FOR RESTRICTED CIRCULATION

ISSN - 0971 - 5002

ISH -- NEWS

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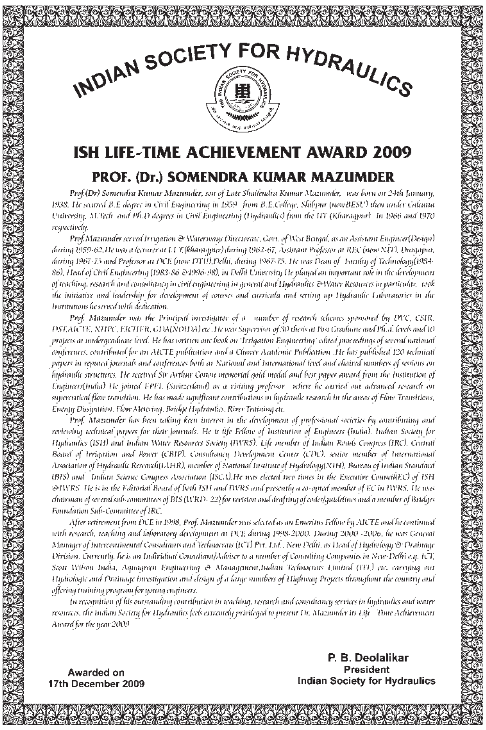
THE INDIAN SOCIETY FOR HYDRAULICS

VOL. 18 No. 2 December, 2009

LIFE-TIME ACHIEVEMENT AWARDS



INDIAN SOCIETY FOR HYDRAULICS

ISH LIFE-TIME ACHIEVEMENT AWARD 2009

PROF. (Dr.) SOMENDRA KUMAR MAZUMDER

Prof.(Dr) Somendra Kumar Mazumder, son of Late Shailendra Kumar Mazumder, was born on 24th January, 1938. He secured B.E degree in Civil Engineering in 1959 from B.E.College, Shibpur (nowBESU) then under Calcutta University, M.Tech and Ph.D degrees in Civil Engineering (Hydraulics) from the IIT (Kharagpur) in 1966 and 1970 respectively.

Prof.Mazumder served Irrigation & Waterways Directorate, Govt. of West Bengal, as an Assistant Engineer(Design) during 1959-62.He was a lecturer at I.I.T.(kharagpur) during 1962-67, Assistant Professor at REC (now NIT), Durgapur, during 1967-75 and Professor at DCE (now DTU),Delhi, during 1967-75. He was Dean of Faculty of Technology(1984-86), Head of Civil Engineering (1983-86 &1996-98), in Delhi University He played an important role in the development of teaching, research and consultancy in civil engineering in general and Hydraulics &Water Resources in particular. took the initiative and leadership for development of courses and curricula and setting up Hydraulic Laboratories in the Institutions he served with dedication.

Prof. Mazumder was the Principal investigator of a number of research schemes sponsored by DVC, CSIR, DST,AICTE, NHPC, EICHER, GDA(NOIDA) etc .He was Supervisor of 30 thesis at Post Graduate and Ph.d. levels and 10 projects at undergraduate level. He has written one book on 'Irrigation Engineering' edited proceedings of several national conferences, contributed for an AICTE publication and a Cluser Academic Publication .He has published 120 technical papers in reputed journals and conferences both at National and International level and chaired numbers of sessions on hydraulic structures. He received Sir Arthur Cotton memorial gold medal and best paper award from the Institution of Engineers(India) He joined EPFL (Switzerland) as a visiting professor where he carried out advanced research on supercritical flow transition. He has made significant contributions in hydraulic research in the areas of Flow Transitions, Energy Dissipation, Flow Metering, Bridge Hydraulics, River Training etc.

Prof. Mazumder has been taking keen interest in the development of professional societies by contributing and reviewing technical papers for their journals. He is life Fellow of Institution of Engineers (India), Indian Society for Hydraulics (ISH) and Indian Water Resources Society (IWRS). Life member of Indian Roads Congress (IRC), Central Board of Irrigation and Power (CBIP), Consultancy Development Center (CDC), senior member of International Association of Hydraulic Research(IAHR), member of National Institute of Hydrology(NIH), Bureau of Indian Standard (BIS) and Indian Science Congress Association (ISCA).He was elected two times in the Executive Council(EC) of ISH &IWRS He is in the Editorial Board of both ISH and IWRS and presently a co-opted member of EC in IWRS, He was chairman of several sub-committees of BIS (WRD- 22) for revision and drafting of codes/guidelines and a member of Bridges Foundation Sub-Committee of IRC.

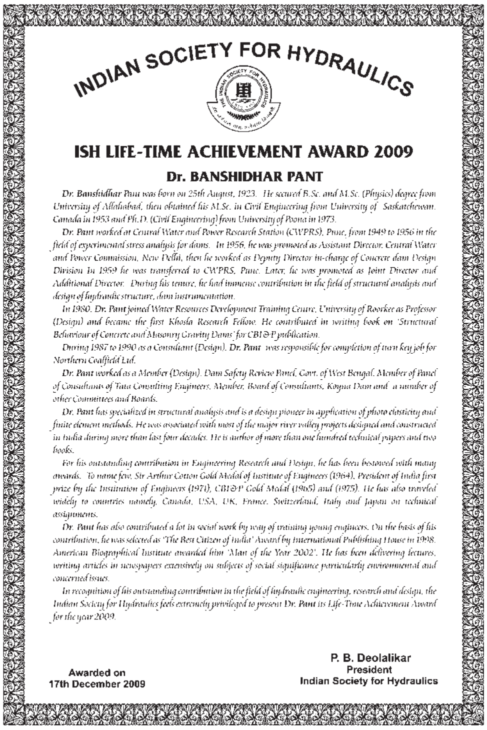
After retirement from DCE in 1998, Prof. Mazumder was selected as an Emeritus Fellow by AICTE and he continued with research, teaching and laboratory development at DCE during 1998-2000. During 2000 -2006, he was General Manager of Intercontinental Consultants and Technocrats (ICT) Pvt. Ltd., New Delhi, as Head of Hydrology & Drainage Division. Currently, he is an Individual Consultant/Adviser to a number of Consulting Companies in New-Delhi e.g. ICT, Scott Wilson India, Aquagreen Engineering & Management,Indian Technocrats Limited (ITL) etc. carrying out Hydrologic and Drainage investigation and design of a large numbers of Highway Projects throughout the country and offering training program for young engineers.

In recognition of his outstanding contribution in teaching, research and consultancy services in hydraulics and water resources, the Indian Society for Hydraulics feels extremely privileged to present Dr. Mazumder its Life Time Achievement Award for the year 2009

Awarded on
17th December 2009

P. B. Deolalikar
President
Indian Society for Hydraulics

The Indian Society for Hydraulics has instituted Life-Time Achievement award for Hydraulic Engineer/Scientist from India who has contributed significantly in the field of hydraulic engineering and water resources. The award consists of Rs. 10,000/- and a citation. In recognition of the outstanding contributions in the field of Water Resources Engineering, the Indian Society for Hydraulics (ISH) has conferred the award on Dr. B. Pant and Dr. S. K. Muzumder for ISH Life-Time Achievement Award for the year 2009. **The award money has been donated back to ISH by both the Life Time Achieve-ent awardees.**



INDIAN SOCIETY FOR HYDRAULICS

ISH LIFE-TIME ACHIEVEMENT AWARD 2009

Dr. BANSHIDHAR PANT

Dr. Banshidhar Pant was born on 25th August, 1923. He secured B.Sc. and M.Sc. (Physics) degree from University of Allahabad, then obtained his M.Sc. in Civil Engineering from University of Saskatchewan. Canada in 1953 and Ph.D. (Civil Engineering) from University of Poona in 1973.

Dr. Pant worked at Central Water and Power Research Station (CWPRS), Pune, from 1949 to 1956 in the field of experimental stress analysis for dams. In 1956, he was promoted as Assistant Director, Central Water and Power Commission, New Delhi, then he worked as Deputy Director in-charge of Concrete dam Design Division In 1959 he was transferred to CWPRS, Pune. Later, he was promoted as Joint Director and Additional Director. During his tenure, he had immense contribution in the field of structural analysis and design of hydraulic structure, dam instrumentation.

In 1980, Dr. Pant joined Water Resources Development Training Centre, University of Roorkee as Professor (Design) and became the first Khosla Research Fellow. He contributed in writing book on 'Structural Behaviour of Concrete and Masonry Gravity Dams' for CBI&P publication.

During 1987 to 1990 as a Consultant (Design), Dr. Pant was responsible for completion of turn key job for Northern Coalfield Ltd.

Dr. Pant worked as a Member (Design), Dam Safety Review Panel, Govt. of West Bengal, Member of Panel of Consultants of Tata Consulting Engineers, Member, Board of Consultants, Koyna Dam and a number of other Committees and Boards.

Dr. Pant has specialized in structural analysis and is a design pioneer in application of photo elasticity and finite element methods. He was associated with most of the major river valley projects designed and constructed in India during more than last four decades. He is author of more than one hundred technical papers and two books.

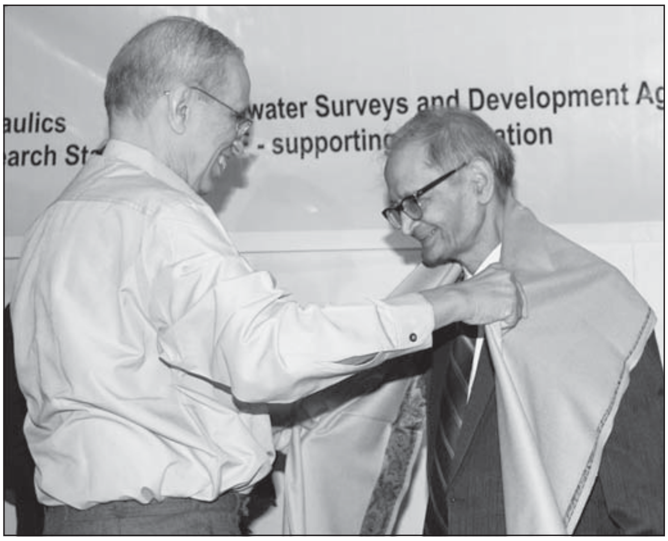
For his outstanding contribution in Engineering Research and Design, he has been bestowed with many awards. To name few, Sir Arthur Cotton Gold Medal of Institute of Engineers (1964), President of India first prize by the Institution of Engineers (1971), CBI&P Gold Medal (1965) and (1975). He has also traveled widely to countries namely, Canada, USA, UK, France, Switzerland, Italy and Japan on technical assignments.

Dr. Pant has also contributed a lot in social work by way of training young engineers. On the basis of his contribution, he was selected as 'The Best Citizen of India' Award by International Publishing House in 1998. American Biographical Institute awarded him 'Man of the Year 2002'. He has been delivering lectures, writing articles in newspapers extensively on subjects of social significance particularly environmental and concerned issues.

In recognition of his outstanding contribution in the field of hydraulic engineering, research and design, the Indian Society for Hydraulics feels extremely privileged to present Dr. Pant its Life-Time Achievement Award for the year 2009.

Awarded on
17th December 2009

P. B. Deolalikar
President
Indian Society for Hydraulics



REPORT ON THE 'NATIONAL CONFERENCE ON HYDRAULICS, WATER RESOURCES AND ENVIRONMENT - HYDRO 2009'

Indian Society for Hydraulics (ISH), Pune, Central Water and Power Research Station (CWPRS) and Ground Water Survey Development Authority (GSDA) organized National Conference on Hydraulics, Water Resources, Coastal and Environment Engineering, HYDRO 2009, during December 17–18, 2009 at CWPRS, Pune. The conference aimed at providing a national level forum for dissemination of recent contributions in the field of Hydraulics and Water Resources Engineering from Scientists, Academicians, and Engineers.

Shri Prabhat Chandra was Organizing Secretary. The conference is an annual event of ISH where practicing engineers, scientists, researchers and academicians working in the field of Hydraulics and water resources participate. The conference was inaugurated by Dr. C.D. Thatte, Former Secretary, MoWR. Shri K. M. Nagargoje, Director, GSDA was Guest of Honour. The proceedings of the conference containing 116 technical papers was published and released by the chief guest. These papers were presented under thirteen themes like Fluvial Hydraulics, Water Resources, Hydrology, Hydraulic Structures and Instrumentation, Reservoir Induced Seismicity, Coastal, Harbour and Ocean Engineering, Water Safety and Security, Environmental Hydraulics and Water Quality in addition to the key note addresses on topics of current interest like "Recent research on Tsunami related projects" by Prof. V. Sunder, IITM, Chennai, the S. N. Gupta Memorial Lecture "Implications of data uncertainties for predicting Indian monsoon rainfall" by Prof. K. Govindraju Rao, University of Purdue U.S.A. and "Water safety and Security" by Shri K. M. Nagargoje, Director, GSDA. Papers were received from countries like Iran, Bangladesh and United Kingdom. About 175 delegates attended the conference from about 50 institutes and 90 papers were presented during various technical sessions. The conference was a big success.

Report on National Specialty Conference on "River Hydraulics" at M. M. University, Mullana, Harayana

National Conference on "River Hydraulics" was held at M. M. University, Mullana, Harayana during 29-30 October, 2009. This specialty conference was attended by more than 50 delegates. The conference was inaugurated by Dr Manoj Dutta, Director, PEC University and the Guest of Honour was Dr. S. G. Damle, Vice Chancellor, M. M. University. Total 30 technical papers were published in the conference proceedings. A keynote address on "Morphological and flood problems of the river Kosi" was delivered by Prof. U. C. Kothyari, IIT Roorkee.

Emerging trends in the provision of desilting arrangements of Hydro-electric Projects

S. C. Mittal

Vice President, Teesta Urja Ltd., New Delhi

Since opening of hydropower sector for private investment, a large number of hydroelectric projects of various sizes (capacities) are in the planning and investigation phase in the states of J&K, Himachal Pradesh, Uttrakhand, Sikkim and Arunanchal Pardesh besides the neighbouring countries of Nepal and Bhutan.

Provision of either surface or underground desilting basin has been almost a standard component of water conductor system for various projects built over last few decades. At the same time, valuable experience has also been gained about effectiveness of these desilting basins in the overall performance of hydro power plants. Typical design of these desilting basins has been:

- Minimum two number of chambers
- 90 % removal of particles of size 0.2 mm and above
- Flow through velocity of about 0.3 m/sec
- Provision of gate upstream and downstream of chamber to isolate for inspection and maintenance
- Provision of Access tunnels and shafts for gates
- A flushing duct for each chamber and common flushing tunnel with gate arrangements
- Underground desilting chambers have been usually lined although unlined chambers have been provided in few cases

These provisions have necessitated that cost of providing desilting basins has been significantly high (close to cost of barrage/dam in some cases).

Maximum value of total silt content (expressed as ppm) in the rivers during monsoons varies from moderate values of 1000 ppm in some rivers, with few occasional shoot ups to 3 to 5 times to high values of 10,000 ppm in other rivers. General distribution of suspended silt particles in the river flow during monsoon has been:

Sizes	Distribution
Coarse (0.2 mm and above)	15 to 25 %
Medium (0.075 mm to 2 mm)	20 to 30 %
Fine (below 0.075)	50% or more

Abrasiveness of silt is another factor that has been considered contributing to damage to turbine runners.

Design of desilting basins is such that it only removes only 30 % of total silt content and 70 % is still passed through

machines. 30 % of total silt content that is trapped in desilting basins consists of coarse and medium particles. Similarly, 70 % of total silt content that is passed through turbines consists of medium and fine particles.

Experience from operation of hydropower plants till now has been that in spite of provision of well designed desilting basins; moderate to severe damages to turbine runners does take place resulting in machine shutdown within monsoon season itself. Thus reliance on desilting basins (with their high capital cost) as a silt management tool has greatly reduced and engineers associated with power plant operations have devised ways to significantly reduce the impact of silt on plant operations. These include:

- Provision of spare runners (capital cost of spare runners is very small compared to capital cost of desilting basins)
- Coatings of best specifications for runners
- Provision of runner removal gallery in the powerhouse layout which facilitates easy replacement of runners
- Powerhouse shutdown during periods of extraordinary floods and extraordinary high silt contents and utilize the period for reservoir flushing

Due to above field practices developed over the years, power plant engineers do not have any enthusiasm for desilting basins. Thus inclusion of desilting basins in the project features has become the fancy item of civil design engineers without strong demand for the same from power plant engineers. So much so that owners and developers have started questioning the desirability of incurring huge capital expenditures on desilting basins.

Projects now being planned are in the remotest places of the country. Many of the projects in the range of 100 MW capacity are not viable economically (No takers for high tariff power and no banks willing to finance such projects). Under the circumstances, several designers feel that luxury to provide desilting basins in the water conductor system can no longer be continued. This is in addition to several other design measures, such as provision of barrage in place of dam where possible, being considered to reduce the capital cost of projects.

Use of Dam or barrage as silt management device

Provision of low level spillways in dams and barrage for sediment management of reservoirs in Himalayan Hydro projects has become almost a standard feature. The power intake crest is kept about 10 m or more higher than the spillway crest. In the barrage layout, intake weir is kept about 10 m above spillway gate crest and the tunnel intake is depressed below for sufficient water seal.

Operational criteria adopted for the reservoirs have been to avoid sediment deposition at the upstream end of reservoir (in the live capacity zone) by specifying reservoir operation in monsoons at MDDL. This approach works well for fairly large reservoirs.

Many of the reservoir for hydro projects are, however, small. Length of reservoir is dependent on the height of dam / barrage and river gradient. Some of the reservoir lengths shall be of the following order:

Height of dam/ barrage from river bed to FRL	River gradient	Length of reservoir
50 m	1 in 100	5 km
50 m	1 in 50	2.5 km
20 m	1 in 100	2 km
20 m	1 in 50	1 km

For specifying reservoir operations at MDDL, while the live capacity can be saved, but the suspended silt may be difficult to trap in the reservoir as velocities in the reservoir may exceed 0.5 m/sec. Assuming a difference in MDDL and FRL as 5m, and assuming that only the zone of water above power intake crest is moving , and assuming power intake crest 10 m below MDDL, specific area as 10 m^2 and specific discharge over spillway crest as 5 $m^3/s/m$, we get a velocity of 0.5 m /sec. Velocities may however increase if the inflow in the reservoir is twice the design discharge for power generation.

By specifying operation of reservoir at FRL, in majority of cases, velocity of flow in the reservoir shall not exceed 0.5 m/ sec for river discharges even up to three to five time the design discharge for power generation.

Consider the following:

Design discharge for power generation.	= 100 cumecs
Flood discharge	= 500 cumecs
River width	= 80 m
Length of reservoir	= 1km
Height of water column between spillway bottom and FRL	= 15 m
Area	= 1020 m^2
Velocity in the reservoir	= 0. 5 m/sec

Therefore, the silt will settle in the reservoir even with 5 times the design discharge. No. of days the flood discharge may exceed 5 times the design discharge will be not many. These days, should be utilized for reservoir flushing with power house shut down.

Omission of desilting basins could be thus specified at least in the projects on rivers carrying average silt during monsoon of the order of 1000 to 3000 ppm. Reservoir operation in such projects can be specified at FRL instead of MDDL. For other projects, case by case decision should be taken. In other words, desilting basins should be provided only in exceptional cases, and not as a general rule.

Above design rationalisation has been possible only due to provision of low level spillways in the modern dams/ barrages as regular flushing of reservoir ensures that reservoir is emptied for trapping more suspended silt for subsequent flushing.

* * * *

INTERESTING INFORMATION ON MANNING'S EQUATION


Robert Manning

An engineer is someone who is trained or professionally engaged in a branch of engineering. Engineers use creativity, technology and scientific knowledge to solve practical problems. Robert Manning was one such engineer whose pioneering work has led hydraulic engineers all over the world for more than a century now. Use of Manning Formula is almost like a reflex action for them. The formula is typically used to estimate flow in open channel situations where it is not practical to construct a weir or flume to measure flow with greater accuracy. Error rates of +/- 20% are common using the Manning Formula while error rates within +/ - 5% are possible with properly constructed weir. Following few lines are written that our readers will be interested to know the development of this formula.

Robert Manning was born in Normandy, France, in 1816. In 1826, the family moved to Waterford, Ireland where Robert started working as an accountant. In 1846, during the year of the great famine, Manning was recruited into the Arterial Drainage Division of the Irish Office of Public Works. After working as a draftsman for a while, he was appointed an assistant engineer to Samuel Roberts later that year. In 1848, he became district engineer, a position he held until 1855. As a district engineer, he read "Traité d'Hydraulique" by d'Aubisson des Voissons, after which he developed a great interest in hydraulics. From 1855 to 1869, Manning was employed by the Marquis of Downshire, while he supervised the construction of the Dundrum Bay Harbor in Ireland and designed a water supply system for Belfast. After the Marquis' death in 1869, Manning returned to the Irish Office of Public Works as assistant to the chief engineer. He became chief engineer in 1874, a position he held it until his retirement in 1891. He died at the age of 81 years in 1897.

Manning did not receive any education or formal training in fluid mechanics or engineering. His accounting background and pragmatism influenced his work and drove him to reduce problems to their simplest form. He compared and evaluated seven best known formulas of the time: Du Buat (1786), Eyelwein (1814), Weisbach (1845), St. Venant (1851), Neville (1860), Darcy and Bazin (1865), and Ganguillet and Kutter (1869). He calculated the velocity obtained from each formula for a given slope and for hydraulic radius varying from 0.25 m to 30 m. Then, for each condition, he found the mean value of the seven velocities and developed a formula that best fitted the data.

The first best-fit formula was the following:

$$V = 32 [RS (1 + R^{1/3})]^{1/2}$$

He then simplified this formula to:

$$V = C R^{x} S^{1/2}$$

In 1885, Manning gave x the value of 2/3 and wrote his formula as follows:

$$V = C R^{2/3} S^{1/2}$$

In a letter to Flamant, Manning stated: "The reciprocal of C corresponds closely with that of n, as determined by Ganguillet and Kutter; both C and n being constant for the same channel."

On December 4, 1889, at the age of 73, Manning first proposed his formula to the Institution of Civil Engineers (Ireland). This formula saw the light in 1891, in a paper written by him entitled "On the flow of water in open channels and pipes," published in the Transactions of the Institution of Civil Engineers (Ireland).

Manning did not like his own equation for two reasons: First, it was difficult in those days to determine the cube root of a number and then square it to arrive at a number to the 2/3 power. In addition, the equation was dimensionally incorrect, and so to obtain dimensional correctness he developed the following equation:

$$V = C (gS)^{1/2} [R^{1/2} + (0.22/m^{1/2}) (R - 0.15 m)]$$

Where m = "height of a column of mercury which balances the atmosphere," and C was a dimensionless number "which varies with the nature of the surface."

However, in some late 19th century textbooks, the Manning formula was written as follows:

$$V = (1/n) R^{2/3} S^{1/2}$$

Through his "Handbook of Hydraulics," King (1918) led to the widespread use of the Manning formula as we know it today, as well as to the acceptance that the Manning's coefficient C should be equal to the reciprocal of Kutter's n.

In the United States, n is referred to as Manning's friction factor, or Manning's constant. In Europe, the Strickler K is the same as Manning's C, i.e., the reciprocal of n.

Finally as someone has said is very apt tribute to Manning.

"Despite the obvious progress in our understanding fluid flow as a result of Prandtl's boundary layer theory and the more recent work on turbulence, no equation for open channel flow has been advanced that has displaced the Manning equation for practicing hydraulic engineers. This seems remarkable for a rather simple equation that was rejected by its author who was an accountant-turned-self-taught engineer as a result of the Irish famine."

* * * *

SOCIETY NEWS

Minutes of the Fourteenth General Body Meeting

The 14th Annual General Body meeting of the Indian Society for Hydraulics (ISH) was held on 17th December 2009 at 17.30 hrs. at CWPRS, Pune during **HYDRO - 2009** Conference. About 30 members attended the meeting. The meeting started with a welcome address by Shri P B Deolalikar, President, ISH. The minutes of the 13th General Body meeting were circulated to the members through ISH News published in June 2009 for perusal, comments and suggestions. These minutes were read out in the meeting and as there were no oral or written comments, the minutes were confirmed. The Secretary, Treasurer and Editor presented their reports in the meeting. The proposals from Prof. Vikas Garg of Mulana Engineering College, Ambala and NIT, Rourkela, Orissa were put up before the General Body for hosting HYDRO-2010. After discussions, it was approved to hold HYDRO-2010 at M. M. Engineering, Mulana. It was also agreed that at least the registration fees will be contributed to the corpus of ISH. The speciality conference was proposed to be held at NIT Rourkela College during the year 2010. The audited accounts of the society for the year 2009-10 were circulated and were approved by the General Body. The renewal of ISH & IAHR partnership agreement (2006-2011) was also approved. The meeting concluded with vote of thanks to the Chair.

THE BOMBAY PUBLIC TRUST ACT, 1950
SCHEDULE VIII [vide Rule 17 (1)]

Name of Public trust: INDIAN SOCIETY FOR HYDRAULICS — Registration No: F - 7555 (PUNE)

BALANCESHEET
As at 31st March 2009

FUNDS AND LIABILITIES	AMOUNT Rs.	AMOUNT Rs.	PROPERTY AND ASSETS	AMOUNT Rs.	AMOUNT Rs.
Trust Funds or Corpus			Immovable Properties(at cost)		
Opening Balance	950782.00				
Add: Life Membership fees recd during the year	87000.00		Investments		
		1037782.00	F D with Cosmos Bank	100000.00	
			F D with IDBI Bank (Formerly with United western bank)	260000.00	
Other Earmarked Funds			F D with Canara Bank	986120.00	
			F D with SBI	444262.00	
Depreciation Fund			F D with Thane Janata S Bank	100000.00	
Sinking Fund	25000.00		F D with IOB (Formerly with Suvarna Sahakari Bank)	370000.00	2260382.00
Reserve Fund	115000.00				
Endowment Fund	250000.00				
S N Gupta Memorial Fund		390000.00			
Loans (Secured or Unsecured)					
From Trustees					
From Others			Tax Deducted at Source		16681.00
Liabilities		835.00	Accrued Interest		58243.00
For Expenses		1500.00	Interest accrued due but not recd		7679
Expenses payable			Cash & Bank Balances		
Income & Expenditure A/c			Cash in Hand	109.60	
Balance as per Last B/S	974045.37		ICICI Bank	389749.84	
Add: Surplus for the year	461682.07		State Bank of India savings A/c	16000.00	405859.44
Less: Life membership fees transferred to trust and corpus	-87000.00	1348727.44	Advances		30000.00
TOTAL Rs.		2778844.44	TOTAL Rs.		2778844.44
		0.00			

As per our Report of even date

For Sharad A Vaze & Co.
Chartered Accountants

Sharad A Vaze
Proprietor.
Date : 12/09/2009
Place : Pune

The above Balancesheet to the best of our belief contains a true account of the Funds and Liabilities and of the Property and Assets of the Trust.

President
Indian Society for Hydraulics

Secretary
Indian Society for Hydraulics

Treasurer
Indian Society for Hydraulics

Date: 12/09/2009
Place: Pune.

THE BOMBAY PUBLIC TRUST ACT, 1950
SCHEDULE VIII [vide Rule 17 (1)]

Name of Public trust: INDIAN SOCIETY FOR HYDRAULICS — Registration No: F - 7555 (PUNE)

Income & Expenditure Account
For the year ending 31st March 2009

EXPENDITURE	AMOUNT Rs.	AMOUNT Rs.	INCOME	AMOUNT Rs.	AMOUNT Rs.
To Expenditure in respect of Properties			By IAHR Membership fees		
To Establishment Expenses			By Interest Recd & Accrued		156692.00
Advertisement	1708.43		By Interest on Savings A/c		10446.00
Printing & Stationery	266680.50		By Journal Subscription		196270.00
Postage	16133.00				
Conveyance	53973.00		By Donation in Cash or Kind		
Bank Charges	1253.00				
Miscellaneous Expenses	24674.00				
Refreshment expenses	14601.00				
Telephone	620.00				
Seminar fees	95267.00		Ministry of S and I		50000.00
Awards and Prizes	33016.00	507925.93	Life membership fees		87000.00
			By Fellowship Fees		
To Remuneration [in case of math] to the head of math including his household expenditure, if any.			By Contributions from Corporate	26000.00	26000.00
To Legal Expense/ Professional Charges			By Seminar Receipts		110000.00
To Audit Fees	1500.00				
To Subscriptions			By Seed Money		
To Professional Fees	1800.00				
			By Sponsorship(HYDRO)		108000.00
To Expenditure on Object of the Trust			Annual membership fees		20000.00
To Amount transferred to Reserve			conference fees		1000.00
To Excess of Income over Expenses		461682.07			207500.00
TOTAL Rs.		972908.00	TOTAL Rs.		972908.00

As per our Report of even date

For Sharad A Vaze & Co.
Chartered Accountants

Sharad A Vaze
Proprietor.
Date: 12/09/2009
Place: Pune.

President
Indian Society for Hydraulics

Secretary
Indian Society for Hydraulics

Treasurer
Indian Society for Hydraulics

Date: 12/09/2009
Place: Pune.

BOOK REVIEW

First course in Fluid Mechanics

By **Professor S Narasimhan**
First edition, 2007; 438 pages
CRC Press, Taylor and Francis Group

The author of the book, Professor S Narasimhan, had been a popular teacher of Fluid Mechanics and related courses at Indian Institute of Technology Bombay. Through this book he has passed on the benefit of his vast teaching and research experience to readers. Although the author has targeted the readership of the book to undergraduate students undergoing their first course and 'perhaps the second course' the depth and breadth of the topics involved might take it even beyond the second course.

The book covers essential components of fluid statics, dynamics, fluid-structure interaction, hydrodynamic equations and applications, laminar and turbulent motions, flows in pipe and open channels, compressible flows and physical modeling principles.

Starting with an introduction to fluid properties and fluid statics it describes the theoretical concepts related to fluid kinematics and particle motions. The hydrodynamic equations modeling irrotational flows, flow around objects, circulation and lift characteristics are dealt with subsequently. A full chapter on the application of Bernoulli's dynamic equation including flow measuring devices comes later and followed by forces on different objects and surface varieties. The Navier Stokes equations and laminar flow analysis is then explained, leading further to turbulence and velocity distribution in pipes and along flat plates. With such analysis in the background the attention is now drawn to hydraulic design associated with pipe flows and including surges and water hammer. Students in general and those in aerospace and coastal engineering in particular can derive considerable information on fluid drag and lift on bodies of different shapes in the subsequent chapter. Uniform and non-uniform open channel flows – mainly of steady type – follow later. The final portion deals with compressible fluid and dimensional analysis.

There are plenty of examples within and at the end of each chapter to illustrate the application of well discussed theories and these further lead to a vast pool of selected exercises. Simple schematic diagrams coupled with general lucidity of explaining even complex phenomena like turbulence and fluid-structure interaction are attractive features of this book.

The book is sure to find acceptability not only among the students community but also with the teachers and professionals as a useful reference book. The exhaustiveness and rigor of the analytical treatment given to various topics should make it an ideal reference for even the Master level students of hydraulic and water resources engineering in our country.

Perhaps a list of references in the end together with suggestions for further reading would have been of help to readers. Similarly more number of solved examples could have made an average student happier.

- Prof. M. C. Deo, IIT Bombay

OBITUARY

SHRI S.J. SAHASRABUDHE

Shri S.J. Sahasrabudhe who was member of ISH for a long time, expired on 19. 7. 2009 at Amravati at the age of 75 after a short illness. After getting diploma in Civil Engineering in 1954 he worked in Maharashtra Irrigation Department and then received M.E. (civil) degree from the University of Roorkee in 1973. After resigning from M.E.R.I., he worked for DUBON and STUP for over 20 years. During this period he traveled to a number of countries. He remained a bachelor, walked around Narmada and Dwaraka to Agra and had active interest in Yoga and other spiritual activities. He had a number of friends who will now miss him.

- Prof. J. G. Dahigaonkar, MISH, Nagpur

PROF. NANDAN VITTAL, Professor (Retd.)
Department of Civil Engineering, IIT Roorkee (1938-2008)

Prof. Nandan Vittal passed away after prolonged illness on 19 Dec. 2008 at his home in Vishakhapatnam, Andhra Pradesh. Prof. Vittal was born in 1938 in Andhra Pradesh and joined the Department of Civil Engineering, University of Roorkee (now; IIT Roorkee) in 1975 as Reader. He was promoted to the post of Professor in 1982 and retired from the University of Roorkee in 1998. Earlier he worked at Sri Venkateshwara University Tirupati, Andhra Pradesh and REC Rourkela, Orissa from 1962 to 1975. Subsequent to his retirement from University of Roorkee in 1998, he also worked as the Principal of a few private institutions in Andhra Pradesh and Orissa.

Prof. Vittal was well known as a good teacher and researcher in the area of Hydraulic Engineering. During his stay at Roorkee he carried out detailed experimental work on measurement of friction drag and form drag due to bed undulations and proposed the concept of 'effective shear stress' to be used for determination of total sediment transport load. An elegant procedure for design of channel expansions was also developed by Prof. Vittal that finds mention in many standard books of Hydraulic Engineering. The work of Prof. Vittal on use of 'pier group' for reduction of scour around bridge piers is also well appreciated and cited by the other researchers.

Prof. Vittal shall be always remembered as a simple man of simplicity who was always devoted to the profession of teaching and research. He was always popular amongst his students as a good teacher and good research supervisor.

Prof. U. C. Kothyari,
Department of Civil Engineering, IIT Roorkee

FORTHCOMING CONFERENCES/SEMINARS

Sr.No.	Title of the Conference	Date	Venue
1.	The 7th WSEAS International	18-20 Feb, 2010	Professor Dr.N.Nagarajan,Principal and Dean of Conference on FLUID MECHANICS (FLUIDS'10) Computer Science and Engineering, Coimbatore Institute of Engineering and Info. Technology, Coimbatore, Tamilnadu, Indiawww.wseas.org/ conferences/2010/coimbatore/fluids/index.html
2.	Annual Conference on Hydraulic Engineering 2010	15 Mar, 2010	Guangzhou, China
3.	International Symposium on Coastal Zones and climate change	12-13 Apr, 2010	Monash University, Australia Irene.Thavarajah@adm.monash.edu.au
4.	Water & Environment 2010	28-29 Apr, 2010	Bob Earll, CMS, bob.earll@coastms.co.uk
5.	First European Congress of the IAHR	4th – 6th May 2010	Edinburgh, UKiahr-europe@hw.ac.uk <iahr-europe@hw.ac.uk>
6.	International Symposium on Sediment dynamics for a changing future	14-18 Jun, 2010	Warsaw University of Life Sciences - SGGW, Warsaw, Poland, Prof. Dr Kazimierz Banasik, SGGW icce2010@sggw.pl
7.	Conference on Water History	16-19 Jun, 2010	Delft, Netherlands E-mail: m.w.ertsen@tudelft.nl
8.	6th International Symposium on Environmental Hydraulics	23-25 Jun, 2010	Athens, Greece E-mail: christod@hydro.civil.ntua.gr Website: http://www.iseh2010.org/
9.	Water 2010: Hydrology, Hydraulics and Water Resources in an uncertain environment	5-7 Jul, 2010	Quebec City Canadainfo@water2010.org
10.	9th International Conference on Hydroinformatics Tianjin, China	07-11 Sep, 2010	E-mail: qchen@rcees.ac.cn Website: http://www.hic2010.org
11.	River Flow Conference 2010	08-10 Sep, 2010	University of Braunschweig, Germany E-mail: a.dittrich@tu-bs.de Website: http://www.riverflow2010.org
12.	8th Ecohydraulics Conference	12-16 Sep, 2010	Seoul, Korea E-mail: hswoo@kict.re.kr
13.	IDRA 2010, 32nd Italian Conference of hydraulic and Hydraulic Constructions	14-17 Sep, 2010	University of Palermo, Italy E-mail: mars@unipa.it Website: http://www.idra2010.unipa.it
14.	25th IAHR Symposium on Hydraulic Machinery and Systems	20-24 Sep, 2010	University of Timisoara, Romania E-mail: Iahr2010@acad-tim.tm.edu.ro Website: http://acad-tim.tm.edu.ro/iahr2010

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Published by **Mrs. V. V. Bhosekar,** Editor, on behalf of the Indian Society for Hydraulics, C/o. Central Water & Power Research Station (CW&PRS), PO. : Khadakwasla, Research Station, Pune - 411 024. (Maharashtra), India
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Designed & Printed by **ACE** ENTERPRISES, 137/A, Madhu-Raj Nagar, C1-25, Paud Road, Kothrud, Pune-411038 • **Email** : info@acetanpure.com