

Feature

Development

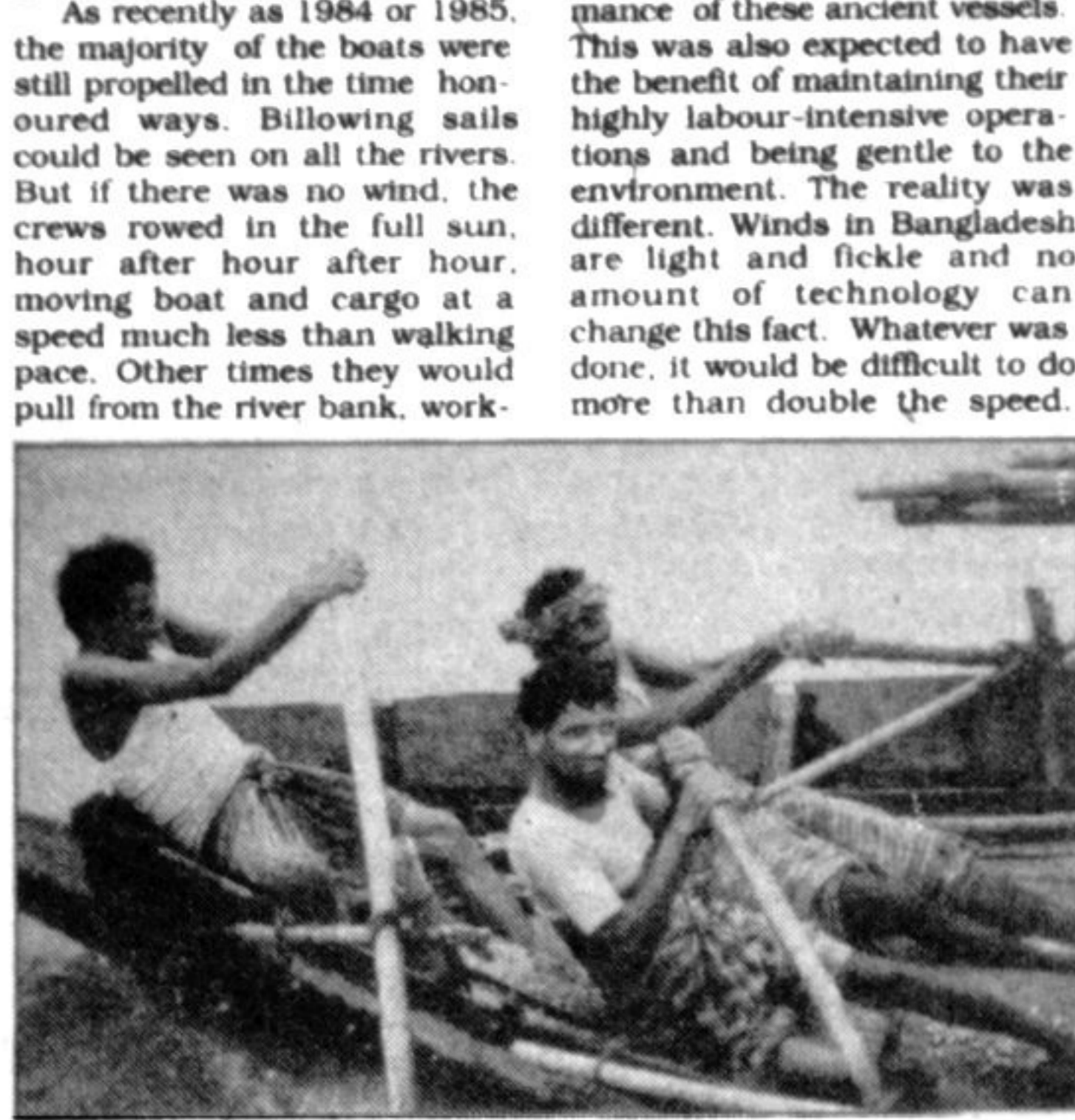
Improving the Country Boats of Bangladesh

by Colin Palmer

The introduction of railways and roads were a threat to Bangladesh's boatmen, but the writer explains how they used their own finance and skills to adapt and compete with the trains and trucks.

FOR generations, the waterways of Bangladesh have been arteries of communication, served by wooden boats built to traditional designs and propelled by sail and human power. They have earned a place at the very heart of Bengali culture. But times change. With the coming of railways and roads, the boat's domination was challenged. There was increasing competition, and social structures were changing too. In the past, the boatmen operated from a trusted and respected position within the rural economy. They had strong personal relationships and conducted their own business, buying and selling cargoes using informal credit secured on the strength of these relationships. As the social structure changed, however, there developed a polarization of wealth which stimulated the rise of a merchant class. Trade became increasingly formalized and the boat men's personal relationships lost much of their economic importance. The boatmen's bargaining power weakened. Gradually they were forced to become the providers of a transport service in return for cash payments, instead of being traders in their own right.

Traditionally, the country boats relied on the wind, the currents, and human power.



Traditionally the boats relied on the wind, the currents, and human power.

When the boatmen were working as businessmen, this slowness and unpredictability may not have been very important, since they themselves were the owners of the cargoes. As they were forced to become providers of transport services in competition with road and rail, however, speed and predictability became more important. The traders liked to know that a cargo would arrive on predetermined market day, so they could get a good price and arrange for one of their people to be on hand to oversee the sale. Road and rail transport in Bangladesh were able to provide a more reliable and faster ser-

vice than country boats, so despite the higher rates charged by these competitors, cargo started to move away from the boats. The fortunes of the non-mechanized country boats began a steep decline. As recently as 1984 or 1985, the majority of the boats were still propelled in the time-honoured ways. Billowing sails could be seen on all the rivers. But if there was no wind, the crews rowed in the full sun, hour after hour after hour, moving boat and cargo at a speed much less than walking pace. Other times they would pull from the river bank, work-

transform the sailing performance of these ancient vessels. This was also expected to have the benefit of maintaining their highly labour-intensive operations and being gentle to the environment. The reality was different. Winds in Bangladesh are light and fickle and no amount of technology can change this fact. Whatever was done, it would be difficult to do more than double the speed.

In the space of a few years, large numbers of small diesel engines became widely available. Initially, they were imported from Japan and had to be subsidized. More recently, they have been imported from China at much lower prices.

What then happened was unprecedented. These engines started to find their way onto boats in very large numbers. The process was entirely the result of initiatives from the boatmen themselves, and was built upon a very narrow base of existing technology and experience. They quickly introduced innovations, with no help or guidance from outside 'experts', and transformed the fortunes of the sector to a degree nobody imagined possible.

Swift and sure
What was remarkable was the rate at which the process suddenly spread. In 1985 there were probably no more than one in twenty mechanized boats in Bangladesh. By 1988, the mechanization revolution was well under way and, by the end of 1992, it was almost complete. In some of the country, at least 90 per cent of all commercially operated boats are mechanized, and overall the average is around 75 per cent.

It is difficult to obtain accurate estimates of the numbers of commercially operated country boats, but a recent project suggests that there are at least 200,000. If 75 per cent are mechanized today and only five

per cent were mechanized in 1985, this means that 20,000 boats have been mechanized each year. Typically, mechanization costs \$ 500 per boat. This represents an investment of \$ 10 million per year, or 70 million in total. Almost all of this finance has been arranged by the boatmen themselves, with loans raised from within their own communities or, in a few cases, from banks. Only very rarely have they received any sort of assistance from the development process, except in so far as they were the indirect beneficiaries of credit and subsidies given to the agricultural sector for the purchase of small diesel engines.

The boatmen have developed some very ingenious and low-cost means of mechanizing their boats. None have been 'designed' in the marine engineering sense. They have all evolved by trial and error, and this has been a very recent and quick process. New ideas are being tried all the time and innovation is spreading, although there is now an increasing tendency for proven arrangements to be copied and not changed. The installations were studied and classified and Figure 1 illustrates the range of types most commonly found.

The technology
When the engines are used on a boat, the basic requirement is to connect the engine to a propeller, via an intermediary

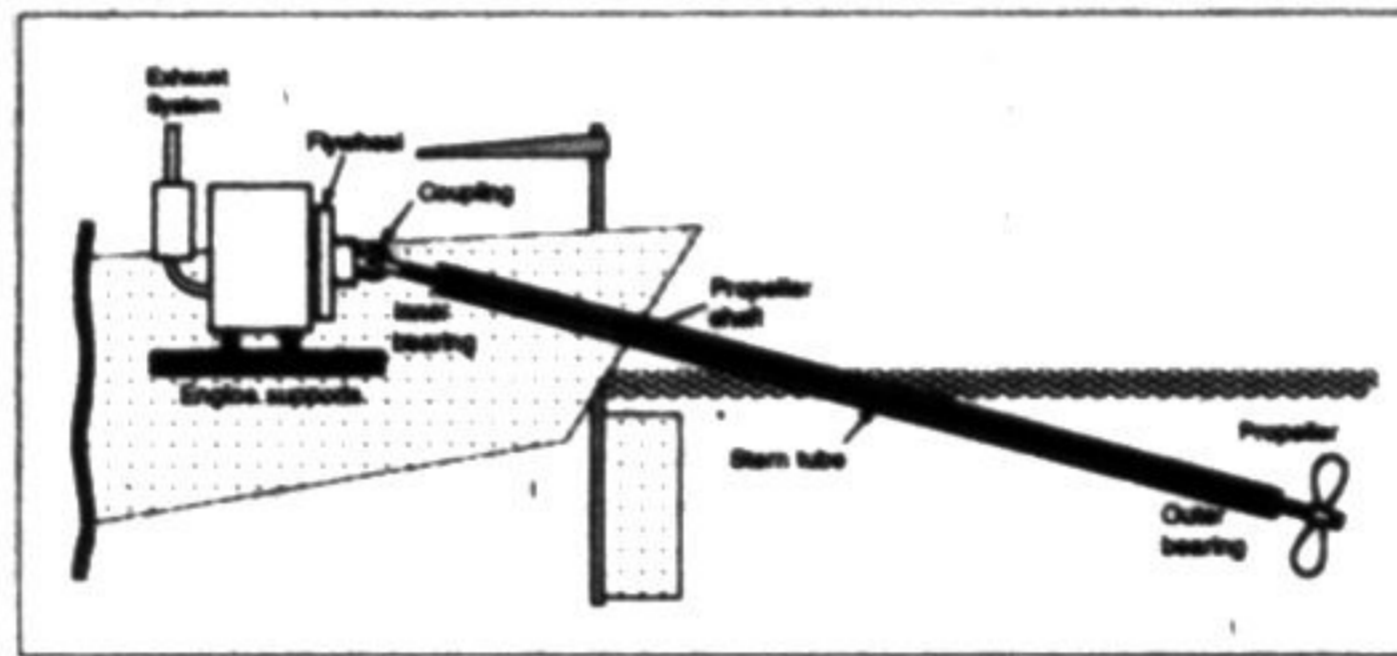


Figure 2. Schematic arrangement of typical country boat mechanization.

shaft. The biggest problem is that the engine has to be in the air and the propeller has to be in the water, so the shaft has to cross the interface between the two. This means that the shaft has to either come from above the surface and angle down into the water, or it has to pass through the hull of the boat beneath the water surface. If the latter method is used, there has to be some sort of water-

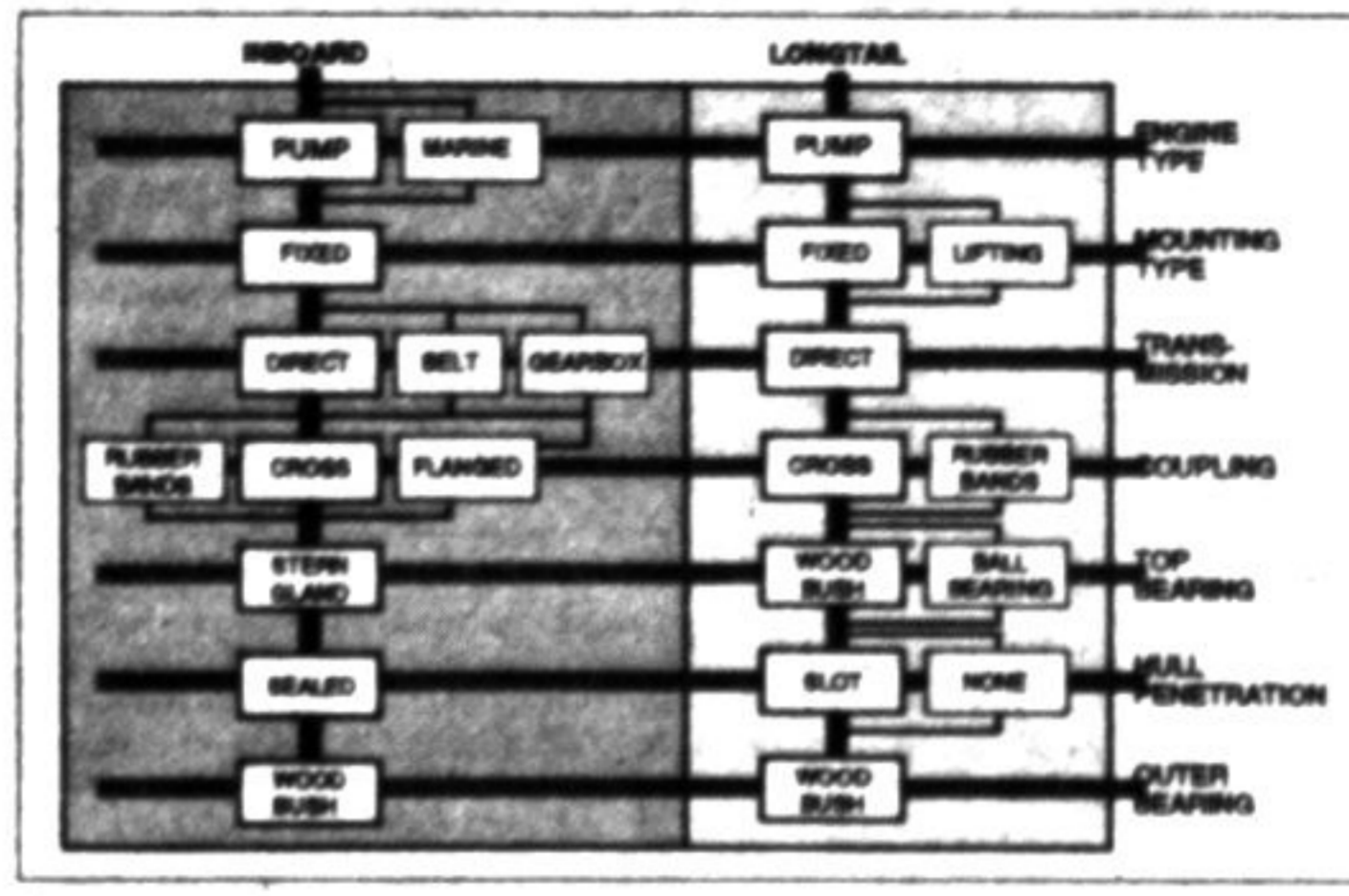


Figure 1. Classification of engine installations.

tight seal and around the shaft. The boatmen have tried all these different options and on different boats they use different systems. The simplest and the most common arrangement is where the shaft extends down from above and there are no holes cut in the boat. This arrangement is illustrated in figure 2.

A problem that has to be faced in all marine engine installations is alignment joining the engine to the shaft and keeping them in line so that the power can be transmitted smoothly. One approach is to bolt everything firmly in place while carefully lining up the engine and the shaft. The boatmen avoid this approach, as their boats are flexible and it is impossible to maintain a fixed alignment. They get round this problem by fitting flexible joints between the engines and the

shafts, which also means that they have more choice in the way they can arrange the various components. Most commonly, the flexible joint is a recycled universal joint from a road vehicle. The engines come with a pulley fitted to the flywheel and the boatmen simply weld the universal joint directly to it.

The other side is attached to the propeller shaft; here again, simplicity is the key. The propeller shaft is fitted inside the hollow tube part of the joint, a hole drilled through the two pieces, and a large nail driven through and bent over. The propeller shaft is supported in-

side a piece of galvanized steel tube, at the engine end, it is common to see a ball bearing, but at the under water end things are not quite so smooth running. When installations are new, they are often fitted with turned, wooden bushes, but these were very quickly it is all too common to find shafts which are just a loose fit in the end of the tubes, or may be with a few pieces of bamboo jammed in place to stop the most severe rattling and shaking.

Lastly, the business end, the propeller. The end of the shaft is tapered to take the aluminium propeller, but there is no keyway. At the end of the taper there is a large nut which is screwed up onto the propeller to squeeze it on to the taper. Friction is all that keeps the propeller from slipping on the shaft. These installations are

masterpieces of low-cost manufacture, but they have low fuel efficiency, so they are expensive to run. They also require frequent maintenance, and the vibrations which they cause (because of flimsy mountings, imbalance in the rotating parts, or any misalignment of connecting shafts) can be very damaging to the main structures of the boats' hulls.

These problems are a direct result of the tyranny of high-cost finance. The initial outlay is the overriding consideration, and every effort is made to minimize it, even when it is known that the installation is storing up problems for the future. The boatmen take this high risk because fitting and engine brings great financial benefits as well as greater safety, less drudgery, and enhanced status. The gross income of a boat can double after an engine is fitted, and the share which goes to the boatmen means that their earnings increase as well.

It is often the case that employment follows in the wake of technical innovation, but employment in the boats does not seem to have been reduced significantly with mechanization. Instead, the availability of faster, more reliable water transport has tapped into suppressed demand. New boats have been built and domestic boats have entered into commercial operation. New cargoes are travelling by water. Goods and people are making journeys which they did not make before, new economic activity is being stimulated. Small farmers can now use the boats to get perishable produce to market, where before they would not have bothered to grow them. The price differential between rural and urban areas is being reduced as the increased flexibility of the transport system allows goods to move more freely. None of these changes would have occurred without the use of diesel engines on the boats.

Colin Palmer is an international adviser to the Bangladesh Country Boat Owners Association and was a consultant naval architect to the Country Boat Pilot Project. He is now Director of International Resource Development, Intermediate Technology, Myson House, Railway Terrace, Rugby, UK.

Need for Re-thinking on Irrigation Policies

by Dr M A Sattar

This is the first instalment of a two part article, in which the writer investigates the present policy regime and presents a second thought on it.

THE irrigation system in Bangladesh has been developed since the fifties. This system has been expanded all over the country after the creation of the Water and Power Development Authority (WAPDA) in 1959 and the Agricultural Development Corporation in 1962. Of these two semi-government agencies, WAPDA (at present renamed as Bangladesh Water Development Board - BWDB) has already established a substantial number of large, medium and small irrigation projects like GK, TW, LIP, DND, Chandpur, Manu, Karnafuli and others. While the BADC has set up and also directly sold out a few lakhs of deep tubewells, shallow tubewells and low-lift-pumps (commonly known as power pumps) in all districts of the country.

Existing Irrigation System

The irrigation system in our country is based on four agencies of operations. The agencies are BWDB, BADC, BRDB and Farmers.

need so much engineers in the rank of SE or CE. Only a small engineering division may be enough to look after the routine types of maintenance works of the canals and their structures inside the project.

Soon after the construction of a project is completed more and more emphasis should be given to develop irrigated agriculture. For this reason the project authority should be an Agriculturist with vast experiences on soils, agriculture and extension activities. He may also control the engineering division through subordinate

engineers. Apart from the administrative bottlenecks, the other constraint in the BWDB project is the insufficient field and plot channels. The project authority desires that field channels connected with the outlets of irrigation canals should be dug by farmers at their own initiative as per design and layout made by the engineers. But farmers are, in fact, reluctant everywhere to do the job at their own will as it involves high costs of labour that farmers cannot bear. In some projects like GK, TW, DND, a few number of field

channels were initially done by farmers. But later on quite a large number of field channels have been done by the project authorities under the Food for Work Programme. Owing to insufficient number of field channels till now the water coming from the outlets generally enters into the neighbouring plots, fills them up and passes into the other plots through flooding. Such overflooding means huge loss of water within the limited number of plots, and that it fails to irrigate a large number of plots in absence of long stretched field channels.

It is further observed in many irrigation projects that even if there are long field channels, there are not enough plot channels.

A Gem of Agri Information

BANGLADESH has been persistently trying to attain self-sufficiency in foodgrain production as well as in the production of other crops also. Government attaches top most priority to agriculture which accounts for about 40 per cent of the gross domestic product (GDP). The focus on agriculture is to sustain economic growth and attain government explicit goal of achieving self reliance through integrated rural development programmes.

searchers and policy makers. They must be assembled systematically and classified. Statistical tables and charts must be organized so that their comparability can be easily understood by researchers and users.

Such a comprehensive and reliable data base is required for analysis, evaluation and continuous refinement of existing agricultural and food policy as well as for considering possible future courses of action.

Such a database was recently published by Bangladesh Agricultural Research Council (BARC) and Human Resource Development Programme (HRDP) of Winrock International entitled, "A Database on

of Livestock and Fisheries and such others. Intensive editing was done by the author so as to avoid any inconsistency or duplication.

The book has seven chapters the first chapters deals with the general features relating to foodgrain budget in Bangladesh, followed by area, production, yield, price, fisheries and livestock. Data period covers from 1947/48 to 1991/92.

Congratulations should go to Dr Mohammad A Hamid again who due to his untiring efforts has collected and compiled a vast array of data in computer disks before giving it to publisher. The book in a nutshell has represented Bangladesh's last 45 years trends in minor



Farmers irrigating the boro fields

According to the latest statistical information, a total 72.5 lakh acres of paddy, wheat, potato, sugarcane, vegetables and a few minor crops have been irrigated throughout the country during 1989-90. Of the total irrigated areas, 36 per cent was irrigated by using deep tubewells, 15 per cent by using traditional methods, six per cent by using canals and one per cent by using hand pumps. The total irrigated areas covers merely 20.78 per cent of the total cropped areas of 348.83 lakh acres. Again 32.2 lakh acres of 44 per cent are irrigated by BADC, 20 lakh acres or 28 per cent are irrigated by BRDB, Bang. Krishi Bank and NGOs, 9.8 lakh acres or 13.5 per cent are irrigated by BWDB and 10.5 lakh acres or 14.5 per cent are irrigated by farmers' traditional means.

With the introduction of 18 large and medium irrigation projects and over 400 minor irrigation projects by BWDB, and 2.53 lakhs of DTWs, STWs and LLPs by BADC during the last

BWDB Irrigation: The large and medium projects of BWDB are operated and maintained by the BWDB engineers, while the irrigation extension and water management of crops are taken care of by the BWDB extension personnel.

The Project Directors are the Superintending Engineers. The Agriculturists actively engaged with soils, crops and water managements, as well as, social problems are never given the chance of becoming the Project Directors. After the projects have gone into operation, the main object of the project lies not only to keep the project alive, but to gradually increase yields of crops and thereby achieve the ultimate goal of the project, and that is only possible by the efficient distribution of water rotation among the farmers of the project.

No doubt the design and construction of the project is a stupendous task of the engineers. Once the construction work is completed, the maintenance of the project does not

Poverty Alleviation Concept Gaining Ground, but ...

by Rashed Mahmud Titumir

ORGANISATIONS professing to alleviate hunger are many, but it is hardly known if all of them can do the job in practical terms beyond the rhetorics and lofty ambitions.

The mission of The Hunger Project (THP) — its strategic intent — is the end of world hunger by the year 2000.

However, it says that the end of the persistence of hunger by the year 2000 is a goal that is clearly beyond the existing or predictable opportunities.

"Yet, hunger persists, but something is clearly missing, and THP has given itself the mandate to identify what is missing for the end of hunger and then to provide it", said Dr John Coonrod, Global Director of Programmes of the organisation.

He told The Daily Star recently that the THP is an 'unconventional' organisation, and has been designed to work in a new way as a 'strategic' organisation.

Asked to clear the terminology, he quoted from the organisation's expert David Korten, that says, "A strategic organisation is able to look beyond merely responding to existing or predictable opportunities. A strategic organisation creates new opportunities, which otherwise might not occur; that is, it engages in the creation of its own future."

"We have grown a mind-set that says, 'we are poor, help us' — and this misses the most important point in Bangladesh", said Coonrod.

He added that 'moral elites' — a coalesced, well-informed, committed body of individuals from all sectors of society exercising leadership for a new future for Bangladesh were missing.

According to him other seven elements of a total nine 'missing

elements' are: Inadequacy of NGOs and government working relationship together with a shared vision and a common strategic intent; lack of any internal forums and advocacy groups that can identify obstacles in the development process and take action to address them; missing of an awakening of the poor to a new vision; lack of effective investment climate, structure of accountability, effective delivery system, and absence of opportunity for expansion.



John Coonrod

triate Bangladeshis to participate in the realisation of a new future."

Asked to suggest the steps to be taken to eradicate hunger by the year 2000 against the backdrop of increasing and worsening poverty situation in Bangladesh, Coonrod said "we are proposing to declare a war". "It is clear that the first step is a new vision, a new context for Bangladesh of the future", continued Coonrod.

The intention, as cleared by

him is to carry out a large-scale campaign of communication, education and mobilisation.

Given the strength and abilities of THP, the organisation envisions to carry out the campaign both at the capital city level and in the districts.

To conduct a series of public workshops, THP held its first one at Dhaka on October 14, 1993.

Meanwhile, The Managing Director of THP, India, Lalita Banavali came to Dhaka to share



Lalita Banavali

her experience in the workshop, according to the organisation's handout 'a woman who has inspired some of the great leaders of India to a shared vision for ending hunger'.

When asked to explain the 'new approach', she said "it must be carried out by the people who are going to take the action."

Asking for a dynamic plan, she maintained "a conventional plan laid out in a step-by-step fashion cannot possibly allow

for the flexibility required to overcome the complex challenges of human development".

She added that the plan must involve a broad range of sectors of society and diverse fields of knowledge and directly generate action that in turn would provide timely feedback for further planning. "To let people know that hunger can be eradicated is the most important task" said Banavali while commenting on the process of alleviating starvation.

She informed that they have created partnership amongst the agencies and acted as a coordinating body for finding a way to bringing about the change.

When asked to figure out the indicators, that could enable us to know the process of alleviation, she said "development cannot happen in a day or two and cannot be quantified".

"We have established 18 schools for the Adivashi (indigenous) little children in Maharashtra", she said while describing the success stories.

"I cannot show you any indicators, but things are changing and will continue to change", concluded the Indian development practitioner.

In the developing world of ours, an estimated 1 billion people continue to do without their most basic needs. Each year some 13 to 18 million people die as a result of hunger and related causes. The tragedy persists year after year, despite efforts by both developing nations and international agencies.

Such an initiative is very timely, as the global community is recommitting itself to meeting human goals as poverty alleviation and the end of hunger. But how far and when will it take place is still unknown.

BOOK REVIEW

A Database on Minor Crops, Cash Crops, Livestock and Fisheries in Bangladesh
by **Mohammad Abdul Hamid Ph D**
Reviewed by **Inam Ahmed**

Minor Crops, Cash Crops, Livestock and Fisheries in Bangladesh" by Mohammad Abdul Hamid Ph D. The author is a former Deputy Chief (Energy Economist) of Planning Commission. It is a superb collection and compilation of the longest time series data (more than 45 years) in agriculture sector now available in the country. Prior to this publication Dr Hamid has published another database entitled "A Database on Agriculture and Foodgrains in Bangladesh". After receiving wide appreciation from scientists and researchers from home and abroad and request for another database for the crops not covered in this publication encouraged him for his second present database.

Data were exhibited by area, production, yield by districts and varieties; harvest and homestead price of minor crops, cash crops, pulses, vegetables and others. Data were collected from official sources like Bangladesh Bureau of Statistics, Ministry of Food, Ministry of Agriculture, Planning Commission, Directorate

crops, cash crops, pulses, vegetables and oilseeds. The book would be of tremendous use to policy makers and researchers in dealing to their day to days activities. For macro and micro analysis for agriculture sector the book would be a "Gem". No such book has ever been published by any researchers and publishers till to day. The database is also available in computer disk which is only available with the author. Data can be retrieved by LOTUS 123 or by such kind of such software.

In order to forecast one has to look backward. The regularities and pattern in historical time series data cannot be ignored. If forecast is based on such regularities and patterns then it could be revealed that future follows the past with some degree of consistency, that what has happened in the past will to a greater or lesser extent continue to happen again in the future. For this we need a sound computerized database and the above mentioned database is the one which could help us.