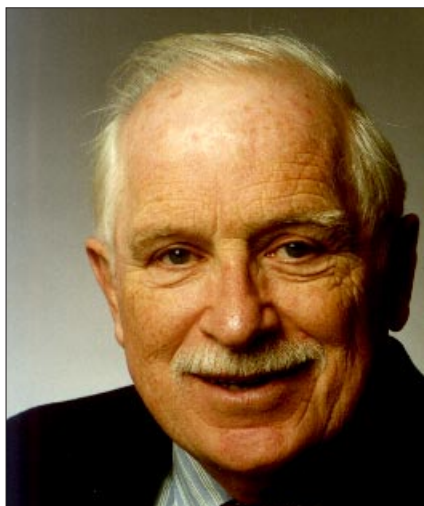


Swiss and American Aquatic Chemists Share 1999 Stockholm Water Prize



Professor Werner Stumm, Switzerland.



Professor James J. Morgan, USA.

Professors Werner Stumm from Switzerland and James J. Morgan from the USA are the recipients of the prestigious \$150,000 Stockholm Water Prize for 1999, the Stockholm Water Foundation announced March 22, the UN World Day for Water.

Together, Professor Stumm and Morgan's profound and far-reaching research achievements in aquatic chemistry have improved the understanding of chemical and physical processes in the water environment and led to the development of better techniques to treat drinking water and wastewater. Their collaborative work was honored with the first joint Prize in the nine-year history of the award. HM King Carl XVI Gustaf of Sweden will present the Prizes on August 12 during the 1999 World Water Week in Stockholm.

From the micro- to the macro-perspectives, their work has had an enormous impact. "Aquatic chemistry is not just the measurement of amounts or concentration levels of substances in natural waters," said Professor Anders Stigebrandt, chairman of the Stockholm Water Prize Nominating Committee. "It is, instead, an understanding of processes and their further impact from the minute and localized reactions in a liquid or on a surface to the global effects on ecosystems and humans."

Professors Stumm and Morgan also made important, fundamental discoveries in the chemical processes in soil and water that

helped validate the concept of acid rain and shed new light on the transport of metals and other substances in the water environment. By increasing knowledge of water, their work has improved the quality of drinking water, wastewater, and coastal and enclosed waters around the world, and preserved its renewability for future generations.

Professor Stumm, 74, Professor Emeritus of the Federal Institute of Technology in Zürich, Switzerland, and Professor Morgan, 66, the Goldberger Professor of Environmental Engineering Science at the California Institute of Technology in Pasadena, USA, met at Harvard University in 1960 and have for decades been the paramount scientists in the field of aquatic chemistry.

The Stockholm Water Prize, founded in 1990, is presented annually to an institution, organization, individual or company that has made a substantial contribution to the preservation and sustainable use of the world's water resources. The Prize honors outstanding research, action or education that increases knowledge of water as a resource and protects its usability for all life.

Stumm's and Morgan's applied research focused on chemistry of surfaces in natural waters; water chemistry of iron, manganese and phosphorus; the chemical reactions of species (including pollutants) as they move through the environment, and physicochemical (water treatment) processes such as coagulation and filtration to remove particulates.

Together, they were pioneers in recognizing the importance of phosphorous in

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STOCKHOLM WATER FRONT

A FORUM FOR GLOBAL WATER ISSUES

NO. 2, MAY 1999

Sven-Erik Skogsfors Joins SIWI as Director-in-Chief



Mr. Sven-Erik Skogsfors has joined the Stockholm International Water Institute (SIWI) staff team as its new Director-in-Chief.

Mr. Skogsfors, who served as Managing Director of the Stockholm Water Company from 1988 to 1999, has strong knowledge of SIWI, the Stockholm Water Prize, Stockholm Junior Water Prize, and Stockholm Water Sympo-

Cont. page 2

In Memoriam

Professor Werner Stumm

As Stockholm Water Front went to press, SIWI received the solemn news that Professor Werner Stumm, co-Laureate of the 1999 Stockholm Water Prize, passed away April 14 after a lengthy illness at his home in Switzerland. He was 74.

"We are saddened by the news of Professor Stumm's passing," said Mr. Sven-Erik Skogsfors, SIWI director-in-chief. "Our most heartfelt condolences are extended at this difficult time to his wife, children, and extended circle of friends and colleagues from around the world."

Professor Stumm will be honored during the August Stockholm Water Prize Ceremony and Banquet along with his long-time friend, collaborator, and co-Laureate, Professor James J. Morgan of the California Institute of Technology.

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SIWI News

Take Note!

New Phone Numbers for SIWI

The Stockholm International Water Institute has new telephone and fax numbers.

Tel: +46 (0)8 522 139 60 Fax: +46 (0)8 522 139 61 E-mail: siwi@siwi.org

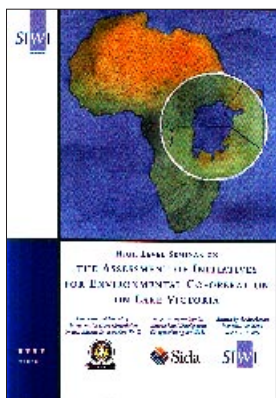
Malin Falkenmark Elected to UN Committee

SIWI Senior Scientist Professor Malin Falkenmark has been elected to the newly constituted Committee on Energy and Natural Resources for Development by the United Nations' Economic and Social Council (ECOSOC). Professor Falkenmark partici-

pated in the committee's first meeting in New York in April.

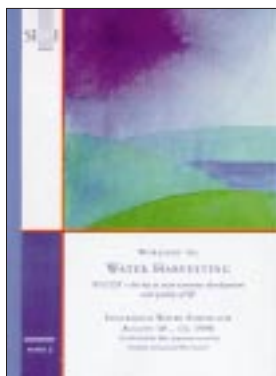
Members of the committee are nominated by governments and elected based on personal qualifications.

Publications from SIWI



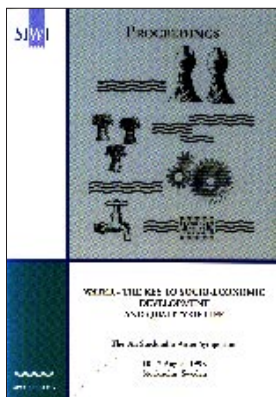
High Level Seminar on the Assessment of Initiatives for Environmental Co-operation on Lake Victoria

High Level Seminar on the Assessment of Initiatives for Environmental Co-operation on Lake Victoria contains the seminar resolution, a summary of key discussions, the seminar papers and presentations, and a list of attendees from the September 1998 meeting organized by SIWI along with the Swedish International Development Cooperation Agency (Sida) and the Secretariat for East African Cooperation (EAC). Seminar delegates discussed and shared Baltic Sea experiences to see how they might apply to the Lake Victoria basin. 272 pages. Price: USD 25.



Water Harvesting

Water Harvesting contains presentations and conclusions from a workshop subsection designated "Rain Water Harvesting" during the 1998 Stockholm Water Symposium. The workshop focused on the usefulness of rainwater utilization and presented practical experiences in different geographic regions. The workshop subsection was organized in cooperation with the Centre for Science & Environment, India, and supported financially by the United Nations Environment Programme (UNEP). 45 pages. Price: USD 25.



Water: The Key to Socio-Economic Development and Quality of Life

The report from "Water: the Key to Socio-Economic Development and Quality of Life," contains the overall conclusions, workshop summaries, key presentations, and more from the 1998 Stockholm Water Symposium. Topics addressed include issues related to development under semi-arid conditions including water shortage and recurrent droughts; groundwater availability; pollution and management; the role of women in water management; and how to avert the escalating water pollution, and more. 266 pages. Price: USD 25.

To place an order for a publication, contact SIWI by fax at +46 8 522 139 61 or e-mail at siwi@siwi.org.

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SIWI, and has been connected to each activity since its inception. Mr. Skogsfors began his new position in March.

At the SIWI headquarters, a management team has been formed with Mr. Skogsfors, Mr. Ulf Ehlin, and Mrs. Gunnel Sundbom.

Mr. Skogsfors will focus his work as Director-in-Chief on institutional and financial issues related to transforming SIWI into a foundation with an international board of directors.

Mr. Ehlin, who as Director has overseen the development of SIWI since its inception in 1997, will coordinate the scientific related activities of the Institute and direct actions based on the conclusions and recommendations of the Stockholm Water Symposium as well as further develop international water projects of the kind that has been successfully started up in the Lake Victoria Basin in Africa. Such activities, coordinated within SIWI's Stockholm Water Initiative, are a key part of the Institute's future work.

As Administrative Director, Mrs. Sundbom will be responsible for administration and staff matters, Prize sponsor relations, SIWI events, and marketing and communication in general.

SIWI Seminar for Young Scientists

Combining the Symposium's continuing focus on the next generation of water leaders with the '99 Symposium theme, the SIWI Seminar for Young Scientists on August 8 will ask young scientists (those under the age of 40) to help identify new approaches and innovations for urban and peri-urban water management. "Tackling Urban Water challenges in the Next Millennium: The Scope for New Approaches and Innovations" is the seminar theme.

"Innovative approaches, combined with conventional observations and practices, are necessary to face the formidable challenges confronting urban areas of developing countries – in particular, the lack of adequate domestic water supply, water treatment, and sewage disposal," says SIWI Director-in-Chief Sven-Erik Skogsfors. "Original and creative ideas from young people will help us to meet these challenges."

With some 60% of the world population living in urban cities near coasts by the year 2025, new approaches to both water supply issues and sustainable approaches for pollution mitigation are necessary and will be considered by the young scientists.

Individuals interested in attending the seminar or proposing oral contributions should contact SIWI at tel +46 8 522 139 75, fax +46 8 522 139 61, or e-mail sympos@siwi.org.

Differences in Urban Flood Mitigation between the Developed and Developing Countries

Floods are natural phenomena that can hit urban areas badly due to human mismanagement. In both the developed and developing world, urban storm drainage – as part of the urban infrastructure as well as a complement in the defence against major floods from adjacent streams – has gained in importance recently as the need for an integrated approach to urban water management has increased. Similarly, public awareness has risen about the pollution caused by urban effluents, which affect both the urban areas themselves as well as the receiving water bodies. Thus the concept of integrated catchment management, and the means of underpinning sustainability, finds its place in the current search for appropriate flood mitigation. This issue is particularly crucial considering the anticipated growth in the world's urban areas over the next 30 years.

Approaches to flood mitigation do differ, however, between developing and developed countries. Developing countries struggle mainly with major flooding caused by distant storms that raise water levels in adjacent rivers. Sustainability, in a situation where survivability is the more pressing issue, is not as actively addressed. Developed countries, although suffering from the same threat, emphasize flooding from local storms. Sustainability is sought by introducing more source controls to reduce flood risks, improve water quality and urban amenities, and use storm water as a resource. The sustainability concept can be applied in developing countries as well by prudent rehabilitation of existing (though often abandoned) conventional systems tied to improved functionality and, many times, relying on preserved indigenous concepts.

Search for the appropriate methodology

Urban flood mitigation methods in developed countries combine conventional flood defence “technology” with advanced methods of sustainable urban drainage systems. Through computer-based simulation, design, optimization, and real-time control and management methods, significant improvements have been made during the last two decades in protecting against flooding by local storms and for assessing the effects of pollution transported by storms on receiving waters. Still, there is a large need for finding the most efficient methods for flood mitigation and for assessing the perfor-



Flood mitigation as well as a host of water issues focusing on urban stability will be examined in the 1999 Stockholm Water Symposium in August.

mance of these systems under operational conditions.

In developing countries, due to a lack of funding or low priority given to flood mitigation, less progress has been made, though significant improvements in reducing destruction risks can be achieved even in such extreme cases as Hurricane Mitch. Modern information technology such as those used in developed countries provides some opportunities, but these have to be combined with “conventional wisdom” adapted to the local and regional situation.

In both developed and developing countries, awareness of wet-weather pollution from diffuse pollution sources has increased in recent years. Used at first simply to collect storm water and convey it to the nearest point of disposal, infrastructure systems have gradually evolved to cover both urban flood protection and control, and pollution control and management. Additionally, urban storm water can be used to improve urban amenities and as a precious resource. The proper solutions have to be sought in a well-balanced combination of structural and non-structural measures in urban areas and in the broader river basin.

There is no magic stick – but prudent solutions exist

In both ancient and modern societies, the river basin has been considered an entity that determines both the range and the reach of human activities with respect to water. A “catchment” is used as a unit for planning and management of not only water, but also

of other resources, human activities, and economic pursuits. The interaction of storm drainage systems with downstream municipalities and water users is strong in those cases when the drainage peak flow uses up the capacity of the river channel, so that no room remains for downstream runoff. In these cases, the upstream-downstream relationships and links have to be analyzed in order to either share the existing capacity or to share the costs of its enlargement. Small river basins are therefore more sensitive in this relationship.

Sustainability of urban drainage systems in developing countries is sought in implementation of source control measures.

In developing countries, appropriate flood mitigation in urban areas is a topic that has not been appropriately addressed. Until recently, drinking water and sanitation (wastewater) systems had an absolute priority in funding by both local and international sources. Ignoring storm runoff and local floods has often resulted in complete failure of the sanitation projects in developing countries. Because storm water reaches wastewater facilities during storm events, the mixture of polluted wastewater creates high health risks and often reaches the drinking water system, which frequently operates in an intermittent mode. Ignoring storm water often results in failure of wastewater systems. However, some positive changes have taken place recently. For one, there is a greater realization that these systems have to be considered together. In some cases when degraded

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Stockholm Water Symposium Preview



1999 Symposium Examines Integrated Water Management from an Urban Stability Perspective

Stockholm, the "City on Water," hosts the 1999 Stockholm Water Symposium from August 9 to 12.

Professor Kader Asmal, exiled from South Africa for 30 years before returning as Minister of Water Affairs & Forestry, and Professor James J. Morgan, the aquatic chemist who earned a share of the 1999 Stockholm Water Prize for helping pave the way for modern water and wastewater treatment, will join more than 600 leading scientists, government officials, water quality practitioners, and multi-disciplinary experts for the 1999 Stockholm Water Symposium, August 9–12. The Symposium is one of a series of activities taking place during the 1999 World Water Week in Stockholm.

As the respective keynote and plenary speakers on Monday, August 9, the two will open a Symposium whose theme – "Urban Stability Through Integrated Water Related Management" – reflects the great importance that water quality, sanitation and water availability will have for life on Earth in the 21st century. The world's urban population is expected to grow by 2.5 billion by 2025.

"All over the world, and particularly in the developing world, people are moving to cities in hopes of an improved standard of living," says Professor Malin Falkenmark, chair of the Symposium's Scientific Program Committee. "With half a million new inhabitants per day for the next 30 years, it is critical that we identify and formulate criteria and strategies for urban planning and development in areas such as sanitation."

The 1999 Symposium, which is the ninth in the future-oriented Stockholm Water Symposia, will attempt to do so by analyzing problems, identifying potential solutions, and considering implementation barriers that have to be overcome.

Symposium Workshops

- Water Reuse Within the City
- Mitigation of Flood Hazards in Urban Areas
- Interaction Between Urban and Peri-Urban Water-Related Activities
- Water and Social Stability
- Town Planning and Urban Metabolism: Integrating Water-Waste-Energy Management
- Challenges to Urban Water Management in Developing Countries
- Urban Areas as Seen in the River Basin Context
- Long-Term Water Supply and Sanitation Solutions
- Sustainable Sanitation

On this page and the next are highlighted various aspects of the 1999 Symposium program. More detailed information on all of the activities taking place at the Symposium and in conjunction with the 1999 World Water Week in Stockholm is available in the 2nd Symposium Announcement inserted into this Stockholm Water Front. The announcement is also available at www.siwi.org or available by request from SIWI, 106 36 Stockholm, Sweden; tel +46 8 522 139 75; fax +46 8 522 139 61; or e-mail sympos@siwi.org.

1999 World Water Week in Stockholm

- Stockholm Water Symposium: Plenary and Workshop Sessions
- SIWI Seminar for Young Scientists
- SIWI-IWRA Seminar: Toward Upstream/Downstream Hydrosolidarity
- Stockholm Water Prize Award Ceremony and Banquet
- Stockholm Junior Water Prize Competition and Ceremony
- Stockholm Water Prize Founders' Seminar
- 4th GWP Consultative Group Meeting
- GWP Seminar on Water Pricing
- GWP Technical Advisory Committee Meetings
- Social and Sightseeing Events
- Technical Tours
- Stockholm Water Festival
- IWRA Board Meeting

Consult the 2nd Announcement or visit www.siwi.org for more information on these events!

Nine Workshops Explore Symposium Theme in Detail

How can water be reused so water-short regions needn't draw it from distant rivers? Is it possible to work with nature, not against, in the effort to mitigate flooding in urban areas? Where can ecological sanitation be employed to alleviate stress on natural resources and provide sensible, alternative solutions to sanitary problems? What is the relationship between water and urban stability, be it political, social, or otherwise?

To help understand these issues better, attendees at the 1999 Stockholm Water Symposium, "Urban Stability Through Integrated Water-Related Management," can attend any of nine specific workshops.

In their sum total, the Symposium's workshops (see chart) cover urban water issues from East and West, North and South. More than 90 speakers from numerous countries will examine specific issues such as

how municipalities can integrate their management of water, waste and energy, as well as broader subjects, such as how the activities in an urban area fit within the river basin context, i.e. "upstream/downstream" along a river or watershed.

Not only do the workshop presentations and presenters reflect the Symposium's diversity and the breadth of its theme; the co-convening organizations for six of the workshops emphasize the multi-disciplinary nature of the topics, as well. Co-conveners include the United Nations Educational, Scientific and Cultural Organization (UNESCO), International Committee of the Red Cross (ICRC), World Business Council for Sustainable Development, Swedish International Development Cooperation Agency (Sida), and the International Water Resources Association. (IWRA).

World Commission on Water Active During '99 Symposium

The World Commission on Water in the 21st Century – the high-level group established last August by the World Water Council with the purpose of examining technological and institutional issues, creating a shared "vision" of water, and developing a framework for action to achieve the vision – will be active during the Stockholm Water Symposium.

In the Commission members will discuss during an August 10 plenary session the findings of teams working in the Vision exercise and priorities to be addressed in the Committee's report to the Second World Water Forum in The Hague next March. The development of the "World Water Vision," which the Global Water Partnership is assisting with, is being conducted through core activities that guide the process, sub-sector consultations, and regional consultations.

The plenary session will also feature the latest findings of a high-level panel (counting

among its members Mikhail Gorbachev) that is examining the crucial issue of national sovereignty over water in an international context – often a source of tension.

In the afternoon, four workshops on institutional, sectoral, and regional issues will feature preliminary findings from teams working in those areas. In addition, a special workshop chaired by Commission Chairman Ismail Serageldin themed "Social Charter for Water" will address the social and economic issues of providing water to those currently without it.

For more information on the Symposium activities or the Commission, which is co-sponsored by numerous UN agencies as well as the World Bank, consult the 2nd Announcement or the World Water Council, tel. +33 (4) 9199 4100, fax: +33 (4) 9199 4101, e-mail wwc@worldwatercouncil.org or <http://worldwatercouncil.org>.

SIWI-IWRA Seminar: Towards Upstream/Downstream Hydrosolidarity

One city's wastewater is another city's drinking water. Though narrower than the United Nations' 1999 World Day for Water theme of "Everybody Lives Downstream," the statement nonetheless fits the context of the UN motto, which drew attention to the conflicts of equally legitimate water-related interests – and equally real relationships – between those living upstream and those living downstream.

On August 14, a special SIWI-IWRA Seminar entitled "Towards Upstream/Downstream Hydrosolidarity" will examine how decision-making, institutional, and organizational structures can be aligned to achieve a true (hydro)solidarity between upstreamers and downstreamers.

Finding models for how these interests can be reconciled is an urgent and challenging task which will be made more concrete by analyzing a set of river basins. The seminar will put special emphasis on conceptual renewal in the hope to reach better harmony between what is happening in society and what is really taking place within the landscape.

The seminar is divided into three sessions that focus on the conceptual framework, regional case studies, and steps and procedures to secure hydrosolidarity. Partial financing comes from the Foundation for Strategic Environment Research (MISTRA), Sweden.



A FORUM FOR GLOBAL WATER ISSUES

Stockholm Water Front is published four times a year by the Stockholm International Water Institute, SIWI, to disseminate news and views on water issues around the world. It also offers a forum for debate, and provides regular updates on the Stockholm Water Prize, Stockholm Junior Water Prize and Stockholm Water Symposium.

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1999 Stockholm Water Prize Laureates

Werner Stumm: The Father of Aquatic Chemistry

Professor Werner Stumm, the Emeritus Professor of the Swiss Federal Institute of Technology in Zürich, is often referred to as the “father of aquatic chemistry” for bringing environmental chemistry of fluid-solid interfaces to new heights by working from a molecular view and thinking about processes at atomic and molecular scales. In particular, through research of particle-water and air-water interfaces, he made tremendous contributions.

Professor Stumm graduated from the University of Zürich with a Ph.D. in inorganic chemistry and worked briefly at the Swiss Federal Institute for Water Resources and Water Pollution Control (EAWAG), a division of the Swiss Federal Institute of Technology, where he first encountered water quality problems. He became interested in the chemistry of Swiss water and the role that fundamental chemistry might play in understanding actual water composition. In 1954 Stumm went to Harvard as a young post-doctoral student, where through his love of chemistry, voracious reading, and ingenuity (he funded his own laboratory) began to tackle difficult environmental problems.

It was also at Harvard where Professor Stumm met his first Ph.D. student, James J. Morgan. Together, they pondered the chemistry of the sea and freshwater, and determined that a quantitative treatment was necessary to explain the composition of natural waters. This beginning of a life-long relationship also led to their co-authorship of *Aquatic Chemistry* in 1970, an immensely influential publication that to date has been published three different times, continuous-



Professor Stumm during a recent visit from former colleagues and friends. Photo courtesy of Diane Hornung, EAWAG.

ly updated with new findings, and translated into three languages, including Chinese.

In the early days at Harvard, Professor Stumm was occupied studying corrosion chemistry and iron oxidation kinetics, eutrophication stoichiometry, and coagulation-flocculation. Together with his colleague Charles O'Melia, Professor Stumm determined that knowledge of water chemistry is critical to success in coagulating or filtering particles. Their pioneering papers are still widely cited. Stumm felt equally at ease with water treatment problems and natural waters and moved easily from chemistry to sanitary (environmental) engineering.

At Harvard, Professor Stumm guided the education and research of ten doctoral students in water chemistry. These “academic children and grandchildren” have become the leaders in the field of aquatic chemistry

and populate the world's major water research centers.

In 1970, Stumm returned to his native country and assumed the Directorship of the Swiss Federal Institute for Water Resources and Water Pollution Control (EAWAG-ETH). About that time, he was developing the foundations of surface coordination theory with his Ph.D. students. They quantified surface complexation on oxides by protons and metal cations using the Gouy-Chapman diffuse layer model to make electrostatic corrections for surface equilibria. With the assistance of other Ph.D. students, Professor Stumm accounted for surface coordination by anions and demonstrated the applicability of the surface complex formation model.

Between 1970 and 1992, Stumm led EAWAG to its position as the world's preeminent environmental research laboratory.

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eutrophication, the oxygen-depleting, over-fertilization of lakes, and they provided a scientific basis for technological processes to remove phosphorus from wastewaters. They

Motivation for Awarding the Stockholm Water Prize to Professors Werner Stumm and James J. Morgan

“For outstanding contributions to aquatic chemistry of great importance for the understanding of chemical reactions in the water environment and development of techniques for treatment of wastewater and drinking water.”

also directed fundamental research on removing particles and pollutants from water supplies and wastewaters, and assisted in the application of these concepts into practice. Their efforts paved the way for high-quality drinking water and properly treated wastewater in much of the industrialized world.

A common theme throughout their life achievements has been the value of fundamental research in the physical, chemical and biological processes involved in the cycling of iron and manganese in aquatic systems. The results have included new concepts and applications for such problems as acid mine drainage, the transport of particle-reactive pollutants in lakes and the removal of iron and manganese in potable water treatment.

They also established aquatic chemistry as a core discipline for limnologists, oceanographers, ecologists, soil scientists and environmental engineers. In 1970, they co-authored the seminal book *Aquatic Chemistry*, which was published again in 1989 and 1996 and is used in higher education all over the world. Together, Professors Stumm and Morgan have had an enormous educational impact as research supervisors, teachers and intellectual mentors. Through their “academic children and grandchildren,” who populate the world's major science research centers, they have laid a scientific and educational foundation that will reach far into the next millennium.

1999 Stockholm Water Prize Laureates

James J. Morgan: The Father's Son

Today, James J. Morgan is the Marvin L. Goldberger Professor of Environmental Engineering Science at the California Institute of Technology in Pasadena, California, USA, but for most of his life he has gladly been the student of – and the main collaborator with – Professor Werner Stumm, whom he first studied under in 1960.

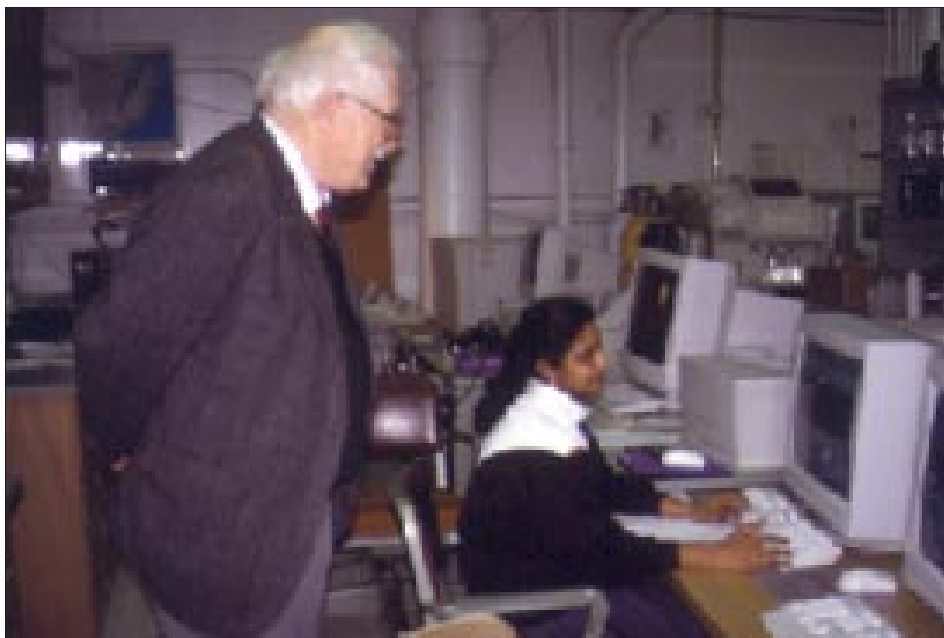
Professor Morgan is an expert in aquatic chemistry and surface chemistry in water treatment. Aims of his research in this field include both the experimental characterization of natural water systems in the field and the laboratory, and the ways in which they are affected by pollution processes. Formulations of adequate models for understanding the chemical behavior of fresh and marine waters and processes involved in water treatment are also studied in aquatic chemistry.

Morgan joined Werner Stumm at Harvard as a new Ph.D. student in the fall of 1960. A graduate of Manhattan College and the University of Michigan in civil and environmental engineering, at the University of Illinois he had researched phosphorus pollution in fresh waters, and had also developed a strong interest in processes for removing iron and manganese from waters. His work paralleled earlier research by Professor Stumm and others on iron oxygenation that had shown success integrating kinetic and equilibrium concepts in approaching iron dynamics. This led to a strong future pursuit of surface chemistry in relation to water quality: surface catalyzed oxidation of manganese in water, chemical aspects of coagulation, and polymer flocculation in water and wastewater treatment.

In 1970, he co-authored along with Professor Stumm the seminal publication, *Aquatic Chemistry*, which became the standard reference within the field and further influenced generations of water quality scientists, engineers, and researchers.

His career has been marked by continued prominence within the field. Between the University of Florida and the California Technical Institute of Technology, he has guided the research of more than 25 doctoral students in water chemistry, and he has been a guest lecturer and visiting professor on numerous occasions and in many institutions.

Professor Morgan was also elected by the American Chemical Society to serve as the founding editor of the scientific journal, *Environmental Science and Technology*, which became recognized throughout the



Professor Morgan with one of his Environmental Engineering Science students at the California Institute of Technology. Photo courtesy Ulf Ehlin, SIWI

world as the leading scientific publication in the area of environmental chemistry of water molecules.

Currently, among the physical chemical processes being investigated by Professor Morgan and his group at the California Institute of Technology are rates of oxidation of manganese in water, adsorption of trace metals and organic pollutants on aqueous oxide particles, dissolution kinetics of metal oxides by complexing agents in water, coagulation rates of aquasols in fresh and marine systems, and the transport of pollutants in ground waters.

Recent research in Professor Morgan's laboratory has also shown the connection between the iron and manganese cycles in water and those of elements such as selenium, arsenic, and lead. The role of particle coagulation in accelerating the removal of suspended particles from water has been a major research focus of Morgan and his co-workers for the past two decades. Earlier work has extended both theoretical and experimental definition in terms of the particle size distribution of coagulating and settling particles for a variety of systems, including clays and metal oxides.

Individually, and with Professor Stumm, Professor Morgan has received numerous awards from professional and academic societies and for his research and educational achievements, including the American Chemical Society's award for Creative

Advances in Environmental Science and Technology, and election to the U.S. National Academy of Engineering.

GWP Events

Global Water Partnership, the international network of organizations involved in freshwater management, will hold several events in conjunction with the 1999 Stockholm Water Symposium.

On Monday, August 9, the "GWP Seminar on Water Pricing" will explore a number of issues related to use of pricing mechanisms as an instrument to achieve more efficient use of water. Subjects to be covered include: cost-based tariffs, barriers to implementation of tariffs, and more.

The Fourth Annual Meeting of the GWP Consultative Group – representatives of GWP's members – takes place Thursday and Friday, August 12–13, and will include items such as the World Water Vision and the Framework for Action, as well as the presentation of the Management Advisory Review of GWP.

For more information on the GWP events, consult the 2nd Announcement or contact GWP at +46 8 698 50 00, fax +46 8 698 56 27, or e-mail gwp@gwp.org.



The Stockholm Junior Water Prize

They may not have known it at the time, but Sarah Bird, Hilary Branfield, and Samantha Newcombe from the tiny English hamlet of Buckinghamshire were the first to qualify for what will be the largest international Stockholm Junior Water Prize contest in Stockholm to date.

The trio, selected by a national SJWP nominating committee during the British Youth Science Fair on March 1–2, will represent Great Britain on August 10 and 11 and join contestants from 16 countries and five continents (see list at right) – both record numbers – who have won their own national contests.

In just its fifth year, the Prize contest has quickly evolved from a Swedish-only endeavor to one that involves thousands of students around the world and more than 40 sponsoring organizations and financial supporters. Its purpose is to engage, encourage, and support the interest of young people throughout the world in water environment and science issues.

The growth pleases Anna Lindberg, SJWP Project Manager at the Stockholm International Water Institute. “The response to the Stockholm Junior Water Prize around the world has been fantastic,” says Ms. Lindberg. “In addition to the participating countries this year, there are many more where there is an interest to participate or where the groundwork to participate has been laid.”

All of which, she says, supports the goals

Cont. from page 3

conventional storm drainage systems are properly analysed, prudent and inexpensive solutions can be found for their sustainable rehabilitation. In the Klisa catchment near Novi Sad, Yugoslavia, for example, a network of almost fully degraded open ditches proved to have a capacity to be converted into a modern, sustainable urban flood mitigation system. This recipe is not universal, however, and modern analytical technology has to be combined with indigenous methods for success. Other examples of unique approaches and indigenous methods will be presented and discussed in the forthcoming Stockholm Water Symposium

Conclusions

Urban flood mitigation can only be achieved by combination of structural and non-struc-



Sarah Bird, Hilary Branfield, and Samantha Newcombe, shown with UK Science Minister Lord Sainsbury (left) and Anglian Water's Dr. Stephen Bolt, were the first to qualify for this summer's international contest. Photo courtesy Barbara Smail, BASC.

Junior Prize Contest Features 16 Countries

of helping young people conduct water projects, sharpen their science skills, and broaden their awareness of environmental issues. This, in turn, helps to develop strong future leaders – the next generation of scientists, politicians, engineers, doctors, business leaders, lawyers, and activists.

At the international final in Stockholm, the students will experience a wide array of activities. Their projects will be reviewed by the international Nominating Committee, which will also conduct in-person interviews with each Laureate. At the Stockholm Water Symposium, the contestants will encounter a thorough introduction to the water field and have opportunities to meet top experts and display their projects in a poster format. Technical tours, social events, and site-seeing events will complete their time at the 1999 World Water Week in Stockholm.

Who will be the next Robert Franke, the

1998 Stockholm Junior Water Prize Laureate from Germany who designed an innovative solar-powered reactor to decontaminate industrial wastewater? Who will be the next Stephen Tinnin, the '97 Laureate from the USA who conducted an advanced scientific analysis of the effect of water pollution on sea urchins? Who, in short, will be the 1999 Stockholm Water Prize Laureate, someone like the previous five winners that have shown the passion and creativity needed to achieve a positive freshwater future? The trio from Great Britain, like the young people from the other 15 countries, hope to be.

Sponsored globally by ITT Industries and in each country by a national organizer and financial sponsor, the Stockholm Junior Water Prize is an international award and competition designed to engage, encourage, and support the interest of young people in water environment and science issues.

Eligibility for the Prize is open to young people up to the age of 20 who have contributed to water conservation and improvement through projects focusing on local, national, regional, or global topics. Projects may be done individually or in a group, and the finalists from national competitions qualify for the international competition, which is held in Stockholm each August.

An international Nominating Committee reviews the finalists' projects, interviews each participant, and selects the winner of the international Stockholm Water Prize.

The SJWP participating countries in 1999 are Argentina, Australia, Finland, France, Germany, Great Britain, India, Latvia, the Netherlands, Norway, Poland, South Africa, Spain, Sweden, Thailand, and the United States.

tural measures. Sustainability concepts can be applied in both developing and developed countries, but there are no universal methodologies. Modern technology combined with common sense and conventional “wisdom” seems to be the most promising route.

Professor Cedo Maksimovic

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