

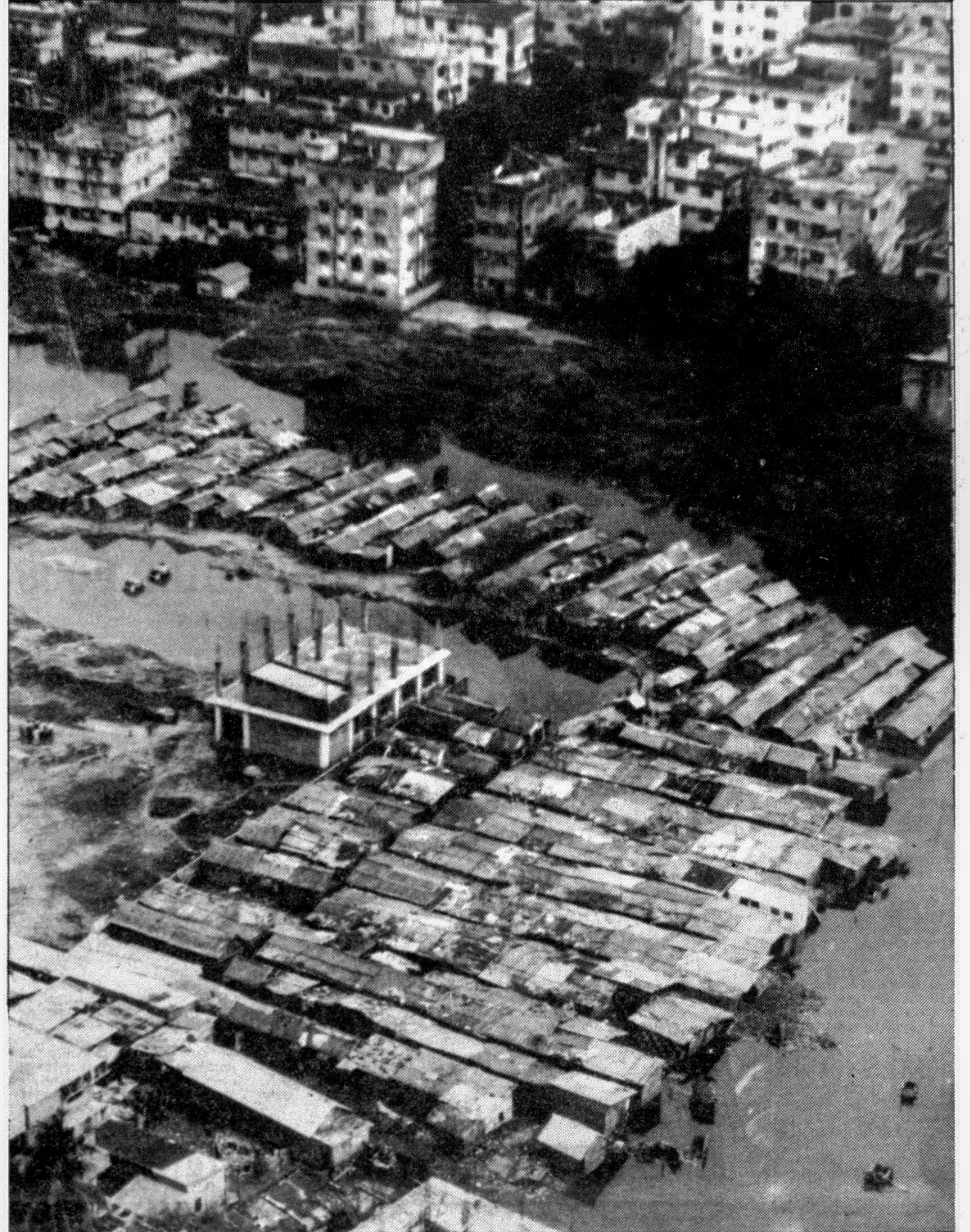
Daunting Deluge

PHOTO FEATURE ON FLOOD



Star photo by Amran Hossain

Flood waters yet to recede from city areas — Sadarghat (left) in the south or Kamlapur-Maniknagar (right) in the north-east



Star photo by Enamul Haq

Some Lessons to be Learnt from 1998 Flood

by M A Matin

ON 27/8/1998 the Buriganga at Dhaka has hit the peak at 6.70 m/PWD this year! By peak level, the flood of 1998 is the 4th highest flood in a record since 1910. The other floods and the corresponding return periods are:

Flood-ID	Station	Peak level	Return period Yrs
1988 Flood	Dhaka	7.58	94.0
1955 Flood		7.09	31.5
1954 Flood		7.06	29.5
1998 Flood		6.70	13.5
1987 Flood		6.64	11.7

At Dhaka we should remain prepared to experience a flood of 1998 height (6.70) or higher at an average interval of about 13.5 years.

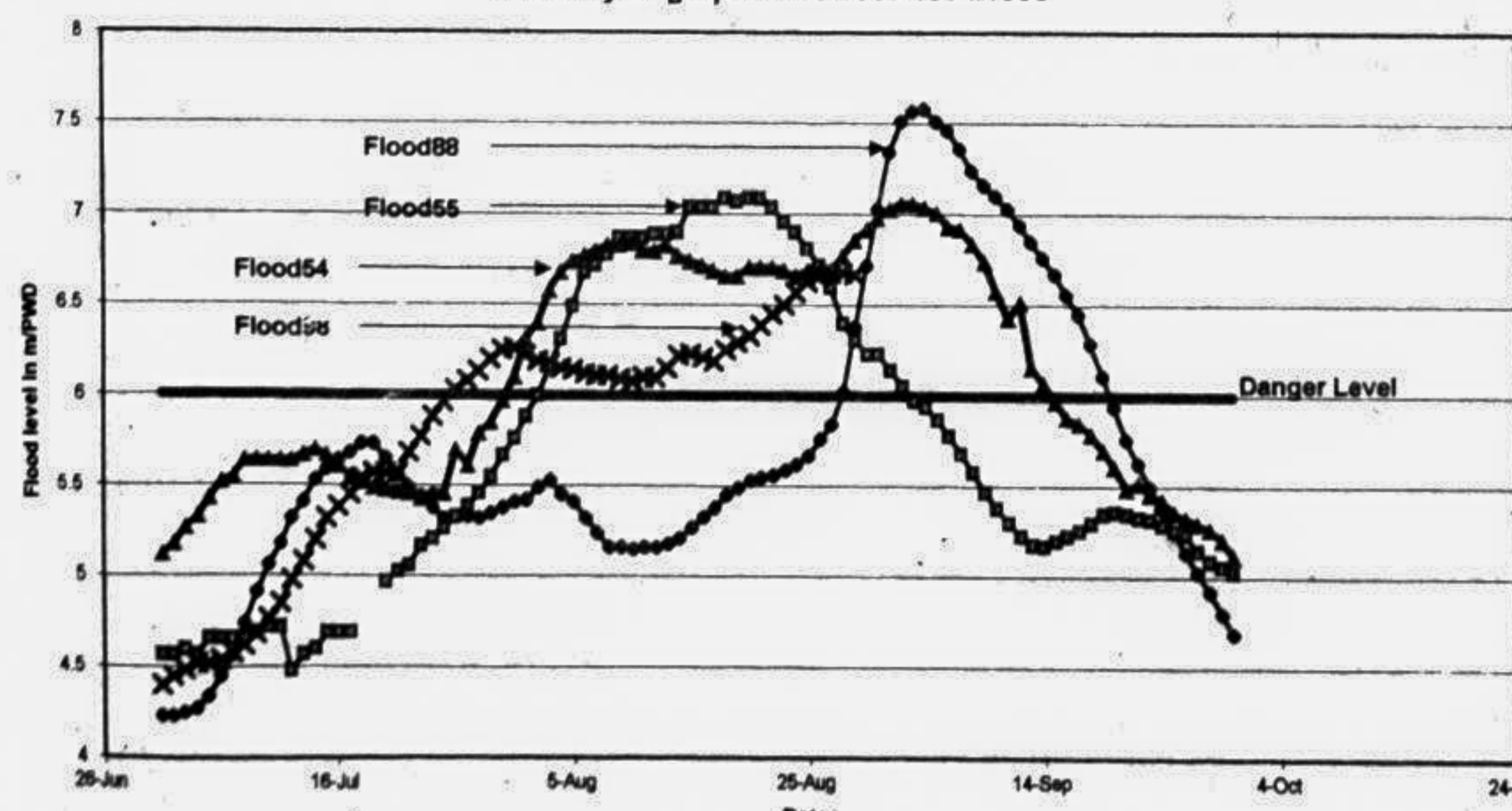
Flood will be receding but the people who are suffering because their homes and roads are inundated would like to know how long more they have to suffer! The farmers would like to know when their lands would be free from flood for a second chance of plantation!

Let us try to find some answer from the past records. Table below shows the dates and peak flood level of the Buriganga at Dhaka for the six highest flood and the days required to fall the flood level below danger level.

Flood year	Date of peak	Peak level	Days of fall below DL
1988	4/9/88	7.58	17
1955	21/8/55	7.09	15
1954	3/9/54	7.06	13
1998	27/8/98	6.70	12*
1987	22/8/87	6.64	11
1931	17/8/31	6.62	10
1974	13/8/74	6.61	13

It will be noticed that all the

Buriganga at Dhaka
Flood Hydrograph- 1988/1955/1954/1998



past flood peaks occurred between 13th August and 4th September and this year's (1998) flood peak occurred within this period say, on 27/8/98. So there is apparently no abnormality in timing of the flood peak. Figure-1 show the recession part of the flood hydrographs from the date of flood peak till flood level dropped below danger level.

Some of the Lessons from 1998 flood

Flood forecasting — 1988 Flood: Flood Forecasting and Warning Centre of BWDB has done a wonderful job by providing timely warning on the flood. But there are a few items that need immediate attention for improvement in future warning activity.

The most conspicuous shortcoming of this year's forecast came out from the lack of information from the sea face. The present forecasting model also does not cover the tidal area and as such no quantitative forecast was available for the coastal area (Barisal, Patuakhali, Barguna, Bhola etc). Because of lack of monitoring stations on the sea face the quantitative effect of abnormal tide in the bay on the flood drainage to the sea could not be assessed.

There are similar lacks of monitoring stations on the Karatoa-Atrai-Gur-Gumani-Hurasagar system and Jamuneswari-Karatoa-Bangali system. Without a few stations on these two river systems, as also in the sea face, the flood forecasting cannot work effectively.

It was also observed that the Ganges-Padma at Goalundo did not cross danger level while the upstream station at Aricha and downstream station at Bhagyakul is flowing above DL for the last 46 and 48 days. So the danger level of these 3 stations along with Panka may need review based on the experience of 1998 flood.

May be FF&WC has to review the flood-monitoring network also and extend the forecasting model into coastal tidal zone of Bangladesh.

A number of important road links were snapped. Some of these are Dhaka-Savar, Dhaka-Ashulia-Kaliakoir, Dhaka-Brahmanbaria-Sylhet, Dhaka-Chittagong etc. FF&WC has the capability of forecasting the inundation of these roads, days in advance if some data is collected and a co-ordination is made with Roads & Highway department. During this year's flood, I observed only two notices in the Daily Itifaaq on the Dhaka-Chittagong highway and about difficulty of berthing launches in Chandpur area. But these notices were issued when the flood already affected the highways or waterways. An active co-operation of Roads & Highways and BIWTA with FF&WC would have enabled transport sectors that would have gone a long way in reducing distress of people and in reducing damages. With the availability of forecast many less important journeys will be stopped, or rescheduled and many traffic jams and sufferings in the middle of affected road can be reduced or eliminated. Damages to roads can also be reduced.

Flood control works: After 1954 we knew only one terminology-flood control. With the increased knowledge of impact of flood control on environment, other terminology have been coined. Some of these are flood management, flood mitigation etc.

The concern for the distress caused by the flood has been well expressed in the dailies and weeklies. Some of these may be reviewed as follows:

Mr. L. K. Siddique one time minister of Water Resources has called (*Jayjaidin* dated 11/8/98) for co-existing with flood. He has raised a number of very good points but the proposition

cannot be taken as a total solution for the problem. In addition there are a number of conceptual defects such as role of barrages for flood control and a few others. The proposal for supplying boats instead of moving flood affected people to flood shelters is interesting and may be further examined and developed by testing through pilot project.

A number of flood shelters were constructed after 1954 and 55 flood. Remnants of one such flood shelter may still be visible somewhere near Fatullah. Multi-purpose shelters like this may also be constructed or may be the NGOs may examine possibility of organising raised and planned villages in flood prone areas.

"Management Not Mitigation can be the solution" an article by Mr Md Asadullah Khan of BUET was published in The Daily Star dated 20/8/98. After reviewing the various past studies and flood control activities, the article recommended "the best thing for a poor country like Bangladesh is to leave it to nature to take its own course!" Can this be an acceptable solution with this year's experience?

Nothing doing and leaving every thing to nature is not an acceptable solution and this should be also a teaching of this year's flood. The role of BWDB projects such as Dhaka City flood control project, DND, DND project and Meghna-Dhanogoda project and BFE should be an eye opener to the proponents of nothing doing strategy in flood control. Incidentally although there was a breach in BFE near Sirajganj most part of BFE command area lying to the north escaped any damage. Remaining part of Dhaka City flood control should be taken up before the next flood hits the city.

Many of our flood control projects suffer not from design deficiency but from lack of maintenance. Did the design flood for Dhaka City flood pro-

tection project exceeded? Definitely not! Then what is the reason of so much worries about the safety of the flood dyke? Timely and adequate maintenance is important for efficient performance of the flood control structures. A good pre-flood inspection and maintenance will reduce worries and anxieties of flood fighting.

Another point is how many industries and industrial areas have been affected. Where the store yards inundated and raw materials damaged? Was the production affected because the road link was snapped due to flood? Could these industries benefit from an improved forecast? If so a rapid survey could be undertaken now to evaluate relevant river stations responsible for the flooding and could these be brought into the forecasting network of FF&WC.

In our country it is only a 30 years' experience when flood management exercise was started in this country. Neither all embankments nor no embankment is the solution. An optimum solution as suitable for each area is to be found out through trial and error and hard experience. Dhaka the capital city cannot be left to the mercy of flood. But the low pockets within the city area so vital for drainage management should be protected and filling up should be stopped. But these should not be breeding ground of mosquitoes but should be beautiful waterfronts. One of our problems is high population density. Nevertheless the concept of controlled flooding and floodways should further be pursued.

Some points in favour of flood: Coming back to Mr L K Siddique's point, all is not bad

about flood. Think about the polluted water of the Buriganga, Tongi Khal, Balu and Lakhya rivers around Dhaka. These pollution have now been washed away. So some good points about floods are: many pollution spots washed away — increased fish production in the open water fishery — increased ground water recharge-sedimentation in the agricultural lands in the flood plains — sufficient water for rotting jute plants — increased water sport in the rural area — increased work for the boatmen.

Flood statistics: The following are the updating of flood statistics which will be of interest to many people.

Flood-ID	Station	Peak level	Days above DL	MDA-DL
1988 Flood	Dhaka	7.58	23	21.64
1955 Flood		7.09	31	22.28
1954 Flood		7.06	46	33.01
1998 Flood		6.70	36	10.35
1987 Flood		6.64	17	6.29
1931 Flood		6.62	24	10.54
1974 Flood		6.61	24	9.26

Flood-ID	Station	Peak level	Days above DL	MAD-DL	SUM-MDA-DL
1987 flood	Bahadurabad	19.71	7	0.98	
	Sirajganj	14.57	28	9.29	
	Hardinge Bridge	14.80	24	6.49	
	Bhairab Bazar	6.91	58	20.96	
	Dhaka	6.64	17	6.29	44.02
1988 flood	Bahadurabad	20.62	15	7.32	
	Sirajganj	15.12	29	16.71	
	Hardinge Bridge	14.87	22	7.18	
	Bhairab Bazar	7.66	76	54.03	
	Dhaka	7.58	23	21.64	106.88
1998 flood	Bahadurabad	20.17	43	13.92	
	Sirajganj	14.34	30	8.95	
	Hardinge Bridge	14.80	9	3.51	
	Bhairab Bazar	7.13	40	28.48	
	Dhaka	6.70	36	10.35	65.21

Recession of Major Floods
Buriganga at Dhaka

