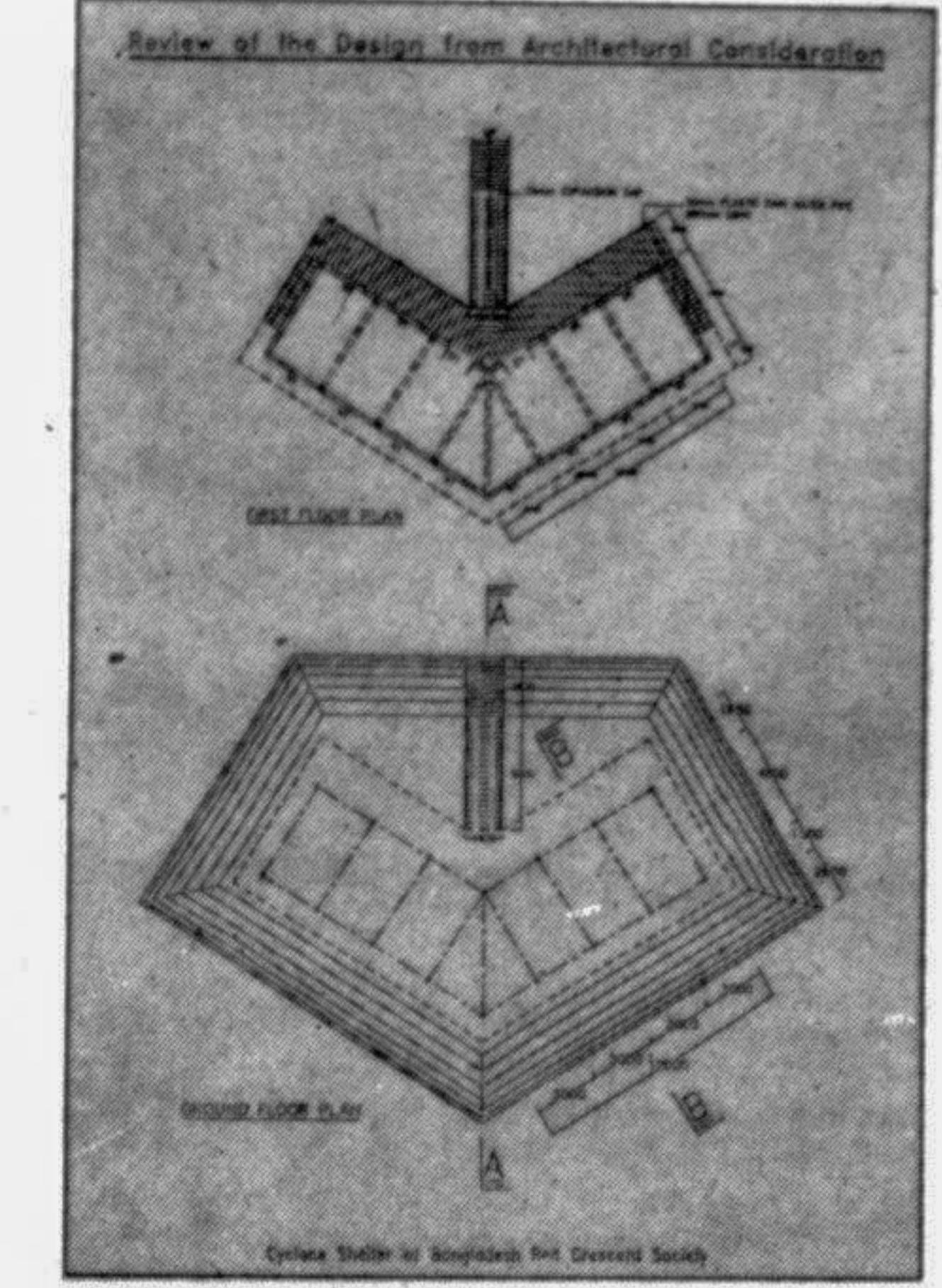
"Usually Caritas does not construct things to help people but it concentrates on aiding people in education, health, legal rights, human rights and women rights," Pasini said in his mother tongue which was translated into English.

"But in the case of cyclone, the Caritas workers worked extensively in the affected areas and asked the people what their prime needs were. Almost everyone answered they needed cyclone shelters first and school premises next," he thoughtfully pointed out.

The Caritas Italiana, one of the 130 other Caritas organisations in different countries of the world, then launched a campaign. The aid for the cyclone shelters amounts to about US \$10 million.

In addition to the cyclone shelters and school premises which also serve as shelters during any natural calamity of the country, the Caritas had used some of the fund in coastal embankment and tree plantation in the construction sites.

"For each cyclone shelter we have employed 100 people com-



Cyclone Shelters at Bangladesh Red Crescent Society

Wrong Aid Prescription in Russia

by Adam Tanner

WHILE many Russians are dying because of the simple lack of medicine, the West continues to flood the ex-Soviet Union with food aid that the country does not need.

Minigali Almirov, a 50-year-old welder, died here after an operation to treat clotted blood vessels — which were caused by his failure to secure routine follow-up medication, doctors say.

"There are medicines that could have helped him," said attending doctor Tatjana Galejeva. "We feel guilty in our souls because we could not give him everything he needed."

"The sick are dying and the West is sending us canned food," said Alfya Ismagilova, assistant director at City Hospital No. 6 in this Ural town, 1300 km east of Moscow. "We don't need that. What we need are medicines."

In 1992, the United States, the largest food donor, Germany, the largest drug donor, and the European Community donated an estimated total of US \$574 million in food aid, more than twice the US \$236 million granted in medicines.

The Western emphasis on food aid is a classic case of the aid community reacting to last year's perceived problem, rather than anticipating future problems.

The food aid drive started in late 1991 when there were fears Russians would starve as the country switched to market economic policies in the dead of winter. The fears were never realised.

"If we didn't get this aid, of course, we would survive any-

way," said Lydia Salodina while accepting handouts of US powdered milk in Polevskoi, a town of 80,000 in the northern Urals. Neither she nor her friend Natasha Shakhmina told aid officials their families tended milking cows.

But in the past year, health officials say the medical situation has grown worse because Russia was forced to pay world prices for medicines it once received cheaply from eastern Europe and the former Soviet republics.

"I'm sorry to say, but I think it's mainly the United States that hasn't got the message," Regional health officials say they are waiting for Moscow to

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The Americans are proposing to send more food, not medicine, in order to support American farmers," said Maltzin.

"America is helping itself first and foremost."

Officials at CARE USA, which distributes much of US aid, say food aid provides help to people suffering from high prices and falling nutritional standards. They say it also earns political goodwill.

"We understand we're not feeding starving people," says

Jeff Jacobs, who heads CARE's operations in the Urals. "It's just a nutritional supplement to their diets."

But US aid official Daniel Puzon says Washington is trying to provide Russia with a balance between food, medicine and other needs. The kind of assistance was decided after officials surveyed needs here last autumn, he said.

"We may be moving into an area where that will be a bigger need now," he said, referring to medicines. "But when we did the studies, food was the highest priority. These are going to be changing targets."

Still, when medical aid does get to Russia, it often goes mostly to the largest regional hospitals. In the Urals administrative centre of Yekaterinburg, Oblast Hospital No. 1 had its basement bomb shelter filled with US \$600,000 worth of US medical aid.

But the medicine chest at Ufa's City Hospital No. 6 is almost bare. A Dutch aid shipment it received two years ago has nearly run out, and nurses are running needles and other items usually disposed after a single use in the West.

Food aid also squanders the West's energies and finances, say critics. "I think doing food aid is counterproductive," says Serge Duss, Moscow field director for World Vision, a humanitarian aid organisation that itself was delivering food a year ago.

"This country can feed itself ten times over," he says. "If you keep bringing food though, they'll keep their hands out."

IPS abilities of plant varieties to withstand drought or floods, grow in poor or rich soil, resist pests and plant diseases.

Biodiversity is also indispensable to medical science. Of all prescriptions filled in the United States, for instance, 25 per cent of the substances therein are extracted from plants. Another 13 per cent comes from micro-organisms and three per cent from animals. Khan says: "The continuing loss of biodiversity is as much a threat to human health as it is to world food production."

Scientists believe that in this century alone, about 75 per cent of the genetic diversity among agricultural crops has already been lost. Throughout history several thousand plant species have been used for human food. Today only about 150 are cultivated and just three — wheat, rice and maize — provide about 60 per cent of all the calories and protein derived from plants. This is too narrow a base for safety. — Gemini News

Genetic Loss Could Cost the Earth

by Peyton Johnson

EVERY year the earth is losing its genetic resources. Though no one knows with certainty just how many plant and animal species the world forfeits annually, some scientists say the number may be as high as 30,000.

Baldullah Khan, regional representative for Asia and the Pacific of the Food and Agriculture Organization (FAO), says: "The earth's biological diversity is important to everyone for the simple reason that if we don't protect it, in the long run we may not be able to produce enough food to feed ourselves."

For ordinary people biodiversity does not mean much. FAO defines it thus: "Biological diversity refers to all species of plants and animals, their genetic material and the ecosystems of which they are a part."

The protection of such biological and genetic resources and their ecosystems — referred to as "biodiversity" — is crucial because, says the FAO, the rural poor depend on biological resources for an estimated 90

per cent of their needs." Genetic diversity in agriculture enables crops and animals to adapt to different environments and growing conditions. This diversity accounts for the

to adapt to different environments and growing conditions. This diversity accounts for the