

Newsletter No. 157, January/March 1985

TABLE OF CONTENTS

- * IRC HIGHLIGHTS 1984 - p. 1
- * MEASURING HEALTH IMPACTS - p. 2
- * NEEDS FOR WATERLOSS PREVENTION - p. 3

IRC HIGHLIGHTS 1984

National activities in the Public Standpost Water Supplies integrated demonstration programme are in full swing; the 15th anniversary symposium, The Local Decade: men, women and agencies in water an development in June; workshop in Sri Lanka in preparation for a National Training Delivery System, and in Thailand, an interregional workshop on Public Standpost Water Supplies; cooperation with multilateral and bilateral donor agencies on new state-of-the-art publications on key subjects as hand pumps, and the participation of women, these were some highlights of IRC activities in 1984. Internally, automation of the documentation unit, address system and financial administration on a multifunctional micro-computer system, has greatly improved the efficiency of IRC operations. The year ended with the move to new office space in the centre of The Hague. Please note our new address.

A good number of requests were received for our publications and newsletters, in total almost 4,000. Payment was received for one-third and the remainder were distributed free of charge.

The Small Community Water Supplies (TP18) and Hand pumps (TP10) were in greatest demand. This was partly due to the renewed bulk order from the US Peace Corps for 150 and 200 copies respectively for all their field offices.

In June, an evaluation team looked at the information programme to assist national agencies in developing countries to set up a national information capacity to improve water supply and sanitation programmes and projects. The programme on exchange and transfer of information is very much linked with the International

Drinking Water Supply and Sanitation Decade. The team of three, one independent member and a representative of WHO and of IRC, concluded that the central clearing house function and the development of information tools and products have proved to be more than adequate, but progress has been somewhat hampered because the anticipated essential international funding for developing country focal points has not materialized. The team also felt that these kind of programmes can only become effective after a long period of preparation and introduction, and that continued funding for a third phase after February 1985 would be necessary to bring to fruition the effort and money invested so far. Based on the evaluation recommendations, the programme in the remainder of 1984 concentrated on a limited number of countries and on further tool development and distribution of products. The latter included IRC current awareness bulletins and Water for the World material made available by USAID. Since then, four countries in Latin America (all partners in the REPIDISCA network) and three in Asia have submitted proposals for information dissemination activities in their countries to IDRC, the Canadian agency with widely appreciated activities in this area. On the tool development, updating of the Directory of Sources of Information and Documentation on Community Water Supply and Sanitation was started, a draft glossary of terms as used in the thesaurus developed in the programme was produced and is now being reviewed. Draft training materials were developed with the aim of improving information skills.

Of IRC's two demonstration projects, which transfer and generate knowledge and experience in a limited number of countries, Slow Sand Filtration is now in its third phase, dissemination and promotion, and is coming to an end. Earlier seminars in India, Thailand, Jamaica and Colombia resulted in very useful exchange of experience between participating agencies. The seminars also had direct spin-offs in 1984. Aided by information obtained at the Colombia seminar, one participant (a university staff member) convinced his municipality to use a slow sand filter instead of the planned and already designed rapid sand



filter. After this success, a SSF group was formed at the university, which in consultation with IRC, is now involved in the development of 11 new SSF plants. Participants in the seminar in Jamaica are now designing the first SSF demonstration plant in a UNICEF-supported project in Haiti. The experiences of the six participating agencies on technology, maintenance and community participation have been condensed and integrated in a publication on SSF in the Technical Paper Series. The draft manuscript is under review.

Activities of the Public Standpost Water Supplies Project, which has now entered its final year, have already been described at length in IRC NL156. Good progress is reported in the participating countries and also in international support activities. The first local demonstration scheme in Indonesia has become operational, the first such scheme in Sri Lanka is due to be commissioned early in 1985. In Zambia, the project has now been successfully implemented and one demonstration scheme is operational. In all four participating countries, a community-based approach has been adopted, and training workshops have strengthened national and local project staff. In November 1984, a successful interregional workshop in support of the project was held in Bangkok and the Northeast Province of Thailand. This was co-organized by Khon Kaen University and the Asian Institute of Technology. The 25 participants from seven countries exchanged experiences and prepared proposals for further development of the national projects, including evaluation. The recently published Hygiene Education Guidelines have been well received. A bibliography on PSWS was also published as IRC Occasional Paper.

In 1984 various members of IRC staff and consultants participated in evaluation missions: two went to the Yemen Arab Republic and Colombia to evaluate water projects sponsored by the Netherlands Directorate General for Development Cooperation; and the third undertook an evaluation mission to Togo for a project of the European Community. With assistance from external donors, work on five key subjects has resulted in draft manuscripts, now in various stages of editing and review. With UNDP-sponsorship, a selected literature review and bibliography on the participation of women in water supply and sanitation has been developed. This is currently being reviewed. With a WHO Technical Services Agreement, background material on community education and participation has been reviewed and a discussion paper on specific research need has been prepared. This is now in its final stage of preparation.

Also, on the software side and in response to an identified Decade goal, case studies on human resources development experiences in five developing countries are being prepared by a consultant. This work is being sponsored by the Development Directorate General of the Commission of the European Communities.

Technology issues have been taken up in two new publications, one on alternative energy sources for water pumping, and the other on the state-of-the-art on handpumps. In both publications, experience with technology, maintenance, and community participation are integrated. The hand pump manual which is to replace IRC's very successful Hand pump (TP10) published in July 1977, is a joint effort with IDRC of Canada. The publication on alternative energy sources is being sponsored by the Netherlands Ministry of Housing, Physical Planning and Environment. Both manuscripts are currently being reviewed.

Finally, you, as IRC Newsletter readers, will be interested in the spread of IRC's mailing list. Of the 4,100 addresses on the list, just over 60% are from developing countries, 1,049 in Africa, 900 in Asia, and 376 in Latin America. From individual countries, the USA with 431 is top scorer, followed by India with 247, The Netherlands with 208, the United Kingdom with 204, Indonesia with 188, Tanzania with 160 and Kenya with 152.

MEASURING HEALTH IMPACT OF WATER AND SANITATION PROGRAMMES

A major objective of the International Drinking Water and Sanitation Decade is the provision of an adequate supply of safe water and facilities for the sanitary disposal of waste for all. In general, the control and reduction of infectious diseases is a priority health objective of the Decade. Water and sanitation related diseases take a particularly heavy toll in rural and urban low-income urban areas in developing countries. WHO estimates that between 10 and 25 million deaths every year and 80% of all the world's sickness are attributable to inadequate water and sanitation. Diarrhoea is thought to kill about five million children every year. Skin and eye diseases cause countless millions of children constant discomfort, and if left untreated, deplete their energy, health, and growth and can lead to permanent disability. At times of serious financial constraints, donors and policy makers are forced to reassess investment priorities which determine the flow of funds to the water supply and sanitation sector. Practical experience showing that improved water supply and excreta disposal facilities reduce disease transmission would help to facilitate this assessment.

Over the years, evaluation of the health impact of water and sanitation improvements has often produced contradictory results. Such evaluations have shown that improved health does not result automatically from improvements in water supplies and sanitation. Intensive research and review undertaken by the Ross Institute of Tropical Hygiene, has revealed several methodological problems

that hamper the drawing of definitive conclusions from these studies. (See NL153)

In essence, there are two alternative approaches to a health impact study, the follow-up approach and the comparative approach, both of which are based on the interpretation of observed differences between an intervention, community and a control community. Recently, an international workshop on measuring the health impact of water and sanitation was held at Cox's Bazar, Bangladesh. As reported in Glimpse (vol. 6, nos 2 and 3) the newsletter of the International Centre for Diarrhoeal Disease Research, Bangladesh (ICDDR,B), the workshop was attended by 50 scientists, policy makers, project implementors, engineers and evaluators from 19 countries and 15 observers from nine donor agencies. Contributions to the workshop gave an interesting overview of recent experience in various developing countries. Here we summarize four examples, which are illustrative for the current discussion:

1. Using the follow-up approach, Dr. Oscar Brunser of the Institute of Nutrition and Food Technology in Chile, studied the health impact on a group of slum dwellers of a move to a new housing complex with a safe water supply and modern sanitation facilities, and found that:

- The number of cases of diarrhoea reported did not change significantly but the types of diarrhoeal disease did. "Invasive" diarrhoeas caused by Shigella, Giardia and Rotavirus decreased but less harmful "non-invasive" diarrhoea caused by unknown pathogens increased.
- When compared with the new housing, certain factors emerged as definitely contributing to the risk of diarrhoea in the slum: latrines which were uncovered, dirty, and unprotected against flies; unprotected food left-overs; hand washing less frequently than seven times a day; and the presence of disease vectors in the house, mostly flies.

2. Dr. Fitzroy Henry of the International Centre for Diarrhoeal Disease Research, Bangladesh (ICDDR,B) described a water and latrine intervention project carried out on the Caribbean island of St. Lucia. Using the comparative approach, he studied settlements in three valleys: the first was provided with individual household water supplies and water-sealed latrines; the second had only individual water supplies; and the third without water supply and latrine served as a control area. The findings of the intervention impact on diarrhoeal diseases in children and parasitic infections were:

- children in households with both individual water supplies and latrines experienced fewer infections than those living in households with only individual water supply. The prevalence of intestinal helminths was found to decrease with access to latrines.
- The quantity of water used in a household was found to be of great importance in reducing the disease burden. Households using less than 25 litres per day were found to be particularly at risk. Water use above this level was associated with a sharp

decline in diarrhoea. Doubling the amount of water used, together with improved latrines, decreased the prevalence of diarrhoea by 50%, of ascariasis by 46% and of skin diseases by 8.2%.

3. Dr. Huub Gaymans of the Joint Urban Development Consultants in Indonesia reported on an evaluation study carried out under the Kampung Improvement Program in that country. The intervention package consisted of provision of a water supply, streamlining garbage collection, and construction of bathing, washing and toilet facilities. Care was taken as to the study method and choice of indicators. This evaluation study indicated that:

- Among children from households with private toilets, 38.5% has ascariasis and 5.2% had skin infections, while for those from households without private toilets, 58.3% had ascariasis and 22.1% skin infections.
- Construction faults in the bathing, washing and toilet facilities resulted in both deterioration of groundwater quality and increased ascariasis in children.

4. Dr. R.J. Magnani of the US Bureau of Census discussed the methodology used and the results of the evaluation of the provincial water project in selected urban areas of the Philippines. Observed improvements in water handling practices and sanitary conditions did not have a conclusively positive health impact. From this study it would seem that, in addition to water supply and sanitation measures, a complementary infrastructure is required for a positive health impact.

Although most studies presented at the workshop claimed an improvement in one or more health indicators, evaluation of the health impact of a water supply and sanitation programme proves to be a difficult undertaking. Especially when attention is given to the myriad of variables that conceivably influence the health indicators selected, the reported outcome of such evaluations remain rather inconclusive. Many processes intervene between intervention and impact. The overriding conclusion from data available so far seems to be that water supply and sanitation interventions have a positive health impact, and as Fitzroy Henry concluded: "...although a specific priori statement on outcome cannot be made, the real question is how to transform that potential into reality.

NEED TO PREVENT WATER LOSSES

Water is a scarce resource which should not be squandered! In the course of the International Drinking Water Supply and Sanitation Decade, considerable efforts are being made to ensure continuous supply of safe water in sufficient quantities to the community. In view of the anticipated population growth and a

higher use of water per person, water undertakings are forced to augment their production capacity and to develop new sources. Yet, tremendous amounts of water are being lost through leakage in delivery systems, not to forget losses through undue consumption of water by consumers and also misuse of water for miscellaneous purposes. According to the Centro Panamericano de Ingenieria y Ciencias del Ambiente (CEPIS), water losses in Lima, the capital city of Peru, are 40% of daily production which amounts to 1.5 million cubic metres. The National Environmental Engineering Research Institute (NEERI), has conservatively estimated water losses through leaks in distribution systems in India to be about 1 billion cubic metres per year. This represents 20-35% of the total flow in mains, communication and service pipes. Unaccounted for water in the Philippines capital Manila is estimated to be on average about 46.5% of daily production.

Attention has been focussed on water losses in cities but similar observations can also be made about water supplies in urban fringe and rural areas, where losses as high as 60% are by no means uncommon. In view of the limited water resources available and the economic implications of wastage of drinking water, it is increasingly being realized that, in addition to care in the design and construction of water supply systems, prevention of water losses requires more emphasis than is usually given.

In recent years, awareness of the problem has become worldwide. WHO has recommended that developing countries give priority to repairing defective water supply networks, rather than to building expensive new systems. In addition to wastage of precious water and loss of revenue, leakages result in deterioration of the aesthetic and microbiological quality of the water supply and represent a potential health hazard to the community. The rate of unaccounted for water can be assessed by special techniques of leakage survey and detection, and can be mitigated by prompt corrective maintenance. Economic as well as health benefits will arise from a maintenance programme.

Well-organized and continuous preventive maintenance of water supply distribution systems can reduce water losses considerably. This is re-enforced by the results of field investigations carried out by NEERI in various cities in India on the feasibility and efficiency of survey, assessment, detection and control of water losses from supply systems. With a systematic programme of preventive maintenance it is possible to bring down water losses to 10-15% of the total flow. Taking into account local conditions, each water undertaking should strive to lay down acceptable loss levels and implement them. The experience of NEERI shows that conventional sounding rods used by trained staff are quite successful in locating leaks in pipes, joints, or valves. The rods are cheap, strong, and simple to use. A separate division should be created in each water works to carry out systematic checks for leakages and water quality. Training and equipment required to carry out a continuous programme of preventive maintenance will add to costs. The expenditure incurred in the initial stages of the programme can easily be recovered. Needless to say, such a programme must be accompanied by education of the consumer to turn off taps when not required and to refrain from using excessive amounts of water. The need for systematic waste assessment and control should be given the same amount of consideration as the development of new sources in view of the goals of the Decade to provide clean water to all by 1990.

THIS NEWSLETTER IS ISSUED BY IRC, AND DOES NOT NECESSARILY REFLECT THE VIEWS AND POLICIES OF WHO, OR ANY OTHER ORGANIZATION CITED.

With its partners in developing countries and with United Nations agencies and donor organizations, IRC assists in the generation, transfer, and application of relevant knowledge through programmes for water and sanitation improvement.

These information-oriented programmes include: 1. Information Support and Services; 2. Technology Development and Transfer; 3. Manpower Development and Training; 4. Community Education and Participation; and 5. Programme Evaluation and Planning.

Support is provided by means of publications and training material, seminars and courses, research and demonstration projects, as well as by general support to the development of national capacities.

P.O. Box 98190, 2509 AD The Hague, The Netherlands

Requests for information on IRC should be addressed to IRC, P.O. Box 5500, 2280 HM Rijswijk, The Netherlands.

TABLE OF CONTENTS

- * MID-DECADE REPORT - p. 1
- * CONFERENCES IN THE PIPELINE p. 2
- * THE IMPORTANCE OF A PACKAGE STRATEGY - p. 2
- * SCHISTOSOMIASIS CONTROL - p. 3
- * COMMUNITY PARTICIPATION GUIDELINES - p. 3

**MID-DECADE REPORT:
SIGNIFICANT PROGRESS**

The record for the entire decade of the 1970s, was surpassed in the first three years of the 1980's during which time safe drinking water was provided for an estimated 345 million people in developing countries. At the same time, almost 140 million rural and urban dwellers benefited from newly installed sanitation facilities - a prerequisite for improved health in most developing countries. But yet, in these countries some 1,200 million people remain without safe water and some 1,900 million without adequate sanitation. National, international and local action on many fronts is needed to plan, design, construct, operate, and maintain the services required.

These assessments come from the UN Secretary General's report on the progress achieved since the International Drinking Water Supply and Sanitation Decade was launched in late 1980. His 'mid-Decade' report, released in April for initial review by the Committee on Natural Resources of the UN Economic and Social Council, will be considered by the General Assembly late in 1985. Unsafe water and inadequate sanitation are responsible for 80% of all human illness and disease, also account for heavy losses in productivity. Thus, clean water and adequate sanitation for all is the central goal of the Decade - an international education and action campaign involving 100 governments in developing countries, donor governments in developing countries, 12 UN system organizations, and numerous non-governmental organizations. In spite of formidable economic, organizational and technological obstacles, measurable progress has been made throughout the developing world in extending drinking water and sanitation services to both urban and rural populations.

Water supply. The latest WHO estimates reveal that about 255 million rural dwellers in over 120 developing countries obtained safe drinking water supplies during the first three years of the 1980s. This 14% increase in coverage in rural water services surpasses the progress achieved throughout the entire decade of the 1970s. In urban areas, an estimated 90 million people were provided with safe water between 1980 and 1983 - a rate of expansion which kept pace on a global basis with rapid population increases, but not in all regions.

Sanitation services. The greatest progress has been made in urban coverage. The proportion of total population served increased from 49% in 1980 to 59% in 1983 - a dramatic reversal from the decline in coverage during the previous decade. While many developing countries have rural sanitation programmes underway, progress in service coverage was difficult to estimate because of unreliable statistics at the beginning of the decade.

"The ultimate success of the Water Decade cannot simply be measured quantitatively, by the absolute levels of coverage achieved," according to G. Arthur Brown, UNDP Associate Administrator and Chair of the UN system's Steering Committee for Co-operative Action on the Decade. "Developing countries are also placing a premium on quality - on building national capabilities in the sector, adopting sustainable, appropriate low-cost technologies for both water supply and sanitation, reaching the poor and underserved populations with services, and, last but not least, involving beneficiaries and particularly women as direct participants in the planning and management of water and sanitation projects."

Remaining challenges. During the second half of the Decade from 1986, the fundamental goal will be to meet the needs of those who are without safe water and adequate sanitation. If all these people are to be served, then each day

- * an additional 650,000 people need to be supplied with a daily minimum of 20 litres of clean water;
- * more than 1,000,000 people need to gain access to adequate sanitation facilities.

Expansion of coverage at such a rapid rate through large-scale replicable programmes remains an urgent challenge. Since the primary responsibility lies with the developing countries themselves, particular attention is being focused on strengthening national



capabilities. The measures needed include improvement in policy formulation, programme and project preparation, implementation and monitoring; accelerated development of institutional and human resources, including innovative approaches to training and management; and greater mobilization and use of national resources. Also, higher priority needs to be given to water and sanitation programmes in national development plans. In the development of new projects, greater emphasis needs to be given to cost-recovery and use of least-cost appropriate technologies which are both compatible with health and engineering standards and acceptable to users. The UN Secretary-General recommends that international aid efforts and resources be focused on the poorest developing countries where water supply and sanitation needs are greatest, especially in sub-Saharan Africa. He further recommends that efforts be made to increase donor coordination to expand external assistance and to intensify resource use; and to continue to raise public awareness about the critical need for water supply and sanitation programmes in developing countries in the second half of the Decade.

Source: UNDP Division of Information
One United Nations Plaza
New York, N.Y. 10017.

CONFERENCES IN THE PIPELINE

Five years into the Decade, a number of conferences have been scheduled for towards the end of 1985 to review progress. As the Decade was launched officially at the UN General Assembly in November 1980, the Mid-Term Review will be held at the UN General Assembly in November 1985. Apart from reviewing progress in the Decade, appropriate strategies and priorities for action in the water and sanitation sector will be identified. The report and the recommendations of the Decade Steering Committee will be issued later, in July 1986. Preparations are underway for the 12th Conference which will be combined with the National Convention on Environmental Engineering of the Institution of Public Health Engineers, to be held in Calcutta, India on 6-9 January 1986. Water and Sanitation at mid-Decade will be the focal point of interest.

India, with a rural population of more than 500 million people among the underserved in the world, is probably one of the most representative countries for the Decade and Calcutta the most appropriate city for the mid-Decade conference. This conference will take a world view of the implementation of the Decade at its half-way mark and will identify the main constraints. On the basis of the experience gained, they will suggest ways of achieving more by 1990.

Professionals involved in the water and sanitation sector are invited to send in papers for the 12th WEDC Conference. Papers may deal with any aspect of Decade activities, including finance, administration and organization motivation of communities, training, water conservation, sanitation and health, low-cost and innovative technology. Those interested in presenting a paper should contact: Rowena Steele, WEDC Group, University of Technology, Loughborough, Leics., 3TU, United Kingdom.

THE IMPORTANCE OF A "PACKAGE" STRATEGY

The success in providing drinking water systems to the low-income, rural areas in developing countries depends greatly on the "package" strategy. It is not the mere establishment of new facilities for a community water supply, but consideration of a range of aspects in the planning and implementation which ensures that projects achieve the benefits expected.

Recent experience with two water supply projects in Nigeria, as reported in various magazines, illustrate how packages can vary and also the results.

The Imo State Water and Sanitation project originated from a community request for safe drinking water. The project was designed as an intervention package which includes water supply of boreholes with hand pumps, sanitation, by the promotion and construction of ventilated improved pit latrines, and supporting health and hygiene education, by training of village-based workers selected and supported by the community. With UNICEF, playing the role of facilitator, the project has succeeded in bringing about multi-sectorial planning and coordination of government ministries namely, the Ministry of Community Development and Cooperatives, the Ministry of Agriculture, Economic Development, and the ministries of Health Information, Primary Education, of Public Utilities and Local Government. A Steering Committee was set up, with the task to organize and supervise project activities. Government staff were seconded to work together at community level to implement the project. Staff worked in five teams, each having one of the following tasks:

- motivation
- training
- sanitation
- evaluation
- drilling and pump installation

This close government-community partnership which has fostered a spirit of state and community ownership may be regarded as a model of community participation. Particular attention has been paid to the training of community workers for the operation and maintenance of hand pumps, and also for the dissemination and reinforcement of health and hygiene education.

Between 1981 and mid 1983, 270 boreholes were drilled, 800 village based workers (one-third being women) were trained, 1,500 latrines completed and over 1,100 households surveyed. This represents coverage of 250,000 villagers in five local government areas. The project cost is US \$ 4 million, of which UNICEF contributed US \$ 3 million, the Imo State Government US \$ 900,000 and the Federal Government US \$ 100,000. Imo State had contributed to 50 per cent of the annual recurrent cost by the end of 1983 and will absorb all running costs by 1985.

An essential characteristic of the Imo State project is its replicability, which has implications for cost-effectiveness. The estimated per capita cost of the Imo State project is \$ 18.15, which compares favourably with the \$ 25 per capita reported by the World Bank for rural water supply projects using hand pumps.

In Plateau State, Nigeria, ten water supply projects are currently under construction, following an agreement signed between the UK Midland Bank, and the Nigerian Plateau State

Government in November 1981. Unlike the Imo State project, the water schemes in Plateau State are designed and constructed by foreign companies without local counterparts. For all ten surface water schemes, conventional treatment has been adopted, consisting of the addition of chemicals flocculation, sedimentation, rapid sand filtration and chlorination. Imported prefabricated and prepackaged treatment units are being installed in all of the schemes. The implementation was not preceded by assessment of community needs and planning activities, and as a result, there is no social component as in the Imo State project "package". As reported in World Water, December 1984, the cost of one project, the new Shendam Water Scheme to serve 27000, people was £ stg 28 million or roughly £1000 for every man, woman and child. In addition, no provision has been made for operation and maintenance of the established system. Various approaches open the way to considerable savings in both investment cost and energy. As demonstrated by the Imo State project, the "package" approach, backed by close government-community partnership, seems to be the key to successful water supply projects. Project replicability, in turn, is a key to extending this success to reach a greater number of people.

SCHISTOSOMIASIS CONTROL

The water-related disease schistosomiasis has been in the news very much recently. At the end of last year, an expert committee of the WHO warned that the disease is spreading and intensifying, and has become the second most devastating tropical disease. It was also noted that in some areas, between 80-100% of school-age children have the disease. The WHO expert committee has developed a control strategy of six components: health education, widespread diagnosis and treatment, access to safe water and latrines, environmental management and modification, snail control, and intersectorial cooperation in agricultural and water resources development schemes. In this new strategy, emphasis has been placed on low-cost diagnostic techniques and the use of safe and highly effective modern drugs, Praziquantel, Oxamniquine, and Metrifonate.

This was announced in a press release and commented on in the December 1984 issue of World Water. This has triggered off reactions by those concerned with the prevention and control of schistosomiasis. In a letter published in World Water January/February 1985, Dr J.M. Jewsbury of the Department of Parasitology Liverpool School of Tropical Medicine, expressed the opinion that it is unfortunate that more emphasis is being placed on diagnosis and treatment than on other aspects, and that no account is given of the cost implications. The WHO press release refers to urine examination which could result in the treatment for some 70 million victims. According to Dr Jewsbury, this leaves twice as many cases of intestinal schistosomiasis undetected and untreated. The cost incurred in providing microscopes and slides, and training health workers may become the limiting factor. It is estimated that the cost of treatment for a child weighing 25kg is: Praziquantel, \$ 1.03; Oxamniquine, \$ 0.89; and Metrifonate, \$0.13. Metrifonate is cheap and effective, but has the disadvantage of that repeated doses are required.

In general, the overall cost of detection and treatment can easily exceed the per capita health budget of the country. As concluded by Dr Jewsbury, "Engineers have a major, indeed key role to play in reducing transmission. Careful consideration of the health implications of alternative designs is essential. Appropriate water supply and sanitation facilities like the ventilated improved pit latrine can be very inexpensive compared to a widespread diagnosis and treatment programme". In addition to reducing schistosomiasis transmission, safe water supplies and improved latrines may result in health benefits in relation to bacterial and viral intestinal infections.

In developing a strategy to fight a major disease, the issue of where to place the emphasis, whether on chemotherapy or environmental control measures, is age-old. Those wishing to know more about this issue are referred to Jordan and Webbe "Schistosomiasis: epidemiology, treatment and control" Chapter II. This chapter deals with 'disease-specific' methods of control, chemotherapy and snail control, and 'non-specific' methods comprising water supplies, reduced contact with infected water and latrines. A review is included of the achievements of control programmes in St. Lucia, Ghana, Sudan, Egypt, Saudi Arabia, Iran, Brazil, the Philippines, China and Puerto Rico. The book is published by William Heinemann, Medical Books Ltd., 23 Bedford Square, London WC1B 3HH. (ISBN 0-433-17581-8,) Hardcover and in hard cover costs £12.50.

COMMUNITY PARTICIPATION GUIDELINES

In recent years, community participation has gained increasing prominence in development philosophy. This is especially the case in the health sector where, within the framework of primary health care, it has been stated that communities have both the right and the responsibility to be involved in the planning and implementation of health programmes. Similarly, in water supply and sanitation programmes, planners have come to realize that community participation is essential for successful projects. This is a vast change from procedures in which the community was viewed as the passive recipient of facilities planned and supplied by central government.

It is against this background that in 1980, IRC together with Dr Anne Whyte produced the "Guidelines for Planning Community Participation in Water Supply and Sanitation Projects" at the request of WHO. After extensive review by more than 40 experts, WHO has recently produced it as WHO Document ERS/83.8, WHO, Geneva (1983). The guidelines are presented in a simple and readily understandable form which leads planners through the "what, when, where, why, how and who" questions associated with the community participation. The operational tasks in planning for community participation are presented in five phases:

- identification of national experience in community participation, including assessment of socio-economic potential and anticipated problems in project implementation;
- setting programme objectives and priorities;

- planning at both the national and agency level to define roles and ensure coordination, and also to locate and ensure that manpower support for community education and participation is available;
- joint planning of activities by the community in partnership with the water supply and sanitation agency (This phase takes into account the education and information component, appraisal and selection of the project, detailed planning and design for construction, management, operation and maintenance);
- progress monitoring and evaluation.

Staff change

After ten years of service in various capacities, Mr Enric Hessing has left IRC to take up a new job in government service in the Netherlands. His most recent work at IRC was as project manager for programme evaluation and planning, and until early 1984, also for community education and participation. This last area has since been taken over by Mr. Jan Teun Visscher.

Correspondence related to Mr. Hessings other former activities should be addressed, for the time being, to the Director of IRC, Mr. J.M.G. van Damme.

We at IRC and, we feel sure, on behalf of many IRC friends in developing countries as well, would like to thank Mr. Hessing for valuable contributions to various projects and we wish him success in the furtherance of his civil service career.

Issues on community participation are addressed in each planning phase. Each issue is accompanied by a checklist of options or considerations distilled from experience gained throughout the world. This format helps to ensure that nothing is forgotten or left to chance. It also helps to stimulate thinking about new ideas and fresh approaches to project implementation.

Limited numbers copies of the guidelines are available in English and in French. Requests should be addressed to The Manager, Environmental Health Technology and Support, Division of Environmental Health, World Health Organization, 1211 Geneva 27, Switzerland.

THIS NEWSLETTER IS ISSUED BY IRC. AND DOES NOT NECESSARILY REFLECT THE VIEWS AND POLICIES OF WHO, OR ANY OTHER ORGANIZATION CITED.

With its partners in developing countries and with United Nations agencies and donor organizations, IRC assists in the generation, transfer, and application of relevant knowledge through programmes for water and sanitation improvement.

These information-oriented programmes include: 1. Information Support and Services; 2. Technology Development and Transfer; 3. Manpower Development and Training; 4. Community Education and Participation; and 5. Programme Evaluation and Planning.

Support is provided by means of publications and training material, seminars and courses, research and demonstration projects, as well as by general support to the development of national capacities.

P.O. Box 93190, 2509 AD The Hague, The Netherlands

Requests for information on IRC should be addressed to IRC, P.O. Box 9300, 2500 HM Rijswijk, The Netherlands.

TABLE OF CONTENTS

- * **WOMEN AND WATER - p. 1**
- * **SLOW SAND FILTRATION: POSITIVE FINDINGS - p. 1**
- * **MID-DECADE REVIEW - part 2**
- * **DRINKING WATER QUALITY GUIDELINES - p. 3**
- * **WATERLINES - p. 4**

WOMAN AND WATER

The drawbacks to implementing water and sanitation programmes have now become clear: too many facilities in developing countries fall in disrepair, or are not used. A greater involvement of users and especially of women is one of the factors which can help to change this situation. Against this background IRC announces the publication of:

PARTICIPATION OF WOMEN IN WATER SUPPLY AND SANITATION: roles and realities.

This comprehensive literature review and selected annotated bibliography has been prepared by Christine van Wijk-Sijbesma, a social scientist who has specialized in community participation and health education. It is a joint publication with UNDP as part of the interregional project, Promotion and Support for Women's Participation in the International Drinking Water Supply and Sanitation Decade (INI/83/003). This publication aims to provide all those involved in planning and implementing water supply and sanitation programmes with a comprehensive review of experience with the involvement of women. It also provides practical understanding of benefits accruing from involvement of women and ways of securing their active participation in planning, implementation, maintenance, evaluation, health education and agency support. The author has reviewed over 800 documents, mainly primary sources of information.

Chapter 1 is an overview and summary and draws implications for projects and programmes. Chapter 2 describes the realities of the traditional involvement of women in drinking water supply and sanitation. The potential contributions of women to short-term project benefits and long-term development impacts are a logical consequence of these traditional roles. This potential is examined in Chapter 3 and is compared to the realities

of the involvement of women in Chapters 4 to 8. These chapters show the extent of women's involvement in the subsequent project stages, planning, implementation, maintenance, management, health education and agency support in different cultures and with different types of technologies. They also show the effect of their involvement or the lack of it, and identify needs for further acquisition of knowledge and experience.

The review has been written specifically for planners and managers of water supply and sanitation projects and programmes. It also contains much information of interest to research workers and national and international women's organizations and donor agencies concerned with water and sanitation, related broader development and women-in-development issues.

The book contains approximately 125 pages of text and 60 pages of reference and annotated bibliography, and costs US\$ 15. Upon requests single complementary copies can be made available to individuals and non profit organizations from developing countries.

Copies can be obtained from:
 IRC,
 P.O. Box 93190,
 2509 AD The Hague
 The Netherlands

* * * * *

**SLOW SAND FILTRATION:
POSITIVE FINDINGS**

Slow sand filtration is one of the most effective surface water treatment methods. It is particularly suitable for rural areas in developing countries because it is one of the simplest and least expensive to construct, operate and maintain. This is the main finding from the integrated Research and Demonstration project on Slow Sand Filtration which was undertaken by institutes in India, Thailand, Kenya, Sudan, Jamaica, and Colombia in collaboration with IRC (SSF Project). The project outcome confirms experiences with slow sand filters in waterworks in Europe (Amsterdam, Dordrecht, London, Antwerp), and in the United States. A recent survey of 27 slow sand filtration plants in the US, serving communities up to 10,000 persons, revealed that most of these plants are very effective and treat water at the low cost of US \$ 0,02 per m³.



A recent study for the Environmental Protection Agency by Stig Regli, recommends that because of its suitability SSF should be taken into account when selecting surface water treatment systems particularly for smaller communities in the US.

The process of slow sand filtration is as follows:

Water passes slowly through a bed of fine sand at a rate of 1.0 - 0.2 m/h. During this passage the water quality is improved considerably by removal of impurities and reduction of the number of micro-organisms (bacteria, viruses, cysts). Soon after the start of the process a biological filter skin or film forms on the surface of the sandbed, which contains a wide variety of biologically active micro-organisms which break down organic matter, including bacteria and viruses and convert it into water, carbon dioxide and harmless inorganic salts. At the same time, a great deal of suspended inorganic matter is retained by straining. The continuous straining process however will gradually increase the resistance in the filter skin. After some time (1-3 months) the resistance becomes high and plant capacities decrease. Then the filtration capacity has to be restored by cleaning the filter, that is, by scraping off the top 2 cm of the sand bed, including the filter skin.

Slow sand filters treat low-turbidity waters (10-20 NTU) for several weeks or months before accumulated materials clog the top layer of sand. Some of the findings of the SSF project can be summarized as follows:

- The effect of three rates of filtration e.g. 0.1, 0.2, 0.3 m/h on the purification efficiency has been compared at NEERI in India. The purification efficiency remained unchanged, except for turbidity which was slightly better removed at higher rates, while the period between successive cleaning was 45 days at 0.1 m/h, 26 days at 0.2 m/h and only 13 days at 0.3 m/h. Thus, operating slow sand filters at a low filtration rate reduces considerably the frequency of cleaning.
- On average 99 - 99.9% reduction in coliform and virus content and an effluent turbidity lower than 1 NTU are achieved by slow sand filtration.
- Intermittant operation of the filters must be avoided because it leads to serious deterioration of the effluent quality. When the power supply is intermittant, the building of a raw water storage reservoir, which can feed the water to the filters by gravity, often is the best alternative to ensure continuous operation of the filters. Another alternative is to run the filters at a declining rate in the period when no raw water is fed to the plant.
- Roofing of the filters treating raw surface water had no influence on the length of filter run nor subsequently on the frequency of cleaning.
- Upflow slow sand filtration is being tested in Alto de los Idolos, Colombia. The first results show that the upflow process is less effective than down flow filtration but produces an effluent of sufficient quality.
- For treating highly turbid surface water, rapid clogging is the main drawback of slow

sand filtration. This drawback can be overcome by the application of a suitable pre-treatment system. Simple pre-treatment systems have been applied successfully in the SSF project, which include riverbed filtration, sedimentation, long-term storage and horizontal roughing filtration (HRF).

The International Reference Centre for Waste Disposal, Ueberlandstrasse 133, CH-8600 Duebendorf, Switzerland, in collaboration with the University of Dar es Salaam, have also tested HRF and found it to be a very suitable system. They are now looking for suitable locations for full scale testing.

The construction of small and medium sized slow sand filters is often cheaper than other competitive systems. When operation and maintenance costs are taken into account, slow sand filtration becomes even more attractive. A NEERI study in 1983 indicates that slow sand filters are less expensive than conventional rapid sand filters up to a capacity of 8000 m³/day, that is the equivalent of a plant which in rural India can serve a population of some 160,000 people.

The design of the system is relatively simple. However, special attention is required for the inlet and the outlet structure. A proper flow indicating device also needs to be installed. Although the operation of slow sand filters is very simple, it is of utmost importance that the caretaker understands the fundamentals of the treatment process in order to guarantee a proper functioning of the plant. Caretakers can be selected from the community but the community should also be involved in the planning, design and construction of the facilities to prevent mistakes from being made or facilities not being used. Hygiene education proved to be a useful tool to raise awareness in the communities and is a very important element to increase the health impact of the water supply system.

Information concerning the experiences with SSF may be of great value to engineers, plant operators and government officials. The earlier design criteria for SSF have been reviewed; the new guidelines are as follows:

- | | |
|-----------------------------------|---|
| - design period | - 10-15 years |
| - period of operation | - 24 hours per day |
| - rate of filtration | - 0.1 m/h (0.1-0.3 m/h) |
| - number of filterbeds | - minimum of 2 |
| - height of supernatant water | - 1 m (1-1.5 m) |
| - initial depth of filterbed | - 0.8 m (0.8-1.2 m) |
| - minimal depth before re-sanding | - 0.5 m |
| - depth of underdrains | - 0.2-0.4 m |
| - specification of filter sand | - effective diameter 0.15-0.35 mm uniformity coefficient 2.5. |

These guidelines and the condensed results of the research in the six participating countries on technology, maintenance and community participation have been integrated in a publication of the Technical Paper Series. The draft manuscript is currently under review, and the final edition is expected soon.

MID-DECADE REVIEW - part 2

Institutional problems remain a key constraint to implementing Decade strategies in developing countries, according to the Secretary General's report on the progress achieved since the International Drinking Water Supply and Sanitation Decade was launched in late 1980. This report was partly covered in the IRC's newsletter 158. Since the beginning of the Decade, many governments have carried out reforms to strengthen sector institutions and achieve better coordination in planning and management. While the proportion of national budgets allocated to water and sanitation programmes has, on average, remained relatively stable in the 1980's, some countries have also boosted expenditures to a level exceeding ten per cent of national budgets. India, for example, stepped up funding sixfold for rural programmes and threefold for urban zones during 1980-1985. Large increases were also reported in Democratic Yemen, Nepal, the Philippines, Sri Lanka, Sudan, and Trinidad and Tobago. Still, government investment in many developing countries remains relatively low and in some poorer ones the portion is negligible. If progress is to be made in the second half of the Decade, both domestic and external investment will have to be increased substantially.

Donor involvement. The late 1970's saw a dramatic increase in the level of external resource flows to the sector. Several bilateral agencies have prepared or are preparing comprehensive new policy papers and strategies to enhance their effectiveness in the sector. During the first half of the 1980's, external funding levels were maintained at about US\$ 2 billion annually. This was made up of contributions from World Bank and regional development banks (50%), bilateral donors (37%), UN system including UNDP and UNICEF (7%), and non-governmental organizations (6%). The Steering Committee for Cooperative Action, established in 1978, and chaired by UNDP, works to improve inter-agency coordination, strategy development and programme support. Considerable progress has also been made in coordinating donor activities at the country level, where UNDP Resident Representatives serve as focal points for Decade activities within each country. Aid agencies involved in the Decade are also assisting developing countries in overcoming organizational and technological obstacles in carrying out programmes in the sector. Many ongoing and proposed projects are being re-examined-- not just in construction and maintenance but also in project planning and design. In 15 developing countries, for example, a UNDP-assisted project funded by two donors is promoting active involvement of women's organizations in water and sanitation schemes.

Movement on many fronts. Beyond the achievements thus far, much remains to be done on all fronts -- both to reshape policies and programmes in new, more cost-effective directions and to continue the widespread efforts to expand services. The methods being used range from satellite detection of groundwater in African drought zones, to microscopic examination of parasites by villagers in Nepal; and from training women as health promoters in Pakistan, to global testing of community use handpumps and low-cost latrines.

Some of the most significant breakthroughs lie in improving conventional designs and developing low-cost technologies. A UNDP/World Bank global handpumps project is supporting extensive research, design and field testing of handpumps in 15 developing countries. The new pumps use plastic parts and are cheaper, lighter and much easier to maintain at the village level.

A UNDP/World Bank global sanitation research programme has already shown that the traditional, unsatisfactory pit latrine used throughout much of sub-Saharan Africa can be improved through addition of ventilation pipes, lined pits and squat plates. Already this ventilated improved pit (VIP) latrine is being widely adopted in Botswana, Ghana, Nigeria, Tanzania and other African countries.

For most of Asia, the pour-flush latrine is a simple, affordable disposal method suited to traditional practices. In India, pour-flush latrine programmes in 110 towns serve some 4 to 6 million people.

Development of new low-cost appropriate technologies not only makes safe drinking water and sanitation facilities more affordable for poorer communities in developing countries but also means financially-strapped governments can realize considerable savings in their Decade strategies for the 1980's. Technology has brought about an almost 40 percent savings in Indonesia's planned Decade investment. The starting point towards achieving Decade goals is for each country to establish targets, plans and programmes through 1990 which match, as far as possible, the global goal of providing safe water supply and appropriate sanitation for all.

Source: UNDP Division of Information
One United Nations Plaza
New York, N.Y. 10017

DRINKING WATER QUALITY FROM "STANDARDS" TO "GUIDELINES"

A major goal of the International Drinking Water Supply and Sanitation Decade (IDWSSD) is "adequate" and safe water for all by 1990".

Drinking safe water is defined as water free from micro-organisms and chemicals in concentrations which could cause, and often have caused, illness. Assuring the safety of water supplies requires an effective water quality surveillance which involves regular and routine physical, chemical and micro-biological quality, control of water from source to consumer.

For over a decade, the WHO International standards (1971) and European Standards (1970) for drinking water have been used worldwide in ensuring the safety of drinking water.

It is against this background that new WHO guidelines for drinking water quality have been developed. They supersede both the "International drinking water quality standards" and "European drinking water quality standards". The establishment of the health basis and the health risk, associated with water contamination, provide a common basis for standard setting. In this respect, the recommended guideline values are not meant to be legal standards that must be adhered to, but rather provide a basis for the development of

national drinking water standards, in compliance with the prevailing local conditions. Special attention is also given to the ways and means in which the guideline values are to be applied.

The new guidelines are being published in three separate volumes:

Volume 1 "Recommendations", was published in 1984. It contains the Guideline values for various substances, together with synoptical information on the rationale used in arriving at the recommended values. The proposed guidelines cover micro-biological, biological, chemical, physical, radioactive, aesthetic and organoleptic quality of drinking water plus application advice.

Volume 2 "Health criteria and other supporting information", was published mid 1985. It provides the toxicological, epidemiological and clinical evidence which formed the basis for the recommended guideline values in the first volume. As a reference document, it should be of great help to health authorities engaged in the process of establishing their national drinking water quality standards.

Volume 3 "Drinking water quality in small community supplies", will be published late 1985 and is currently being field tested. It will be devoted to the problems of small water supplies in the rural areas of developing countries. Besides institutional requirements, it places emphasis on routine sanitary surveys. The importance of micro-biological safety, basic techniques for sampling and analysis, and preventive and corrective measures needed. It goes without saying that standards and guideline values achieve nothing unless they can be implemented and enforced. Under present day circumstances, many rural areas of developing countries have to rely on water supplies that are neither piped nor treated. Tremendous logistical problems often render the task of routine water testing impossible, let alone complying with WHO guidelines. Under these conditions, there is no substitute for source protection and simple storage guidelines focussing on the micro-biological safety of drinking water supplies. Also, many people will be dependent, for the foreseeable future, on a quality of service lower than that which has become the norm in industrialized countries.

The new WHO guidelines for drinking water quality represent an essential tool to governments in developing and implementing their national Decade plans. As such, they are equally a means towards the attainment of the goal "adequate and safe water for all", in an endeavour to protect public health.

For more information: The World Health Organization, Distribution and Sales Services, 1211 Geneva 27, Switzerland. Special terms for developing countries are obtainable on application with the WHO Programme Coordinators or WHO Regional Offices.

* * * * *

WATERLINES

Waterlines should continue.

Waterlines, the journal of appropriate water supply and sanitation technologies urgently needs subscriptions. By the end of 1985 efforts of the Intermediate Technology Publications group must result in an increase in circulation in order to break even. Sponsor IDRC has allowed this extra time during which Waterlines is going for an all out marketing drive.

The quarterly journal has been receiving some income from advertizing which was introduced in 1984. At the same time it is trying to increase the number of subscribers. We at IRC feel that Waterlines deserves to be continued, as it is a practical magazine relevant to the rural water and sanitation sector in developing countries. Individual subscription is £8, institutions pay £9. Bulk subscriptions get 20 per cent discount. Perhaps readers in the North could consider sponsoring subscriptions for developing country readers. Write to: Intermediate Technology Publications Ltd, 9 King Street, London WC2E 8HW, United Kingdom.

The July issue (Vol.4 No.1) carries articles on the Blair laboratory in Zimbabwe, on schistosomiasis, on school sanitation in Lesotho, on the stream-driven coil pump from Sudan, on improved traditional clay water jars from Sudan, and on ways of involving women in water projects from Tanzania.

THIS NEWSLETTER IS ISSUED BY IRC, AND DOES NOT NECESSARILY REFLECT THE VIEWS AND POLICIES OF WHO, OR ANY OTHER ORGANIZATION CITED.

With its partners in developing countries and with United Nations agencies and donor organizations, IRC assists in the generation, transfer, and application of relevant knowledge through programmes for water and sanitation improvement.

These information-oriented programmes include: 1. Information Support and Services; 2. Technology Development and Transfer; 3. Manpower Development and Training; 4. Community Education and Participation; and 5. Programme Evaluation and Planning.

Support is provided by means of publications and training material, seminars and courses, research and demonstration projects, as well as by general support to the development of national capacities.

P.O. Box 93190, 2509 AD The Hague, The Netherlands

Requests for information on IRC should be addressed to IRC, P.O. Box 5500, 2200 LM Rijswijk, The Netherlands.

TABLE OF CONTENTS

- * NITRATE POLLUTION PROBLEMS - p. 1
- * IRC STUDIES ON GROUNDWATER EXPLORATION - p. 1
- * COURSE IN GROUNDWATER HYDROLOGY - p. 2
- * RENEWABLE ENERGY SOURCES - p. 2
- * IRC AND TRAINING MATERIAL - p. 2
- * INFORMATION HAS A COST - p. 3
- * UNICEF HONOURED - p. 3
- * PUBLICATIONS - p.3

NITRATE POLLUTION PROBLEMS

Based on the requests of information IRC receives, pollution of groundwater through nitrate is becoming a serious problem in developing countries. Recent reports from Europe show that in several countries this type of pollution is more widespread than earlier assumed. Intensive use of fertilizers in agriculture is the major cause for this pollution. IRC's home base the Netherlands is also seeing its drinking water supply endangered. In a recent nation-wide groundwater quality survey 40 out of 370 measuring points showed nitrate concentrations of 137 milligram per litre. This is exceeding the maximum allowable concentration of 50 milligram nitrate recommended by the European guidelines for drinking water quality.

Also in West Germany, high nitrate concentrations in excess of 50 mg/l are measured in drinking water from several groundwater pumping stations, particularly in two states.

Nitrate pollution of groundwater from on-site sewage disposal systems, especially in high density unsewered areas in developing countries, has also been reported. In Jamaica, the city of Kingston has been forced to abandon more than 50% of its drinking water supply due to the high levels of nitrates in the groundwater. In a study at Semra, India, many hand-dug wells were found to contain water with high concentrations of nitrate. This nitrate pollution was found to originate from latrines and animals straying in the vicinity of wells. An elaborate study has been undertaken in the Netherlands in order to develop a practical denitrification system for polluted groundwater. Denitrification using methanol as the

source of organic carbon has been successful in laboratory soil columns which represented the vertical soil profile. However, it is already anticipated that the introduction of denitrification in water treatment process will lead to a doubling of the cost price of drinking water. Some specialists advocate a limited use of fertilizers as the only economically and ecologically sound measure to safeguard the quality of drinking water. Similarly, a better design of on-site sewage disposal systems and a better protection of wells may have a considerable impact on the prevention of nitrate pollution of groundwater in developing countries.

IRC STUDIES ON GROUNDWATER EXPLORATION

Groundwater is a very important resource for rural water supply, and for a large proportion of rural population in the developing countries it will be the most appropriate source. Practical hydrogeology has a role to play in implementing rural water supply programmes. More attention needs to be given to the design and construction of boreholes and dug wells, even where - as is often the case - the yield requirements are small and the construction costs low. The example of Malawi can be cited, where there are 5,000 existing boreholes, and an additional 14,000 (!) planned to be completed by 1990. A substantial geohydrological input will be needed, because - even if it is expensive - very much higher costs will be involved in failures. The rapidly expanding low-cost groundwater development activity will need adequate designs, equipment, skills and training courses. Groundwater resources investigation and exploration techniques need to be better suited to the limited skills available in developing countries, and the large scale of rural water supply programmes. Borehole design is probably as important, or more important, than handpump design for reducing the rate of handpump breakdown (e.g. sand entering the well and wearing down the handpump).

In crystalline rocks (i.e. the African Basement Complex), groundwater occurs in fissures or weathered zones only. The rocks themselves are virtually impermeable. Groundwater resources at individual sites are mostly very limited, rarely exceeding 500 m³/day. Optimum depth of boreholes is in the 30-80 m range, with 100 m the upper limit. A depth of 50 m is, realistically, the more



common optimum. For a substantial yield, it is necessary that a borehole strikes a fissure. Success or failure is very dependent on well siting; there have been cases of a dry well at a distance of less than 150 m from a well with a good yield (e.g. 0,6 l/sec). In general, 1 l/sec should be "all that can be expected from a well drilled in the crystalline basement complex". Planners and engineers involved in groundwater development projects should be educated to recognise this.

IRC is conducting studies, and gathering information on practical experiences in groundwater exploration for rural water supply development. Project staff, groundwater survey personnel, and consultants wishing to contribute material, are requested to contact: IRC, Information Manager, P.O. Box 93190, 2509 AD, The Hague, Netherlands.

COURSE IN GROUNDWATER HYDROLOGY

An announcement for Spanish speakers. From 14 January 1986 to 11 July 1986 the 20th international course in groundwater hydrology will be held in Barcelona, Spain.

It is sponsored by the Universidad Politécnica de Catalunya, Departament de Política Territorial i Obres Públiques, Departament d'Agricultura Ramaderia i Pesca, both of la Generalitat de Catalunya, the Dirección General de Cooperación Técnica Internacional, the Centro de Estudios y Experimentación de Obras Públicas, the Comisaría de Aguas del Pirineo Oriental, the Confederación Hidrográfica del Pirineo Oriental, the Sociedad General de Aguas de Barcelona. It will be mainly intended for graduates from higher technical schools and science faculties and who wish to receive further training or specialize in the problems of prospecting, tapping, exploitation and planning of groundwater while studying surface water and other hydrological resources.

The teaching program will be: auxiliary disciplines, groundwater exploration and exploitation, and water management. This means a total of 318 hours for the theoretical and applied lectures, 9 field trips, 7 technical visits, and the realization of a groundwater practical report in reduced groups of two persons. Lectures are given in Spanish.

For further information, please write to Curso Internacional de Hidrología Subterránea, Beethoven no.15, 3º - 08021 Barcelona (Spain), Telephone (93) 201.52.55, Telex 52455 coabne.

RENEWABLE ENERGY SOURCES

Renewable energy sources providing power for drinking water supply and irrigation purposes in developing countries are receiving increased attention. Recently there has been a revival of interests in wind pumps as well as solar powered water pumps. In a number of developing countries various non-governmental agencies experiment with alternative energy sources for water pumping.

An extensive survey conducted by UNDP has shown that lack of practical information is one of the chief constraints for decision makers, planning officers and engineering staff in determining the potential of these renewable energy sources in their rural water supply programmes. Recently a number of good handbooks on wind and solar pumping have been published, on wind by GRET and VITA and on solar pumping by Intermediate Technology Publications. These manuals give indications of the applications where the wind and solar pumps are likely to be viable options, but they all treat one energy source in detail. They also tend to be largely devoted to irrigation purposes.

IRC has nearly finished preparing a manual which aims to provide an overview of four renewable energy sources for water pumping: solar energy, wind energy, hydropower and biomass energy. The focus of this manual is exclusively on small-scale drinking water supplies in rural areas. It is scheduled to be published in early 1986 and it is designed to help stimulate the careful consideration of all options for use in water pumping.

The handbook referred to is: "Solar water pumping, A Handbook", Jeff Kenna and Bill Gillet, IT Publications Ltd, 9 King Street. London WC2E 8HN, United Kingdom. Price £ 12.50.

IRC AND TRAINING MATERIAL

Since 1979, IRC has actively participated in projects concerning human resources development for water supply and sanitation. These projects were carried out in the Eastern Caribbean area, in Indonesia and in Sri Lanka. As part of the project activities, training manuals have been produced for various types of job holders in water utilities. Through IRC these manuals are available for other users.

Since 1983, IRC has been exploring ways and means to give effective support to the production by national or regional institutes of appropriate training material in local languages, for the training of subprofessionals and field workers involved in rural water supply and sanitation projects. IRC will prepare manuals in simple, straight-forward English, with a glossary and a list of useful references in annex. Such manuals will specially designed and written to be easily translatable and adaptable.

To start with, IRC has commissioned Mrs. Donna R. Flanagan, Educational Technologist, to prepare a training manual for the training of foreman and field supervisors. The manual, which can be used in training courses as well as for self-teaching, is intended to give the supervisors the attitudes, knowledge and skills they need in order to effectively improve their subordinates' performances. In addition to the glossary and a list of references, the manual contains checklists and model forms the would-be-trainer will use for the preparation of training events.

The new manual, entitled TRAINING SKILLS FOR SUPERVISORS, will be sent on request to institutes and agencies wanting to test it in training programmes. IRC will invite their comments and recommendations to be incorporated in the design of the next manuals.

Along another line, IRC is preparing a set of case histories to illustrate a number of key elements in human resources development. The case histories will help students and managers discover which are the factors that make human resources development efforts successful. Here also, IRC will invite comments on a first set of case histories to be published soon, and recommendations for more case histories.

IRC is convinced that more could be done in support of training for rural water supply and sanitation in less developed countries. It intends actively to survey the needs of local training institutes. In addition, suggestions and ideas from Newsletter readers will be warmly welcome.

INFORMATION HAS A COST

Information work for water supply and sanitation has to be paid for by some one. Waterlines needs paid subscriptions. Readers of the IRC newsletter have sofar been receiving free copies, subsidized by IRC. We may have to think about ways to charge a price to clients who can afford to pay for services like the newsletter, as funding becomes scarce.

Recently, the Aqualine database on water, waste water technology and environmental protection produced by the Water Research Centre joined forces with Pergamon Infoline to become available online. Aqualine contains over 85,000 records, for which over 600 primary journals are scanned, together with technical reports, monographs and conference papers. The database can be searched with a suitable terminal or micro computer and a modem. Aqualine costs £ 30 per connect hour, plus a charge of 12 pence for displaying a full record on line. For database and online service no subscription fee is needed.

It is interesting to note from literature that, although information services like these have to be paid for by the customers, only few commercial databases seem to make money.

For further information:
Mrs. Sarah Dunn, Pergamon Infoline Ltd, 12
Vandy Street, London EC2A 2DE, United Kingdom.

UNICEF HONOURED

The 5th World Congress of the International Water Resources Association meeting in Brussels 15th June honoured UNICEF for its "excellence in bringing water resources to good use by human populations."

It was the first such IWRA tribute to an international organization.

The award, in the shape of a large water-drop in clear Belgian crystal, was presented by Sir Alexander King, Chairman of the Club of Rome, who headed the international jury that selected UNICEF.

Mr. Martin G. Beyer, a Senior Policy Analyst with UNICEF, accepted the award on behalf of Mr. James P. Grant.

Sir Alexander said that at a time when so many international organizations were experiencing difficulties, "UNICEF was clearly standing out in all fields with an excellent record of efficiency in its vital work for very human issues."

In response, Mr. Beyer said he felt that it was a "tremendous encouragement for all of us to know that the international world regards us as being on the right track."

The IWRA was established in 1972 to provide an inter-disciplinary international forum for the advancement of water resources planning and management.

PUBLICATIONS

IDRC-UM Handpump Manual

The International Development Research Centre (IDRC), together with the University of Malaya (Philippines), announce the publication of this new manual on the Installation, Repair and Maintenance of the IDRC-UM Handpump which was designed by the University of Malaya through the assistance of IDRC. The conception of the manual is based on a 4-country project involving Malaysia, Philippines, Thailand and Sri Lanka. The manual is meant to serve as a reference for the installation, repair and maintenance of the handpump. It is intended for use by semi-literate rural villagers. Special features of this handpump are that the main parts of the pump are made of PVC (polyvinyl chloride), and that the foot valve is removable which allows for easy repair and maintenance. To order, please write: Cecilia C. Verzosa, Executive Director, P.O. Box 189, Makati 3117, Philippines.

Hand Drilled Wells, A manual on Siting, Design, Construction and Maintenance by Bob Blankwaardt

This handbook on hand drilled wells is a successful marriage between a manual and a reference book: It starts from the premise that practical skills can only be improved by theoretical knowledge. In this 132-page publication, a step-by-step procedure is outlined for respectively well siting, site investigation, the design, construction and maintenance of tube wells at community level. In Chapters 2 and 3, the basic theoretical knowledge for developing a well is summarized, including hydro-geology and sedimentary geology. The selection, installation and maintenance of handpumps is dealt with in Chapters 11 and 12. Additional information on surveying and well drilling equipment is presented in separate appendices.

The manual has benefitted from a 3 years' field and classroom teaching experience. Generally, the instructions are clearly laid down, with many helpful illustrations, covering all aspects of well construction and maintenance. The book is primarily directed towards pre-service students at the Rwegarilula Water Resources Institute in Dar es Salaam, Tanzania. The material is presented in a readily understandable way, which contributes to making the book accessible to a much broader public including craftsmen, technicians, practising engineers, project planners and

field workers. There are, however, some shortcomings: The emphasis of the book is more on engineering features and operation than the various aspects of process design. The book is at fault in omitting to deal in detail with community participation at a time when community participation is considered to be an essential ingredient of rural water supply projects. Equally, no mention is made of the construction and maintenance of water supplies. Finally, the author recognizes that parts of the book need to be translated in Kiswahili so as to reach a great number of field workers in Africa.

132 pages - English only - Price: Dfl. 19,50. Published by the Rwegarulila Water Resources Institute, Tanzania. Distributed by the Tool Foundation, Entrepôt dok 68A/69A, 1018 AD Amsterdam, Netherlands.

Focus on Diarrhoea by Isabelle de Zoysa, Susanne O'Driscoll and Eric Collen for the Save the Children Fund. London School of Hygiene and Tropical Medicine, London, United Kingdom.

Although the disease pattern of a poor community may vary from country to country, and even from place to place within the same country, diarrhoea remains the most common single cause of morbidity and mortality among children under 5 years of age in developing countries. In fighting diarrhoea, the type of solutions to be promoted vary also, from the sole management of the disease to general environmental measures, including water supply and sanitation. This book is part of an audio-visual information package which consists of two tape-slide sets (or a video cassette), an illustrated hand-book and an information chart. The emphasis of the package lies in promoting a proper management of diarrhoea. As a result, it is aimed at professional health workers who are responsible for the planning and implementation of diarrhoea control activities. The complete information package

costs £ 90.00, which seems a lot to pay, but arrangements are made for the provision of individual copies.

To order, contact: Suzanne O'Driscoll, Department of Tropical Hygiene, London School of Hygiene and Tropical Medicine, Keppel Street, London WC1E 7HT, United Kingdom.

Gravity-flow Water Systems by Thomas D. Jordan Jr. June 1984, 250 pages. This handbook was issued by the Intermediate Technology Publications, the publishing arm of the Intermediate Technology Development Group (ITDG), United Kingdom.

This handbook is written with the intention of collecting together all the knowledge, theory, and practices necessary for the surveying, designing, and construction of gravity-flow water systems for rural communities. It is intended that this handbook will now replace the "Village Water Systems Technical Manual" written by Carl R. Johnson in 1975. New insights, based on a better understanding of the principles and problems inherent in projects and much valuable field experience, have found their way in this publication. Besides technical theory and construction practices, special attention has been given to human problems and wherever possible means on how to tackle them. The material has been presented in a simple and well-organized manner that allows overseers of both engineering and non-engineering backgrounds to readily understand. It must be emphasized that a good understanding of the fundamental principles of design is a prerequisite for successfully constructed structures fitting the local conditions. Price: £ 4,95, 148 x 210 mm. ISBN 0946688508 To order, please write: IT Publications, Unit 25 Longmead, Shaftbury, Wiltshire SP7 8PL, United Kingdom.

* * * * *

THIS NEWSLETTER IS ISSUED BY IRC, AND DOES NOT NECESSARILY REFLECT THE VIEWS AND POLICIES OF WHO, OR ANY OTHER ORGANIZATION CITED.

With its partners in developing countries and with United Nations agencies and donor organizations, IRC assists in the generation, transfer, and application of relevant knowledge through programmes for water and sanitation improvement.

These information-oriented programmes include: 1. Information Support and Services; 2. Technology Development and Transfer; 3. Manpower Development and Training; 4. Community Education and Participation; and 5. Programme Evaluation and Planning.

Support is provided by means of publications and training material, seminars and courses, research and demonstration projects, as well as by general support to the development of national capacities.

P.O. Box 93190, 2509 AD The Hague, The Netherlands

Requests for information on IRC should be addressed to IRC, P.O. Box 5500, 2230 HM Rijswijk, The Netherlands.

Newsletter No. 161, January/March 1986

TABLE OF CONTENTS

- * HAITI: INTERESTING PROJECTS
- p. 1
- * OVERPUMPING: VARIOUS ANSWERS
- p. 2
- * SUCCESS FOR IDRC FILM - p. 2
- * NEWS FROM NEERI - p. 3
- * NEWS FROM IRC - p. 3
- * SPECIALISTS MEET ON
INTERWATER THESAURUS - p. 3
- * NEW PUBLICATIONS - p.3

HAITI: INTERESTING PROJECTS

Haiti, the poorest country in the Western Hemisphere, needs considerable outside help in developing drinking water supplies. With 75 to 90 % of the population earning less than US\$150 a year, safe and adequate drinking water is a luxury few can afford. Better-off city residents pay about US 0.20 per gallon for purified bottled water.

According to the Pan American Health Organization, only about one in ten Haitians had access to safe water in 1980. Over half of all recorded deaths were linked with gastrointestinal diseases which are primarily waterborne.

Even when government and foreign funds and technical specialists are available, it is not always easy to find workable, affordable solutions to Haiti's water problems. For example, four years ago, USAID (United States Agency for International Development) imported 20 hand pumps manufactured in the Dominican Republic for a pilot water-supply project in south-west Haiti. However, a preliminary inspection revealed that the pump sets were factory rejects. With all the usual delays, new pumps were installed in 16 locations for test runs. Then a whole panoply of mechanical, operational and organizational problems arose. The new pumps were found to be of inferior quality; cast components broke; threaded parts did not fit; and many parts were not uniform. Pumps designed to serve 150 people were being used in some locations by up to 1 500 people. An agreement with a local technical school to service and maintain the hand pumps was never implemented. The result was that only five of the original pumps were working after two years.

Search for alternatives: The search for workable alternatives to the hand pumps was

launched when engineer Frank Temmel and associates from CARE and the National Potable Water Service (SNEP) of the Haitian Government started looking for solutions to the water-supply problem of the small village of Baie de Henne, on the arid Caribbean coast of north-west Haiti. For the population of 2 000 there was only one source of potable water within six miles: a spring on the outskirts of the town at the base of a 30-foot cliff where water emerged directly onto the beach.

At low tide there was very little mixing of water from spring and sea, and people would climb down the cliff with their animals to collect fresh water. But when the tide came in, salt-water mixed with the spring water making it unfit for human and animal consumption.

Hand pumps would not work because of maintenance problems. Windmill pumping was impossible for lack of adequate winds. Then the idea emerged of using solar-powered pumping to take advantage of Haiti's 360 days of sunshine per year.

To do this, the spring was enclosed in a concrete box, and a US\$ 10 000 photovoltaic-powered pumping system obtained from the A.Y. McDonald Company of Dubuque, Iowa, was installed. The system consists of 14 panels in two arrays mounted in an aluminium frame. At peak it produces about one horsepower which is sufficient to lift enough water to keep the 10 000-gallon storage tank filled. Plastic pipes from the tank, carry water by gravity to public water fountains in town.

Three more villages: Following the success at Baie de Henne, officials planned to replicate the solar/gravity scheme in three locations in the Artibonite Valley under the CARE Community Water Systems Project which is funded by USAID's "Caribbean Basin Initiative." While this fertile region rarely suffers from a shortage of water, most people in Mauge, Bois Mauge and Moulin Jean-Denis had to rely on shallow hand-dug wells and irrigation canals for drinking and washing water which was often contaminated. Other people in these villages walked up to three miles to draw water from several artesian wells which had been drilled decades before for the banana-growing operations of the Standard Fruit Company.

The old Standard Fruit well at Mauge has now been capped and a Honeywell electric motor powered by solar panels pumps water approximately 25 feet to an elevated 10 000 gallon storage tank. The tank provides enough



pressure to push water three miles through a network of plastic pipes under the village community.

A combination of engineering factors and popular demand led to the placement of public fountains around Mauge. "To avoid lines and prevent local flooding we wanted each fountain to serve no more than 500 people, with two taps per fountain," explained Temmel. "We placed the fountains where there was a cluster of houses or where the villagers were used to coming for water, but the distance between fountains was kept less than 700 meters to maximize use."

Material and technical support for the system was supplied by CARE, USAID and SNEP. The community in Mauge participated by digging trenches for pipelines and by contributing local materials for the storage tank and fountain foundations. A locally elected water committee was responsible for the maintenance fund, which consisted of contributions collected from all water users, and amounted to about US \$1 per family per year.

Since completion of the solar/gravity water system at Mauge in December 1983, a similar system has been constructed in neighbouring Bois Mauge to serve 4 500 people. Shortly another system with twice the pumping and storage capacity will be complete in Moulin Jean-Denis.

USAID, CARE and SNEP officials now hope to repeat the success of these pilot solar/gravity schemes on a larger scale in water-supply programmes in Haiti's southern peninsula, which has suffered recurrent drought in recent years. Construction or rehabilitation of about 40 water systems is expected to bring safe drinking water to about 160 000 people.

Four other programmes: At least four other programmes are working on the drinking water problem in Haiti. The United Nations Development Programme (UNDP) and the World Bank are funding a major project to provide safe drinking water for 12 selected rural towns throughout the country. UNDP is also helping to increase the Government's capacity to manage and exploit underground water resources by training engineers and updating inventories of water resources. UNICEF and SNEP are working to provide a gravity-fed water-supply system to four small communities near the town of Coridon, on the arid north-west coast.

In Coridon, a community where primitive fishing and salt drying provide meagre subsistence, new pipes are being laid from a spring-fed source seven miles away in the rugged mountains, directly to Coridon and three neighbouring coastal towns. According to UNICEF officials, by early summer, some 6 000 people will be receiving fresh safe drinking water.

These achievements shed a ray of hope in a country which is wracked by extreme poverty, illiteracy and malnutrition. It will obviously take hundreds more Mauges and Coridons before Haitians in rural areas feel there is a real future for them in their own villages and will not feel the need to migrate.

This account is based on two articles by David Kinley who is an information advisor working with the United Nations Development Programme in New York.

OVERPUMPING: VARIOUS ANSWERS

We at IRC usually do not pay very much attention to irrigation. Not that we think water for agricultural use is unimportant, but our main concern is drinking water and sanitation. Sometimes conflicts arise over the use of water. In this context we report on a seminar on Water Management Technology Transfer which took place in Pantnagar, Uttar Pradesh, India, in May 1985. Participants at this seminar, which was sponsored by the Ford Foundation, drew up 27 recommendations of which those on drainage and groundwater also have bearing on drinking water.

As reported in the Indian quarterly Water World, monitoring of water data was recognized as being very important. It was observed "that in some states like Haryana, precise observation and periodic analysis of water table data is being carried out giving a clear idea of rising trend of groundwater and sensitivity to drainage and salinization in different areas. In other states, even though ground water organization exist, there appears to be less awareness of water table observations at appropriate intervals...".

Participants also stressed that legislation could be an answer to regulate withdrawal of groundwater from artesian aquifers at the foothills of the Himalayas which now suffer from an indiscriminate drilling of wells.

Legislation can help new technology is another option, as tried out in Bangladesh. Large parts of that country suffer from over pumping. This has resulted in lowering of the water-table by as much as one metre per year. In many cases water cannot be pumped by the new no. 6 hand pump which is to be found throughout the country in 65 000 villages.

The answer has been the development by UNICEF and the World Bank of a new pump, the Tara pump, which can pump water from a greater depth than the no. 6 pump which is only effective up to 6 to 7 metres.

SUCCESS FOR IDRC FILM

An unprecedented success in communication for development! That is how the health education film "Prescription for Health" from the Canadian International Development Research Centre (IDRC) has been described. Hundreds of copies in English and French have been distributed and sold throughout the world.

UNICEF has purchased 100 copies for use in Asia and Africa. UNICEF offices in Pakistan, India, Bangladesh, Burma and Sri Lanka are producing local-language versions. Other agencies have completed versions in Malay, Tamil, Tegalog, Thai, and Bahasa Indonesia. The Pan American Health Organization has started working on a Spanish version. Other language versions are being prepared.

Even agencies in countries of different cultures and terrain from Asian for which the film was primarily designed, have found this film useful. IDRC reports that in Senegal and the Central African Republic audio tapes have been produced in local languages to accompany silent projections of the French version.

The film emphasizes the fact that technical solutions to water supply and sanitation are of little value unless accompanied by measures to break the faecal-oral transmission route of diarrhoeal diseases. The film was aimed at health workers and sanitary technicians but some agencies have also found it useful for village health meetings.

Recently IRDC invited contributions for the production of support material. A guide for production of special support materials for specific countries will make the film even more useful and relevant.

NEWS FROM NEERI

The National Environmental Engineering Research Institute (NEERI) in Nagpur, India, is one of IRC's oldest partners and friends. The institute's contribution to the IRC supported slow sand filtration demonstration project is well known. NEERI plays an essential role in information exchange between developing countries. It is with great pleasure that we welcome its most recent initiative, the publication of a quarterly newsletter.

Last year NEERI was also involved in a training course, jointly organized with the Danish International Development Agency (Danida). Water-supply in general and resources, transport, treatment and design in particular were the subjects of the 6-week course. Sixteen engineers, five from Philippines, two from Nepal and others from various Indian states and the central government participated. Sponsoring local training courses in developing countries is one of the most effective methods of knowledge transfer to selected target groups. The NEERI newsletter is an additional instrument to disseminate information on new developments to wider audiences in India and abroad. Keep it up friends!

NEERI's inspiring Director, Dr. B.B. Sundaresan has returned to university work in Madras. Dr. K.R. Bulusu is now the acting Director of NEERI.

NEWS FROM IRC

One of IRC's longest-serving staff members, Mr. Kien Tjiook will retire at the end of March. Mr. Tjiook has been with IRC since its first concrete operation in 1971. He laid the basis for IRC's successful slow sand filtration demonstration project. He inspired the standard water purification plant study in Indonesia, the results of which were incorporated in the country's national plan. Mr. Tjiook has also been instrumental in collecting various technological ideas from the field through a mail survey. This resulted in the publication of the "Practical Solutions in Drinking Water Supply and Wastes Disposal".

His more recent work has included review and promotion of disinfection especially the technology for local manufacture of disinfectants to overcome logistic problems in dispersed areas. And let us not forget, before the IRC newsletter changed to its present format, Mr. Tjiook was the editor of the first two-page newsletter in the 1970's....

On behalf of his many friends, we say goodbye to Mr. Tjiook, we thank you for the work done and wish good luck in the years to come! Mr. Tjiook, in his turn, wishes to thank his friends and colleagues for their collaboration and co-operation.

IRC hopes to continue the relationship with Mr. Tjiook on another basis and to make use of his experience.

SPECIALISTS MEET ON INTERWATER THESAURUS

Terminology used and meaning of terms in water-supply and sanitation vary considerably. This poses problems in indexing, in storage and retrieval of information on rural water supply and sanitation. An agreed vocabulary in a number of languages is essential for information exchange and transfer between various information systems and services.

Currently a working group of nine information specialists, funded by IDRC, is working on a multi-lingual thesaurus based on the previous Intermediate Thesaurus developed in the POETRI project. Towards the end of 1985 the working group met at IRC to discuss the multi-lingual version in English, French and Spanish.

At the end of March the working group, which includes representatives of WRC United Kingdom, AFEE France, CIEH Burkina Faso, CEPIS Peru, AIT/ENSIC Thailand, and IRC Netherlands, will have a draft prepared on computer available for follow-up discussion.

NEW PUBLICATIONS

With the increasing number of hand pumps in use (and too often not in use!) in developing countries, the need for and supply of information on performance standardization, and community involvement has been growing. A range of new books have been published recently, more are in the pipeline.

In newsletter 160, two manuals from the field, one from the Philippines and one from Tanzania were mentioned briefly.

Now the fifth progress report of the UNDP/WB Global Handpump Testing and Development: Proceedings of a workshop in China (INT/81/026) has been published by and is available from:

The International Bank for Reconstruction and Development/The World Bank
1818 H Street,
N.W. Washington DC 20433
U.S.A.

Intermediate Technology Publications published Tools for Agriculture (third edition) in which IRC contributed a chapter. Available from:

Intermediate Technology Publications
9 King Street
London WC2E 8HW
United Kingdom

Recently IDRC published the results of a research project on Laboratory and Field Testing of Handpumps (polyvinyl chloride pvc handpumps) which was carried out by the University of Malaya, Malaysia. Available from:

IDRC
P.O. Box 8500
Ottawa
Canada K1G 3H9

Sanitation without Water, the successful book by Uno Winblad and Wea Kilana, published in 1978 has been updated and revised. This book gives practical information on design, construction, operation and maintenance of sanitation systems for individual households. The main systems described are pit and compost latrines.

The new edition includes information on pour-flush latrines and on the construction of soakpits. It also contains a bibliography and a glossary. Although the above mentioned latrine types are said to be inexpensive, no specific cost figures were given.

The publication is intended for health officers, nurses, medical auxiliaries and village health workers. It should also be of use to other members of the medical profession and to architects, engineers, physical planners and administrators concerned with appropriate technology.

Thanks to a subsidy provided by the Swedish International Development Agency (SIDA), the paperback edition is available at a reduced price of £(Stg) 2.50 from:

Macmillan, Higher and Further Education
Division
Houndmills, Basingstoke
Hampshire, RG 21 2XS

* * * * *

World Health Statistics Annual 1985

In the first three years of the International Drinking Water Supply and Sanitation Decade the number of rural inhabitants in the developing world served with water supplies rose from 30

to 38 percent, according to figures in the World Health Statistics Annual 1985, just published by the World Health Organization (WHO). That is "probably the most significant achievement of progress of the decade so far", WHO says in an assessment of progress and problems to date.

The 1985 edition devotes an entire section on Environmental Health to the Decade and gives reported levels of coverage for WHO regions and individual countries in 1970, 1975, 1980 and 1983. World Health Statistics Annual 1985 is (on special terms for developing countries) obtainable from WHO Programme Coordinators or WHO Regional Offices, or at Swiss Franc 85.- from:
World Health Organization
Distribution and Sales Service
1211 Geneva 27
Switzerland

Manual for the Appraisal of Rural Water Supplies

Late 1985, the Overseas Development Administration produced a very useful manual for people working in sector and project appraisal: Manual for the Appraisal of Rural Water Supplies. This manual should be used to guide decision-making. The issues arising are addressed in seven chapters. Chapter 2, The Existing Situation describes the sort of background information which will be required regarding the present standard of provision of water, and the users and suppliers of water. Chapter 3, 4 and 5 deal with the technical, organizational and financial aspects of rural water supply projects. Chapter 6 is the central core of the manual, wherein the methodology for appraisal is presented.

The potential benefits of improved rural water supply are identified, from which are derived guidelines for selecting projects. An analysis is given of the main decisions to be taken and their implications not only for costs, but also for feasibility. Chapter 7 gives some details of other forms of aid, such as health education or assistance with the maintenance of existing supplies. Available at £(stg) 7.95 net from:
Her Majesty's Stationary office
49 High Holborn
London WC1V 6HB
United Kingdom

THIS NEWSLETTER IS ISSUED BY IRC, AND DOES NOT NECESSARILY REFLECT THE VIEWS AND POLICIES OF WHO, OR ANY OTHER ORGANIZATION CITED.

With its partners in developing countries and with United Nations agencies and donor organizations, IRC assists in the generation, transfer, and application of relevant knowledge through programmes for water and sanitation improvement.

These information-oriented programmes include: 1. Information Support and Services; 2. Technology Development and Transfer; 3. Manpower Development and Training; 4. Community Education and Participation; and 5. Programme Evaluation and Planning.

Support is provided by means of publications and training material, seminars and courses, research and demonstration projects, as well as by general support to the development of national capacities.

Requests for information on IRC should be addressed to IRC, P.O. Box 98190, 2509 AD The Hague, The Netherlands.

TABLE OF CONTENTS

- * WOMAN'S PARTICIPATION IN NEPAL - p. 1
- * WORLD HEALTH ASSEMBLY - p. 1
- * NEW THRUST NEEDED - p. 2
- * HYGIENE EDUCATION SEARCH p. 3
- * INTERNATIONAL COURSES IHE-DELFT - p. 3
- * NEW PUBLICATION - p. 4

WOMEN'S PARTICIPATION IN NEPAL

The UNICEF and Swiss (SATA/Helvetas) - supported rural water supply project in Nepal has recently engaged a Nepalese woman specialist primarily to increase the participation of women in its water supply and sanitation projects. Her first task will be to stimulate women's involvement in health education, which has been integrated in community water supply projects for the last two years. It is organized by the projects technicians who have been trained to give health talks at the village schools and health posts. On the invitation of the village water committees, the project staff also show films on water and health, which are followed by discussions on local health problems and possible community action.

Latrines and smokeless stoves: Two of such action programmes are the installation of household latrines and smokeless cooking-stoves. The stoves use less fuel than open fires and therefore reduce not only the hard work of firewood collection but also the heavy soil erosion which threatens the most important source of income: agriculture. The project supplies the necessary materials and joins with the community workers and the community leaders in building the latrines and installing the stoves.

The separate spheres of life of Nepalese men and women means that the women are not as easily reached by development programmes, although they have to use the stoves, keep the latrines clean and teach the children how to use them. There is also considerable reluctance to accept women as members of the village water committees, despite their value as motivators of village hygiene improvements. The new women development officer is to change all this. Her first activity has been to educate the project's technical staff about the importance of women's involvement, if the project is to lead to better village health.

As mothers, wives and domestic managers women play a central role in the health and hygiene of their families, and discuss these issues with other women. Working with women for better hygiene is easier when they already have a position in the project. With this in mind they will be encouraged to become active members of the village water committees. This means education for the women, as well as their husbands and the male leaders of the community, will be needed.

An active role: not entirely new: The representation of women's interests is not entirely new to Nepalese culture. In several villages in the project area, women have their own saving groups and have raised funds to establish or maintain "resting trees". These are halting-places under a shade-tree where passers-by, including many women, can take off their backloads and rest before continuing their journeys. Not surprisingly, one of the first desires of women when a water project arrives at their village is to have one of the taps located near this resting place, so that they can quench their thirst after their climb in the fierce sun and thin mountain air.

To find a woman staff member who, to achieve these goals, can visit far-away villages has not been easy. During the recruitment permission from the husband or father to travel in remote areas had to be ensured. The project allows a woman companion when the work necessitates staying in a village overnight. The task of this woman worker will certainly be demanding, but should benefit not only her fellow-women, but whole villages and water projects, and should be seen as one of the steps towards better health for all in the year 2000.

WORLD HEALTH ASSEMBLY

More Decade progress needed: Among the needs stressed in the debate on the International Drinking Water Supply and Sanitation Decade in the 39th World Health Assembly which took place in May were: more funds, an increase in service levels in rural areas, a better collaboration between the water and health sectors and more community participation for water supply and sanitation. The Assembly noted with appreciation the report of the WHO Director-General: Mid-Decade progress review (Document A39/11). Several of the delegates to the Assembly reported commitment in terms of increased investment and stimulation of water supply and sanitation support programmes.



For example priority for Somalia will be to reduce the two to four hours spent by women and children in water collection in some arid rural areas. Iran indicates that US\$ 150 million had been designated for improving the rural water supply during the first half of the Decade. The United States reported a total external support programme to the sector of US\$ 2,600 million, and Tunisia a sixfold increase in expenditure on water supply and sanitation programmes during the period 1981 to 1985 as compared to the previous five years. In addition, Zaire reported that an additional US\$ 133 million, provided by external technical support agencies, had been directed towards water supply and sanitation projects during the Decade's first five years.

In a special resolution on the Decade which was accepted with few amendments, special attention was placed on the necessity to make proper arrangements if progress as outlined in the report by the Directorate General, is to be obtained. To date, in spite of the considerable efforts by member states, progress with the Decade programme has fallen short of expectations. If this trend continues many countries will not meet their targets. The USA delegate summed up the situation by saying that a reappraisal of the goals is needed and monitoring the impact on health should be stepped up.

A more active participation of national health authorities in water supply and sanitation programmes is needed, with this, more collaboration with national agencies from other sectors and continued effective co-operation of external support agencies involved. Calls were made for a more determined effort during the second half of the Decade and several action points were outlined.

Addressing the member states the resolution stressed the need for:

- (1) better balancing of level and quality of service between urban and rural areas and between water supply and sanitation;
- (2) water supply and sanitation programmes to be included in the national health authorities primary health care activities;
- (3) inter-sectoral collaboration among national and international agencies with operational responsibility for and/or involvement in water supply and sanitation and other agencies;
- (4) more community participation with special attention being paid to the position and role of the women in the choice of facilities and sites, management and maintenance;
- (5) provision of adequate operation and maintenance, as well as rehabilitation and surveillance.

External support agencies were urged to:

- (1) continue the high priority given to water supply and sanitation and increase the proportion of resources made available for under served and poor areas;
- (2) increase the proportion of resources allocated for institutional and human resource development, operation, maintenance and rehabilitation, public information, health and hygiene education, and community participation;
- (3) continue to improve co-ordination and exchange of programme information at country and international level with the agencies concerned.

REGIONAL DECADE MEETINGS: NEW THRUST NEEDED

With the Americas Regional External Support Consultation taking place in Washington 21-24 April 1986, resource mobilization for drinking water and sanitation for the three regions of the developing world has been given a push. Rather than pledging additional funds, ways have been sought to increase internal savings in the sector and to use existing resources more efficiently. It was concluded at the Washington meeting that service coverage rates can then be increased despite the severe economic constraints.

The Asian meeting in Manila took place earlier in October 1985 and the African meeting followed one month later in Abidjan. During these meetings resource specialists from various countries presented their own views and critical appraisals of the present situation.

As an African Consultation specialist put it: "To make even a modest headway towards the Decade goal, my country will need a large inflow of external assistance." However, to be effective better co-ordination of donor activities is needed. At this moment each external agency has different policies, approaches and priorities and inter-agency competition cannot be ruled out. This results from much of the external support being given on a bilateral rather than a multilateral basis. Multilateral assistance is relatively easier to co-ordinate because of the rather restrictive conditions that accompany bilateral aid, according to the African specialist. This leads to ineffective use of utilities and resources making projects more expensive for both donor and country. "Moreover, donors prefer to concentrate on one region creating a sphere of interest although the area is not always that which is most in need of support. There is also a preference by donors to fund the most visible projects - new water supplies, new treatment plants etc., whereas a country might be more in need of operation and maintenance programmes. The priorities of the country are often neglected. This is most unfortunate while the role of the external supporting agencies (ESA's) could be more positive".

All three consultations agreed that a new thrust in sector development was needed and that the next five years are crucial. Some figures might help to illustrate the needs: In Africa and Latin America 80% of all endemic diseases are water related. In Asia 150 million people suffer from diarrhoeal diseases and infant mortality could be reduced by 50% if everyone had safe drinking water and sanitary facilities.

Current coverage figures per region are:

	Water supply	Sanitation
AFRICA		
urban	50 to 60%	20 to 40%
rural	20%	3%
ASIA		
urban	67%	32%
rural	33%	7%
LATIN AMERICA		
urban	80%	48%
rural	26%	13%

Major conclusions and recommendations from the three consultations were:

- (1) ESA co-operation, information exchange and communications must be improved;
- (2) more concentration on operation, maintenance and software development;
- (3) institutional development and human resource development must be supported;
- (4) more attention for intersectoral co-ordination and project linkage;
- (5) cost recovery should be stepped up;
- (6) better balancing of water supply and sanitation sector development.

Key constraints and priority issues were discussed at the meetings in relation to progress in the water supply and sanitation sector development. We plan to publish in coming issues a more detailed account on these discussions taking into account regional differences. IRC Newsletter readers in the various regions may in future be affected by decisions on these priority issues and it is good to know which direction the discussion is taking.

One major discussion issue was the recovery of costs for drinking water and sanitation facilities.

The African and Asian consultation meetings agreed that costs should be borne or at least shared by beneficiaries, and that more than political will is needed. At the meeting in Washington it was clearly stated that willingness to pay should be one of the main selection criteria used in planning sector programmes. To encourage this willingness to pay, public awareness campaigns should be included in sector programmes.

In the long run, cost recovery should cover not only operation and maintenance but also investment costs. The primary objective of cost recovery is to ensure financial viability for proper operation, maintenance and extension of systems. Another objective would be to increase the financial autonomy of water and sanitation agencies.

There was general agreement at the three meetings that full cost recovery should be the long term target for the financial management of the water supply and sanitation sector. The time scale for reaching this target may vary between water supply and sanitary services, between rural and urban areas and from country to country. However the American meeting concluded that in the Americas cost recovery should as a minimum cover the costs of operation and maintenance for the sector as a whole. The fact that in order to ensure cost recovery, the service must be reliable, was re-emphasized at the African meeting.

Both the African and Asian meetings set varying targets. Beneficiaries in rural areas should:

- (1) as much as possible contribute to the initial investment in kind or in cash;
- (2) gradually assume full responsibility for operation and maintenance;
- (3) make potential financial contributions towards the replacement of equipment (as a long term objective).

In urban areas beneficiaries should:

- (1) pay for the entire costs of the installation and services, operating costs,

- including depreciation of equipment and debt service (long term);
- (2) bear the operating costs, including the replacement of operating equipment (short term).

The Asian meeting stated that in urban areas water sales and sewerage taxes should at least cover operation and maintenance costs and replacement of short term assets. The tariff should also be considered in relationship to what can be afforded.

HYGIENE EDUCATION SEARCH

More attention is now being paid to hygiene education. Its importance for successful water supply and sanitation projects is recognized by various development agencies and organizations.

Hygiene education is now often emphasized in documents on water supply and sanitation. However, fundamental information on how hygiene education programmes are carried out in practice is lacking. This kind of information is needed and IRC feels that exchange of direct practical information is extremely beneficial. Field experiences from others can be valuable for those currently working on a practical level.

To help people concerned in hygiene education learn from other experiences, stimulate further development and improve hygiene education practice, IRC is compiling an annotated bibliography and literature review on hygiene education. A first listing of hygiene education literature available at IRC already shows over 200 titles. However, only part of these concern so called "grey literature": unpublished material, case studies, project documents and organization papers. We would like to receive additional grey literature, preferably reflecting practical hygiene education experiences. With this publication we hope to reach not only those working in hygiene education and primary health care programmes, staff of water supply and sanitation projects, but also planners and project managers. Any relevant information please send to the Information Officer IRC.

INTERNATIONAL COURSES IHE-DELFT

In October 1986 a new study programme which may be of interest to Newsletter readers, will start at The International Institute for Hydraulic and Environmental Engineering (IHE).

This concerns the sanitary engineering study programme which deals with the design and operation of water and waste water treatment plants, water distribution networks, the monitoring and management of environmental pollution and its impact on the water quality in lakes, rivers, estuaries and groundwater aquifers.

The protection of water resources against pollution, the provision of sufficient domestic as well as industrial water of good quality, and the safe disposal and/or treatment of waste and waste water are matters of major concern in

many regions of the world, and call for an integrated approach for their solution. To meet the challenge of the UN Water Decade effective co-operation between engineers, chemists, biologists and sociologists is essential for water projects and programmes to be successful planned, implemented and managed.

The main target audience of the sanitary engineering study programme are professionals, especially from developing countries, who:

- (1) hold a university degree in engineering, chemistry or a related branch of science;
- (2) have at least three years of practical or research experience after graduation;
- (3) have a good command of English.

Within this study programme four specific courses allow for specialization in: water supply engineering; water quality management; rural water supply and sanitation.

Due to different conditions found in rural and urban areas, a special course is designed to deal with implementation of development programmes in rural and urban fringe areas which call for low-cost technology for the provision of drinking water and basic sanitation. IRC is contributing to this course by providing relevant information and experience.

IHE was set up in 1957 and now runs one-year international courses in which lectures, laboratory and research work, workshops and field studies are combined. Those seeking more information are invited to mail their request to the Institute: IHE Institute, P.O. Box 3015, 2601 DA, Delft, The Netherlands. A more detailed brochure will be sent, providing information on the study programmes, administration procedures and how to apply for admission and financial assistance. The study programmes will start in October 1986.

NEW PUBLICATION

Rainwater harvesting: Intermediate Technology Publications have published an excellent book on rainwater harvesting, intended for practical fieldworkers, project planners or managers, policy makers and academics. Authors A. Pacey and A. Cullis treat the subject in eight chapters including one on *design for drinking water systems*.

Rainwater harvesting has attracted considerable attention recently in work which has covered a wide range of techniques—from the collection of rainwater off roofs to the direct use of runoff on fields of growing crops. The authors of this book believe that the systems described here could hold out great hope for thousands of scattered, small communities in the Third World that cannot be served by more centralized water supply schemes in the foreseeable future.

This handbook was originally planned as a survey of the technical options for harvesting rainwater for domestic, livestock and crop production purposes. It soon became clear however, that such guidance was already available and that what was missing was material on the design, organization and overall implementation of "appropriate" rainwater harvesting schemes. Such schemes are those which are socially, technically and economically suitable for use in connection with many forms of livelihood and social context. The book gives particular emphasis to such interdependent dimensions of rural development.

The book is well-written and the material is clearly presented with over fifty line illustrations, and extensive bibliography and reference section. Case study material of work in Africa, India and South-East Asia is included and provides practical examples of the sorts of problems encountered and lessons learnt when trying to implement rainwater harvesting schemes in rural areas.

"Rainwater harvesting" by A. Pacey & A. Cullis, price £ 7.95. Available from:

Intermediate Technology Publications,
9 Kings Street, London WC2E 8HW, United Kingdom.

THIS NEWSLETTER IS ISSUED BY IRC, AND DOES NOT NECESSARILY REFLECT THE VIEWS AND POLICIES OF WHO, OR ANY OTHER ORGANIZATION CITED.

With its partners in developing countries and with United Nations agencies and donor organizations, IRC assists in the generation, transfer, and application of relevant knowledge through programmes for water and sanitation improvement.

These information-oriented programmes include: 1. Information Support and Services; 2. Technology Development and Transfer; 3. Manpower Development and Training; 4. Community Education and Participation; and 5. Programme Evaluation and Planning.

Support is provided by means of publications and training material, seminars and courses, research and demonstration projects, as well as by general support to the development of national capacities.

Requests for information on IRC should be addressed to IRC, P.O. Box 98190, 2509 AD The Hague, The Netherlands.

TABLE OF CONTENTS

- * DECADE IN EUROPE - p. 1
- * MID-DECADE COVERAGE FIGURES - p. 1
- * MAINTENANCE IN AFRICA - p. 1
- * SOFTWARE: 5% OF TOTAL FUNDS - p. 3
- * WORLD WATER CONFERENCE 1986 - p. 3
- * WASH RAINWATER INFORMATION CENTER - p. 4
- * NEW STAFF MEMBER IRC - p. 4
- * NEW SPANISH AND FRENCH TITLES - p. 4

DECADE IN EUROPE

Pollution of water sources and the effects on health was one of the subjects of the Third Consultation on the International Drinking Water and Sanitation Decade in the European Region of the World Health Organization held in Izmir, Turkey on 7 to 10 April 1986.

Changes in the level of water and sanitation services, the distribution of investments over urban and rural areas and the constraints encountered to achieve the Decade targets were also discussed. From the discussions it became clear that, although the European Region attains highest coverage, some countries do not have total coverage in rural and urban fringe areas. Investment has been concentrated in the populated industrial and commercial urban areas. In the rural areas solutions have to be found for the limited cost recovery potential.

Finally, it was recommended that the objectives of the Decade should be considered together with the Strategy of Health for All by the year 2000 and be revised accordingly for each country, not only for the remaining part of the Decade, but also for the period beyond.

MID-DECADE COVERAGE FIGURES

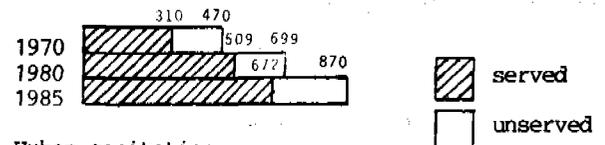
Apart from reports and proceedings of meetings on the Decade (see NL 162), it is possible to show in figures where we stand today with respect to water supply and sanitation. The most recent official figures for global urban and rural coverage for 1980 and 1983 on which estimates for 1985 and 1990 are based, are presented in the table below.

GLOBAL COVERAGE

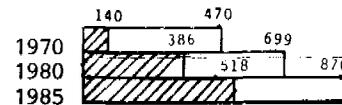
	1980	1983	1985	1990
<u>Water supply</u>				(estimates)
urban	72%	76%	77%	79%
rural	32%	33%	36%	41%
<u>Sanitation</u>				
urban	54%	58%	60%	62%
rural	14%	15%	16%	18%

The figure below shows changes in coverage of water supply and sanitation in the ten years preceding the Decade (1970-1980) and its first five years (1981-1985). Population is given in millions for developing countries excluding China.

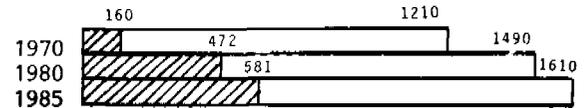
Urban water supply



Urban sanitation



Rural water supply



Rural sanitation



Obviously a lot of "white space" still needs to be covered! The WHO press release after the World Health Assembly expressed this as "slightly more people will be without water in 1990 than at the start of the Decade and approximately 200 million more will have no access to appropriate means of disposal of faecal wastes".

MAINTENANCE IN AFRICA

Improvement of maintenance performance was the main theme at the 25th anniversary conference of the Comité Interafricain d'Etudes



Hydrauliques (CIEH) in Brazzaville in February 1986. Many maintenance problems are the result of technical deficiencies of installed systems, was stated over and over again. The delegate of Burkina Faso: "many pumps are abandoned because of mistakes in the technical conception, lack of spare parts, insufficient skilled personnel, financing problems, and neglect and wrong use of the installation". Benin stressed the importance of an adequate national maintenance structure which should be in line with the countries wishes.

To date very few countries (for example) have a maintenance department in the responsible ministry. Current maintenance structures in several West African countries are not able to secure proper functioning of rural water supply systems. To improve maintenance and to reduce the costs, village based management of water supply system is viewed as the most appropriate and cheapest solution to improved drinking water supply.

This was illustrated by the report presented by the West African Development Bank (BOAD). In 1979 and 1980 the BOAD sponsored rural water projects in two countries with an administrative structure for maintenance. The annual costs for maintenance were estimated at about FCFA 7,190,000 for 100 wells in the first case and FCFA 5,292,000 for 150 wells in the second, being US\$ 216.- and US \$108.- per well a year respectively. (FCFA 100,000 = US\$ 300.-). It soon became clear that installations were not functioning properly. One-third of the pumps had broken down of which 30% for a period of at least ten months. Supplies deteriorated almost as quickly as the new systems were installed. Faced with this situation the Bank changed its policy and turned to a participatory approach.

In its financial plans for maintenance the Bank now incorporates the obligation to pay by the users. To assure acceptance of payment, attitudes and behaviour of people have to be changed. Therefore the BOAD places more attention on education and motivation activities. In practice the project budget include a post "Animation, Training and Education for Maintenance" which represents on average 13% of project costs. This approach has already led to interesting results in Benin and Burkina Faso. A study in Benin showed that the cost of maintenance of pumps carried out by local maintenance structures was FCFA 15,400, or US\$ 46.- less than when done through a national agency. Unfortunately, no figures for Burkina Faso were given in the report.

The findings and conclusion of the technical meetings were reflected in a number of resolutions adopted in the Ministers Conference at the conclusion of the conference. It was recommended that member countries pay more attention to training, and motivation of their people. In addition attention needs to be given to the local manufacture and distribution of pumps and spare parts.

The position of CIEH received special attention. It was recommended that funds be allocated to enable CIEH to test and experiment with new techniques. CIEH should continue to be the central research, technical support and information centre for the area. As co-ordinating centre of activities, CIEH can play an important role in improving maintenance.

To date CIEH has concentrated on the technical aspects of water supply by publishing studies and research results, in particular their document on standardization of hand pump design and installation. Less attention has been paid to the organizational aspects but currently CIEH has been promoting the village based maintenance approach. However, CIEH has difficulties in fulfilling its role as information centre. The exchange of information is limited to distribution of CIEH reports and studies. Collection and selection of documents from elsewhere needs more attention. CIEH also has difficulties finding practical applications for their research and studies.

Yatenga-Comroe project

At the CIEH meeting a very interesting example of a maintenance oriented project was presented by Mr. Prat of BURGEAP, a firm of French consultants. In the Yatenga-Comroe project in Burkina Faso, financed by the European Development Fund and executed by BURGEAP (1981 to 1985), training, community participation and set up of a maintenance system were the basis of the pump implementation programme. The project was based on users looking after the maintenance of the pumps and its financial aspects thus relieving the government. It was essential that all necessary administrative and operational structures were set up before the installation started. For this the water supply service had to be in line with the needs and the financial capabilities of the communities.

The first step was a careful pre-selection of villages to assess community needs. After the selection, village meetings were held to raise awareness and to give information about technical and financial aspects and about the implications for maintenance. A decision was made for a well or a borehole with a pump. A user organization was set up to look after the water point, maintenance and collection of money. The committee members were trained for these tasks by the project. The site of the well was selected by the hydrologist together with the water committee only after animation and training were over.

Meanwhile, a complete maintenance network was set up. In this network the regular maintenance was carried out by the members of the committee. Installation of the pumps and major repairs were carried out by local artisans, selected and trained by the project. They were trained to install the pump and do all repairs without assistance from the supplier or manufacturer. Payment for their work was open to negotiation with the village concerned. Special attention was given to the availability of spare parts. The consumers and technicians could buy their spare parts at a number of shops working on a commercial basis.

Only when the supply system was initiated and all local arrangements were made, was the pump handed over to the committee leader and placed at the agreed site. Then the community was given full responsibility for the pump.

An evaluation in 1985 showed that 70% of these pumps were working satisfactorily without serious breakdowns. Where breakdown occurred, communities took measures to have pumps repaired as quickly as possible, even when the cost of the repair was relatively high. In

general the provision of spare parts was satisfactory, although temporary set backs affected the supply of fast rotating pieces. In fact, the weakest point in the supply of spare parts was the relationship between importer and manufacturer.

SOFTWARE: 5% OF TOTAL FUNDS

Until 1985 less than one percent of all water supply and sanitation investment funds was allocated for software components. This was stated at the Asian Decade Consultation Meeting about which we promised our readers (in NL 162) follow up information. Software spending should be increased to at least five percent of hardware investments to achieve optimal results, the Meeting recommended.

Software can be described as all the activities in a water supply and sanitation project without direct relation to the physical installation and construction of the water supply and sanitation system hardware (pumps, pipes, wells). Software implies: community organization and participation, health and hygiene education, training, project monitoring and evaluation.

The need to include software components in the project design, was one of the main conclusions in all three External Support Consultation Meetings. It was agreed that hardware must be accompanied by supporting measures such as technical co-operation and software to assure that water supply and sanitation systems are used properly.

This means that investments for software must be made prior, during and after implementation of the project. Cost of software needs to be included in the project budget by both External Support Agencies (ESA's) and by the national project entity. However, to date software has been largely neglected. Lack of organized community participation and hygiene education have slowed down progress in terms of coverage, health improvements and cost recovery. Working with the people for safe water, better health and environmental conditions, does not only save lives, but is also profitable in terms of costs reduction.

Open dialogue with the people may well lead to selection of more appropriate technologies, more realistic financial arrangements, improved operation and maintenance and better management and thus better chances of cost recovery and less financial losses. The meetings also indicated that more attention should be given to the role of women in water supply and sanitation. More women should be given the chance to be more actively involved as system caretakers, technicians, members of water committees or hygiene education promoters.

The delegates concluded that software components are expected to yield long-term socio-economic benefits and therefore require long-term commitment of governments and external support agencies.

WORLD WATER CONFERENCE 1986

More attention to management and protection

of available resources from contamination will be the main issues in the 1990s according to Mr. Kilani, President of the Amman Water Authority, in his key note address to the Second World Water Conference in London in 1986. He felt that attention and funds must be focussed on these and other global issues, such as drought, and that the 1990s should be declared the International Water Resources Decade.

His plea for attention to management and pollution was well heard during this Conference at which these were major issues. On one occasion it was stressed that while the principles of water resource might be clear, they are not always applied in practice. In addition to knowledge and understanding of hydrologicval issues it is essential that all aspects of a water resource be managed by one single body. If different bodies are responsible for various aspects, this will lead to wasteful use of resources.

Management should always realize that water is a vehicle for disease. Microbiological and chemical pollution are serious threats. Usually only the first is associated with developing countries. However, chemical water problems, natural and man-made in origin are growing rapidly, thus placing extra pressure on management. Dr. F. Padernal of the Philippine Ministry of Public Works and Highways felt that man-made problems can be solved by technical, institutional, managerial and political approaches. Planning and management could be improved significantly with more and better training.

In planning particular attention should be given to social and political aspects, said Mr. Ghooprasert of Thailand Provincial Waterworks Authority. Especially in small urban and rural areas success depends greatly upon co-operation from local leaders and residents, accurate assessment of community needs, and technology transfer.

Attention to these issues is vital for the Decade approach which emphasizes solving the needs of the underserved. This remark comes from Mr. G.A. Brown of the Steering Committee of the International Drinking Water Supply and Sanitation Decade. Although much has been achieved, hundreds of millions of people do not have an adequate water supply and sanitation facilities. Mr. G.A. Brown also pointed out that in general the Decade is handicapped by traditional approaches and development activities are carried out through time worn channels when a more flexible approach is needed. A multi-sector approach with strong ministries collaborating with weak is vital. The same goes for solving the shortage and mal-distribution of skilled manpower which affects adequate operation and maintenance. In his key note address Mr. G.A. Brown stresses the necessity for international co-operation in collection, analysis and dissemination of information as a promotional tool and as a support to governments in their efforts to stimulate the sector. The UN will keep the pressure up on all governments and institutions and will emphasize the link between Decade, drought and famine, and follow up the need for international aid and integrated relief and development.

WASH RAINWATER INFORMATION CENTRE

In many countries rainwater harvesting from roof catchment is an important source of domestic potable water supply. The techniques of construction and the maintenance are relatively simple, and water quality is usually excellent. Furthermore, as roof catchment systems do not depend on outside systems, this technique is especially useful in remote areas.

Information on rainwater roof catchment is not well documented and there are few references in literature. Therefore the Water and Sanitation for Health (WASH) Project has established an information centre for rainwater roof catchment systems and is setting up a network of interested people and organizations. The goal is to facilitate the exchange of information.

The initial activities of this new centre included the development of a specialized thesaurus, establishment of a special library collection and a computerized bibliographic data base called RAINCOLL.

The information centre started only a few months ago. Via a questionnaire distributed in a newsletter WASH informed 50,000 readers in 120 countries of their interest. Those not yet aware of this initiative and have information on this subject can contact WASH, 1611 N. Kent Street, Arlington, Virginia, 22209 U.S.A.

NEW STAFF MEMBER IRC

IRC is pleased to announce that Dr. Barry Karlin will join its staff in September this year. Dr. Karlin specializes in health and hygiene education, community participation, basic sanitation and human resource development. He supported Thailand's Village Health Programme for six years, followed by three years as a family planning educator in Pakistan. More recently, Dr. Karlin has been a primary health care consultant in North Yemen, The Sultanate of Oman, Thailand and other countries working for several international agencies including USAID, UNICEF and The World Bank. At IRC Dr. Karlin will concentrate on the software aspects of water supply and sanitation projects and programmes.

NEW SPANISH AND FRENCH TITLES

Recently, two new IRC publications, one in Spanish and one in French have been published.

With IRC support, Centro Panamericano de Ingenieria Sanitaria y Ciencias del Ambiente (CEPIS) has translated the IRC Technical Paper Series number 12 into Spanish. The title is: Participación y educación en programas de suministro comunitario de agua potable y de saneamiento: una revisión bibliográfica. (Cepis Publication no. 53).

CEPIS has translated a number of IRC publications and more will follow shortly. Information and orders for these IRC publications can be obtained from CEPIS, Casilla 4337, Lima, Peru.

For The Netherlands Directorate-General of Development Co-operation (DGIS), and within the scope of DGIS efforts to promote local manufacturing of pumps, IRC compiled a maintenance manual in French for village level operated and maintained Volanta handpump. In principle this manual is for use within the Village Water Supply Project "Volta-Noir" in Burkina Faso.

The manual is to be used by villagers responsible for maintenance of the Volanta handpump. With text and photographs, practical instructions to support the technicians during all stages of maintenance activities are given. Also it provides some general information about the Volanta pump itself.

Pompe à main VOLANTA: instructions d'entretien. Prepared by IRC for DGIS., 1986. Information and orders from IRC.

THIS NEWSLETTER IS ISSUED BY IRC, AND DOES NOT NECESSARILY REFLECT THE VIEWS AND POLICIES OF WHO, OR ANY OTHER ORGANIZATION CITED.

With its partners in developing countries and with United Nations agencies and donor organizations, IRC assists in the generation, transfer, and application of relevant knowledge through programmes for water and sanitation improvement.

These information-oriented programmes include: 1. Information Support and Services; 2. Technology Development and Transfer; 3. Manpower Development and Training; 4. Community Education and Participation; and 5. Programme Evaluation and Planning.

Support is provided by means of publications and training material, seminars and courses, research and demonstration projects, as well as by general support to the development of national capacities.

Requests for information on IRC should be addressed to IRC, P.O. Box 98190, 2509 AD The Hague, The Netherlands.

TABLE OF CONTENTS

- * THE AFRICAN MEDICAL RESEARCH FOUNDATION - p. 1
- * DONOR CO-ORDINATION ESSENTIAL FOR DECADE - p. 2
- * WATER DIVINING IN SRI LANKA - p. 2
- * WORKING GROUP ON THE INTERWATER THESAURUS - p. 2
- * UPDATE WORLD BANK HANDPUMPS TESTING PROGRAMME - p. 3
- * NEW COMMUNITY PARTICIPATION TITLE BY IRC - p. 4
- * IRC DIRECTORY OF SOURCES - p. 4
- * NEW PUBLICATION - p. 4

THE AFRICAN MEDICAL RESEARCH FOUNDATION

The implementation of the Water Decade has been achieved with the help of Non-Governmental Organizations (NGOs). These often collaborate with various United Nations agencies and governments who feel that the NGOs not only have the skill to carry out grassroots programmes but also at a more cost effective level than government agencies.

The African Medical and Research Foundation (AMREF) is one of these NGOs which works in Kenya, Tanzania, Sudan and Botswana with funding from overseas. The main emphasis of AMREF is on preventive and curative health care in poorly accessible areas. In the past they have developed training material for community health workers on health education and environmental improvement, and are also involved in consultations, evaluations and training. Plans exist to give training in community participation and health care to the staff of government agencies in Kenya, and hopefully to develop, in co-operation with the Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ) - the German Agency for Technical Co-operation - a regional reference centre for integrated community water supply and sanitation projects for the East African region.

AMREF plays an active role in improving water supplies and sanitary conditions in rural areas, since without these essential services there can be no viable community health programmes. The foundation assists rural communities to make their own water and sanitation improvements. The projects are linked to primary health care and great importance is attached to participation of

local men and women: in planning through consultation with the community; in implementation through labour and cash contributions; in maintenance and management by training local artisans and members of the water committee, and in evaluation through meetings with the community.

During a recent tour of duty, IRC's Christine van Wijk-Sijbesma visited a major project area in Kibwezi, Kenya. AMREF has been working in this dry area since 1978 to initiate a health care scheme. A primary health clinic has been set up where community health workers (CHW) have been trained.

In areas where even contaminated water is valuable, success of Primary Health Care (PHC) programmes depends on the year-round availability of safe water in adequate quantities. Since 1981 AMREF's Kibwezi staff have significantly contributed to the community water supply efforts by helping to construct hand-dug wells and rainwater collection tanks. Villagers can request the initiation of water projects through the community health worker or through the assistant chief. The project staff then visit the area to assess if a genuine demand exists and to evaluate the possibilities. After this first assessment an initial project meeting is held in which the community is told what they can expect from AMREF and what AMREF expects from them. In the case of a well AMREF generally contributes non-local materials and equipment, the handpump and also gives technical assistance (manpower and transport) to a value of Ksh. 36.000 (or about US \$ 779) per well. The community contributes local materials, local organization, all unskilled labour, maintenance and repair by local craftsmen which is organized and paid for by the community. Supplies and spare parts have to be bought on a commercial basis from the nearest city.

After discussing the general outline, further organization of the community is left to the local leaders. However, recently more emphasis has been placed on general assemblies to involve other members of the community. Water committees are formed to spread the decision making power and form a definite, answerable body for co-operation in the project work. The composition of the water committee is left to the community, however misuse of power or lack of support means ineffective community contributions, and in such cases AMREF can suspend its work until the problems have been sorted out, continuing its work in neighbouring communities. This strategy is made clear from the beginning and there are enough other communities in the area who are eager to get an improved water supply. In this



way the community learns to solve its own problems, which is important when the committee takes over the responsibility for maintenance. To help committees to be more self-reliant concerning maintenance and management of their water supply, AMREF has started a one week training course for water committees, on handpump maintenance and financial management.

After construction is complete, follow-up activities are carried out as part of a broader women's programme. Women play an active part in the water projects as active members of water committees and by speaking at meetings that concern water and water management. During the Women Decade, funds for projects concerning women became available and organizations were formed based on the traditional age group system. AMREF has provided a woman technical advisor for these groups, who discusses their needs and advises on the possibilities of using the increased availability of water for further development. As part of this programme the women have initiated a scheme to solve the serious shortage of firewood. This community fuel project consists of firstly, a tree nursery near the well and secondly, promotion of, and training in building clay stoves. These stoves not only consume less fuel than the customary open fires, but are smokeless, clean and safer for children. In due time the trees not only provide firewood, fruit or timber, but when transplanted from the nursery to the farms they also contribute to protection of the water catchment area of the system. The stoves are adapted to locally available materials and designed in line with cooking habits of the women concerned. The low fuel consumption means more time is available after wood collection for activities such as basket weaving, and for better personal and child care. The women's groups have also established communal vegetable gardens near the well and if this is seen to be profitable, their example is sometimes followed by men.

DONOR CO-ORDINATION ESSENTIAL FOR DECADE

It is only through the development of strong and viable sector agencies that Decade objectives can be achieved. This requires a co-ordinated and uniform approach between donors, and was one of the messages from the three Regional External Support Consultations (cost recovery, NL 162 and software aspects, NL 163 have been reported earlier). At all three meetings, it was agreed that institutional, financial and maintenance issues should be pursued in a uniform manner by all donors. The same problems were highlighted at all the meetings.

Improvement is needed in information exchange between External Support Agencies (ESAs), between ESAs and recipient governments and also between inter-sectoral agencies within the recipient countries. Lack of a realistic and effective national sector strategy and weak national planning structures were found to be the main blocks to effective co-ordination. However, insufficient information exchange between ESAs, a lack of coherence in their strategies and inadequate communication between ESAs and their national resource base (i.e. between locally based consultants and overseas personnel), were also contributing factors. Actions were proposed to co-ordinate aid at a national level. At the meetings it was agreed that recipient countries, through National Action Committees, should organize Decade Consultative Meetings, if necessary assisted by UNDP/WHO. Here governments

would present to the participating ESAs their sector strategies and priorities, including projects and programmes.

ESAs should not only help recipient governments to develop their own sector strategies and institutions, but also develop their own sector profiles, and discuss these with each other and recipient governments. These sector profiles could be developed into guidelines for use of ESAs personnel, consultants and recipient countries. However, at the African Consultation, November 1985, only about 6 or 7 ESAs had developed their own sector strategy policy.

For good co-operation and co-ordination, availability of adequate and regularly updated information at the national level is essential. WHO launched an important initiative in preparing computerized Country External Support Information (CESI). It has been suggested that programme and project information is exchanged regularly between ESAs on the basis of national profiles. The usefulness of such a system will of course depend on the ESAs data input provided to WHO.

WATER DIVINING IN SRI LANKA

The use in Sri Lanka of an unconventional and controversial method of finding water supplies (i.e. water divining or radioaesthesia) has resulted in an almost 100% success rate. Through professional handling of the dowsing-rod for finding potential water sources more than 600 wells were completed in just three years. This is more than if other methods alone had been relied upon considering the fractured base rock formation in this area. Apart from the time saving factor, the accuracy in pin-pointing of well sites by the water divining method was mainly responsible for the cost-effectiveness of the project with respect to drilling operations, construction of wells and high water yields. Launched late in 1981 and finished early in 1985, the project was set up to provide the people of two poor districts in the Northwest of Sri Lanka (Vavuniya and Mullaitivu) with unpolluted drinking water throughout the entire year. Support came from the Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ) - the German Agency for Technical Co-operation - which assisted the National Water Supply and Drainage Board (NWSDB) and the Government Health Department in drilling wells, constructing latrines and carrying out hygiene education.

Conditions in the area showed that the best option was to drill borewells and to equip these with handpumps. Groundwater was located with help of geological and geo-electrical surveys, aerial photo-interpretation and geomorphological field studies. However water divining was used right from the start to pin-point the sites where the drilling should take place. Other methods confirmed the sites pre-determined by the water divining method carried out by the GTZ project leader. As well as generally locating a possible well site, it was possible to pin-point the site with an accuracy of ten centimetres, to five detailed specifications on the width of aquifers and pin-point intersecting points of aquifers. Furthermore, additional information on quality and quantity of the proposed wells were gained, such as flow direction, expected water yield and water quality.

The success of the method aroused interest in the possibility of training additional personnel in the technique, but water divining depends greatly

on the sensitiveness of the person using the rod. Extremely sensitive energies of existing earth rays come together with the biological force field of the dowser and result in a nerve stimulus that causes the dowsing rod to react. The reaction of the rod must then be interpreted in the correct way. For successful use of the dowser an understanding of geological and hydro-geological features in the survey area is necessary and the most suitable person to train would be a hydro-geologist with experience in the field.

Methodology and project results are published in a bi-lingual (German and English) document published by the Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ), Dag-Hammarskjöld-Weg 1-2, D 6236 Eschborn, German Federal Republic. The English title is: Drinking water supply and sanitation project in Sri Lanka. It is No. 183 in the Schriftenreihe of the GTZ and the author is Eckard Schleberger.

WORKING GROUP ON THE INTERWATER THESAURUS

The Working Group including representatives from the Association Francaise pour l'Etude des Eaux, Paris (AFEE), The Asian Institute of Technology/ Environmental Sanitation Information Center, Bangkok (AIT/ENSIC), Centro Panamericano de Ingeniera Sanitaria y Ciencias del Ambiente, Lima (CEPIS), Centre Inter africain d'Etudes Hydrauliques, Ouagadougou (CIEH), the Water Research Centre, Stevenage, UK (WRC) and from IRC, met for the third time from 23 to 26 September in the Hague to examine the Interwater Thesaurus that had been prepared with the technical assistance of the Netherlands Ministry of Foreign Affairs.

It is hoped that the identically structured English, French and Spanish versions will help the transfer of information on water supply and sanitation from one part of the world to another as well as streamlining documentation. The thesaurus should be published before the end of the year, and glossaries of the terms used will supplement it later.

The Working Group, aware of the fact that these publications were not ends in themselves, made proposals for the training in documentation of personnel in developing countries and for the preparation of instruction material. They also ensured a continuous updating of the Interwater Thesaurus. This is considered vital since it is expected that other language versions of the thesaurus will soon appear (the possibility of an English-Indonesian version is already under discussion) and an overall responsibility for the vocabulary would then be essential.

UPDATE WORLD BANK HANDPUMPS TESTING PROGRAMME

Recently the Consumer's Association Testing and Research Laboratory (CATR) in the UK, published the latest laboratory test of handpumps. The report gives the test results of five modified models and two new pumps. These results plus information on a number of other handpumps tested in 1984-85, were discussed at the All Africa Seminar on Low-Cost Rural and Urban Fringe Water Supply held in Abidjan, Ivory Coast, 13-18 October, 1986. All tests were carried out within

the framework of the World Bank/UNDP Interregional Project for Laboratory and Field Testing and Technological Development of Rural Water Supply Handpumps.

The tests point out that although modifications on the old pumps improved their test results still only some are suitable for village level operation and maintenance (VLOM) and for local manufacture. This conclusion of CATR was confirmed in Abidjan by the Representatives of the UNDP/World Bank Rural Water Supply Handpumps Project who stressed the importance of the VLOM concept for rural water supply. However, they added that few handpump systems failures can be blamed solely on the pump. Other reasons being include: inadequate maintenance, poor well design and construction, corrosive effects of groundwater and damage to pumping elements due to sand.

From laboratory and field tests it is becoming clear that the ideal handpump does not exist. Although a wide variety of pumps is available, not all pumps are suited for use within the varying conditions in developing countries. Especially when pumping lift increases, the number of pumps suitable for VLOM declines rapidly.

Still pumps will improve, pump specialists conclude and the UNDP/World Bank Handpumps Project has greatly contributed to further development of handpump technology. Also manufacturers responded well: products were modified and new models introduced. Now many pumps on the market are durable and allow for substantial involvement of villagers in pump maintenance. Manufacturers from industrialized countries are also being encouraged to combine with enterprises in developing countries for local manufacture. This strongly improves the likelihood that spare parts will be available when needed. Furthermore it facilitates standardization on pump types to simplify caretaker training and stocking of spare parts. Developing country governments and donor agencies are increasingly changing their policies to include village-level maintenance of handpumps in projects on programmes. This is a significant departure from previous practices, particularly in Africa, where unsuitable pumps have often been brought in through donor assistance, and recipient agencies have taken on unmanageable maintenance commitments depending on public-sector mobile maintenance teams.

Experiences in the field trials and data from many other rural water supply projects have enabled the Handpumps Project to formulate guidelines for the planning and implementation of Rural water supply projects using wells equipped with handpumps. The guidelines deal with five critical elements, namely: maintenance systems, community involvement, aquifer analysis, well design and construction, and the handpump.

Further information on these guidelines and about the Seminar in Abidjan will be reported on in a later newsletter. The results of the CATR test are published in: "Rural Water Supply Handpumps Project: handpump laboratory-test results", WIUDAT-Note No.2, published by the World Bank/UNDP, 1818 H Street, NW, Washington DC 20433, USA.

NEW COMMUNITY PARTICIPATION TITLE BY IRC

Recently IRC published, "Drinking water supply and sanitation: co-operation between communities and agencies", in the Occasional Paper Series. This publication emphasizes the importance of adequate and clearly defined co-operation between the parties involved in development of community water supply and sanitation. They are key conditions for successful programmes.

The publication builds on the recommendations of the symposium, "Local Decade, men, women and agencies in water and development", which IRC organized in June 1984. To make the recommendations more meaningful to policy makers and programme managers, they have been put into the framework of project planning. In addition they have been illustrated by actual projects and examples of field experiences. This Occasional Paper has 6 short chapters and contains 40 pages. It will cost US \$ 5 and can be obtained from IRC.

IRC DIRECTORY OF SOURCES

IRC has published the second edition of the "Directory of sources of information and documentation on community water supply and sanitation". This directory has been compiled to facilitate information exchange in developing countries. The first edition was prepared in 1983 for the IRC "Programme on Exchange and Transfer of Information" set up to strengthen national information capacities. On the basis of current network contacts and an extensive mail survey the directory has been extended, updated and revised.

More than 250 international, national and regional centres are included in the directory. They supply general information on their activities and main subjects and topics covered as well as facts about the information services and network relations. A subject index and alphabetical list of organizations makes it easy to find the relevant information. It is hoped that this directory will stimulate more direct contacts and exchange of information and experience between organizations in, and concerned with developing countries.

IRC plans to continue regular revision and updating of the information in the directory. To do so we will keep in contact with the agencies already in the Directory, but equally important, IRC hopes to get in touch with agencies and institutions specializing in water and sanitation matters who not yet registered with us. In the Directory and in this announcement we invite those agencies to inform us about their activities so that they might be included in later editions of the Directory.

The Interwater Directory of Information Sources is available from IRC. The price is US \$ 20.

THIS NEWSLETTER IS ISSUED BY IRC, AND DOES NOT NECESSARILY REFLECT THE VIEWS AND POLICIES OF WHO, OR ANY OTHER ORGANIZATION CITED.

With its partners in developing countries and with United Nations agencies and donor organizations, IRC assists in the generation, transfer, and application of relevant knowledge through programmes for water and sanitation improvement.

These information-oriented programmes include: 1. Information Support and Services; 2. Technology Development and Transfer; 3. Manpower Development and Training; 4. Community Education and Participation; and 5. Programme Evaluation and Planning.

Support is provided by means of publications and training material, seminars and courses, research and demonstration projects, as well as by general support to the development of national capacities.

Requests for information on IRC should be addressed to IRC, P.O. Box 98190, 2509 AD The Hague, The Netherlands.

NEW PUBLICATION

Village health guide: "Doctor" Maimouna talks with the villagers, by F. Sillonville

These original French guidelines written in principle for the West African region present an interesting approach to health education. The book tries to make village level animators and health workers aware of the possible reactions from the illiterate villagers concerning hygiene and health.

In simple language and illustrated with drawings stories are told of everyday health and hygiene practices. The dialogues can be used to stage little plays or comedies which gives the book an extra dimension. The central figure in the stories is "Doctor" Maimouna, an ordinary woman given her title by her fellow villagers because she is always willing to give good advice. She is the model village health worker.

The text and design of the book have been tested on different African groups, and though written in French, it might be interesting for those who work in other parts of Africa. The original title is: Guide de la santé au village: "Docteur" Maimouna parle avec les villageois. There are two different editions available both published by the Institut Panafricain pour le Développement. The edition used for this reference is the Karthala edition and can be ordered at IPD, 22-24, Boulevard Arago, 75013-Paris (France). The other edition comes from the IPD, Cameroun. B.P. 4056 - Douala (Cameroun).

CONGRESS ANNOUNCEMENT

The Vth International Water Resources Association World Congress on Water Resources will take place in Ottawa, Canada, from May 29 to June 3, 1988. The overall theme of the Congress is "Water for World Development".

For information on abstracts, submissions and attendance, please write to the Secretariat: Sixth IWRA World Water Congress on Water Resources, University of Ottawa, 631 King Edward Avenue, Ottawa, Ontario, K1N 6N5, Canada.

TABLE OF CONTENTS

- * ABIDJAN ALL-AFRICA SEMINAR - p. 1 1
- * MARKET SURVEY ON STANDARD TAPS - p. 2 2
- * STAFF CHANGES IN DECADE AGENCIES - p. 2
- * NEW WHO REGIONAL CENTRE - p. 3 3
- * TRAINING WORK AT CEPIS - p. 3
- * GROUNDWATER IN ASIA - p. 3
- * FEMALE CARETAKERS CENTRAL IN IDRC FILM - p. 4 4

NEWS FROM THE ABIDJAN ALL-AFRICA SEMINAR

Maintenance capability and the closely related cost aspects: these were among the key issues discussed at the All-Africa Seminar on Low-Cost Rural and Urban-Fringe Water supply held in Abidjan, 13 - 18 October 1986, on which we reported in the previous newsletter (164). This was reported by Mr. J.T. Visscher of IRC who was present at the seminar. Representatives of participating agencies and countries discussed methods of improving performance and lowering maintenance costs. In general, the delegates believed that a stronger involvement of the beneficiaries in maintenance and financial management of water supply systems, and proper training of villagers and area caretakers could significantly bring down current cost levels and deterioration rates.

The need to tackle the maintenance problem is evident. According to Mr. D. Robert from the World Bank West African Sector Develop Team, in the West African Region alone the proportion of installations out of order can be as high as to 50%. The UNDP/World Bank Handpumps Project has commonly reported a failure rate of up to 70-80% in certain countries. In his analysis Mr. Robert supported the concept of Village Level Operation and Maintenance (VLOM), but stressed that more attention has to be paid to education and training. Training should not only concentrate on technical aspects but also on the financial aspects of managing a village water supply.

At the All-Africa seminar a few actions were highlighted which were aimed at improving maintenance by stimulating VLOM, to curb costs of community water supply. Examples were given to demonstrate the effectiveness of community

management of pumps with respect to cost control. In Burkina Faso, separate projects backed by UNICEF and the European Development Fund (EDF) have brought down maintenance costs to 5 - 10 US cents per user per year compared with US\$ 2 per user per year or more on systems depending on centralized maintenance. Countries such as Cote d'Ivoire, Niger and Lesotho have also reported big savings and increased reliability when governments encourage and equip local communities to take responsibility for their own hand pump projects.

ITN News

This newsletter carries the first of the News from the International Training Network for Water and Waste Management (ITN) supplement. This network was initiated to improve the effectiveness of investments in the water supply and sanitation sector through the promotion of training, information and research activities on low cost technologies and innovative multi-disciplinary approaches in project planning, implementation, and evaluation. ITN is supported by the UNDP, the World Bank and other multilateral and bilateral development agencies. ITN has produced a comprehensive collection of training and information materials, 45 slide sound shows on various subject areas and three films. For conditions of purchase and use please contact Mr. Michael Potaschnik at the World Bank, whose address is given in the supplement. ITN will publish a supplement with Network News through the IRC newsletter at least three times, of which this is the first issue. IRC has also been commissioned to produce one slide sound module in the training series on the role and effective use of information in water supply and sanitation.

Local savings of this size can amount to enormous savings on a global scale. At this moment, according to the UNDP/World Bank Handpumps Project the cost estimates for meeting rural water supply needs to the year 2000 range from US \$ 50,000 million to US \$ 150,000 million depending on the choice of technology. The difficulty of mobilizing this funds is obvious, so, if results are to be effective, large proportion of the rural population in need should receive services at the lower end of the cost range.

The Abidjan Statement indicates that the choice of technology must match the community resources available for upkeep of the system. Experience has shown that properly chosen hand pumps



suitable for maintenance by trained caretakers, supported where necessary by area mechanics are the best guarantee of a dependable long-term water supply. However, the statement adds that in-country manufacture and planned distribution of pumps and spare parts brings about added reliability, a point strongly advocated by Mr. Arlosoroff of the UNDP/World Bank Handpumps Project. He has pointed out that monitoring hand pumps in the field has given manufacturers new concepts on which to base future designs. Meanwhile, countries can be advised of the existing pumps suitable for VLOM.

Donors responded positively to the call for more VLOM. Self-criticism for past errors was combined with commitments for the future, and assurances were given that action will be taken to co-ordinated support for policies based on low-cost water supply and sanitation. However, reports from the seminar suggest, that although most donors recognize that standardization on a limited number of pumps per country can help to improve effective hand pump projects the willingness to spend aid-money on purchase of pumps from other donor countries is limited. The political compromise, which would also bring extra benefits to the recipient countries would be to buy locally made pumps. In many countries local manufacture and assembly of hand pumps is being investigated and donor agencies seem willing to find ways to support local initiatives in this direction.

MARKET SURVEY ON STANDARD TAPS

A market intelligence survey on standard taps for use in developing countries has recently been commissioned by IRC with Consumers' Association Testing and Research (CATR) in the United Kingdom. This forms part of the support work of the IRC co-ordinated Public Standpost Water Supplies demonstration project (PSWS), currently in progress in Indonesia, Malawi, Sri Lanka and Zambia. The survey is the first phase of a planned more extensive study on taps for piped water supply systems, which will include laboratory and field testing.

The general aim of the study is to help improve the appropriateness and dependability, increase the acceptability and ease of maintenance and reduce the cost of taps, vital components of piped water supply distribution systems. Through information collection and publication of test results IRC hopes to encourage the development of appropriate technology, local manufacture and standardization of taps for use within developing countries.

The market intelligence survey has been set up to collect manufacturers' data and information on both related studies and field experiences from a number of regions. The range of taps under review include those of 3/8 in. (10 mm), 1/2 in. (15 mm), 3/4 in. (20 mm), and 1 in. (25 mm) in diameter. All types of standard taps are of interest as long as they are appropriate for standposts, yard or in-house connections. Automatic taps are not being reviewed as these have already been the subject of a special study, also by CATR, for the UK Overseas Development Administration.

People with experience of taps, either from work in the field or otherwise, people and

organizations with relevant information, and manufacturers of taps wishing to have their products included, are requested to contact: Mr. K. Mills, Testing Manager, Consumers Association Testing and Research, Harpenden Rise Laboratory, Harpenden, Herts., AL5 3Bj, United Kingdom. (Telex 826619 CALAB G).

STAFF CHANGES IN TOP POSTS FOR WATER DECADE

Quite coincidentally three major top posts at the Head Quarters in Geneva relating to the International Drinking Water Supply and Sanitation Decade exchange hands at the end of this year. Alexander "Sandy" Rotival takes over from Peter Lowes, as the UNDP/WHO co-ordinator for the Water Decade. Wilfried Kreisal takes over from Berndt Dieterich as the World Health Organization's Director of Environmental Health Division. The Third change involves the position of Manager Community Water Supply and Sanitation of the same WHO Division: Michael A. Acheson takes over from Odyer A. Sperandio.

Alexander "Sandy" Rotival, an American with 22 years of international experience in UNDP, GATT (General Agreement on Traffic and Trade) and UNCTAD (United Nations Commission on Trade and Development) will be director of the International Initiative Against Avoidable Disablement with responsibility for co-ordination of the UN agencies actions in this sphere. In the terms of reference, death or debility through waterborne or related diseases is considered "avoidable".

Mr. Rotival has also taken over Peter Lowes's Decade Co-ordinators job. Since 1982 Dr. Lowes has assisted UNDP and WHO in their country-level operations and was a member of the Inter-Agency Steering Committee for Co-operation Action International Drinking Water Supply and Sanitation Decade, assisted on promotion and monitoring of the Decade, and liaising with Europe-based UN agencies. He provided support to UNDP resident representatives in the planning and implementation of Decade programmes, and the collection and analysis of data on country programmes and projects of interest to external assistance agencies.

Since 1982 Dr. Lowes was also a member of the Governing Board of IRC, and in his five years of dedicated service in this function he has made an important contribution in focussing IRC's field of work and establishing good working relations with country organizations and UN-agencies. We at IRC are sad to see him go and wish him a happy future during which we hope to be able to stay in contact. It is expected that Mr. Rotival will also take over Dr. Lowes's function in the Governing Board of IRC.

The second major staff change occurred in Geneva where the WHO Director of Environmental Health Division, Dr. Berndt Dieterich retired after 15 years. The position is to be taken over by Wilfried Kreisal from West Germany who has worked for the WHO since 1977 in Korea, Malaysia and the Philippines. Wilfried Kreisal is a specialist in the quality of air. In Korea he also worked on integrated environmental quality management plants for major river basins. In Kuala Lumpur he worked on planning of manpower development and research. Dr. Dieterich left us with the advise not to be carried away by data, and to temper optimism by realism. He concluded by saying that the growing world population has created problems

but on the other hand "there are 200 million people who now have service who started the Decade without".

Dr. Dieterich has always played an important role at IRC, not only did IRC's initiation take place under his directorship at WHO, but he has also provided a strong support to IRC utilizing its potential wherever possible. We also wish him a happy future.

Lastly, Mr. Michael Acheson will be taking over as Manager Community Water Supply and Sanitation. Mr. A. Acheson's last position in WHO was Regional Co-operation Officer in the Division of Environmental Health in Geneva. Previously he was regional officer at WHO's New Delhi office. He takes over from Odyer Sperandio who was the founding father of Centro Panamericano de Ingeniería Sanitaria y Ciencias del Ambiente (CEPIS) the Pan-American Centre for Sanitary Engineering and Environmental Science in Peru with which IRC has established and maintained an excellent working relationship.

Mr. Sperandio started working for PAHO (Pan-American Health Organization) in 1963 and joined WHO in Geneva in 1980. In this function he has continued to guide and support IRC activities as much as his WHO work allowed. With the retirement of Odyer Sperandio, IRC is losing another Governing Board member, and one who has played a valuable part in establishing a multi-faceted and well defined working contribution between WHO and IRC; always stressing the importance of information. We shall miss him, and his wife Theresa. "So Odyer, le deseamos lo mejor para el futuro y le agradecemos todo lo que ha hecho por IRC!".

ROWER PUMP COMPETITION

In September 1987 the Rower Cup and Canadian \$ 10,000 will be awarded to the engineering student who has achieved the lowest officially recorded time to lift 2.5 tons of water (2,500 litres) through exactly 4 meters under standard conditions with a standard pump. UNDP and the non-profit organization International Development Enterprises (IDE) have joined hand in this competition in the hope to identify possible design improvement and to further spread the Rower pump around the world.

To obtain a standard Rower pump, specifications of test set-up, information package, competition rules, and entry forms, send name and address with a draft of 50 Canadian dollar before March 1987 to: IDE-Rower pump, 368 St. James Crescent, West Vancouver, B.C.V7S1J8, Canada.

NEW WHO REGIONAL CENTRE

In 1986 a new WHO regional centre for the Eastern Mediterranean Region has been opened. It is the Centre for Environmental Hygiene Activities situated in Amman, Jordan and is partly funded by AGFUND (the United Nations Development Programme of the Arab Gulf States), and covers 22 countries.

The activities of the new centre will be concentrated on drinking water supply and sanitation in the region. Attention will also be given to waste water treatment and solid waste disposal, which are of particular importance for Jordan and other areas in the region.

With the establishment of this centre there are now three regional centres dedicated to this field of work, the other two being CEPIS, el Centro Panamericano de Ingeniería Sanitaria y Ciencias del Ambiente (the Pan-American Centre for Sanitary Engineering and Environmental Science) in Lima, Peru and PEPAS, The Western Pacific Centre for Promotion of Environmental Planning and Applied Studies in Kuala Lumpur, Malaysia.

TRAINING WORK AT CEPIS

CEPIS, el Centro Panamericano de Ingeniería y Ciencias del Ambiente (The Pan-American Centre for Sanitary Engineering and Environmental Science) in Lima, Has recently completed the work on 16 instruction manuals. The manuals are published in Spanish and are distributed to water and sanitation agencies in the region. They form the end product of the Proyecto de Desarrollo Tecnológico de las Instituciones de Agua Potable y Alcantarillado, DTIAPA (Technology Development Project for Drinking Water and Drainage Institutions), which was carried out between 1979 and 1983.

DTIAPA was aimed at stimulating the utilization of appropriate technological developments to improve the efficiency of the services of drinking water and sanitation authorities. It was the outcome of an agreement between Peru, represented by the Instituto Nacional de Planificación (INP), the Corporación Financiera de Desarrollo (COFIDE), and the Interamerican Development Bank. According to the agreement CEPIS would be responsible for the execution of the activities, these being primarily aimed at water authorities in Peru, although some of the activities, especially training, would also be beneficial to institutions in the Andes and the rest of the region. Within the project the areas of interest were research, training, information dissemination and technical co-operation between sector institutions. In the four years of the project, ten research projects were carried out and 36 training courses organized in which 918 people participated. The experiences and material gained from these courses formed the basis for the production of the 16 manuals.

In principle the manuals are written for engineers or managers working in the water supply and sanitation sector and for operators of water treatment plants. Among the subjects treated are hydrology, groundwater, management, water treatment, filtration, pumps, and water quality control. More information about these manuals can be obtained from CEPIS, Casilla 4337, Lima 100, Peru.

GROUNDWATER IN CONTINENTAL ASIA

On the continent of Asia, large scale groundwater development began in the 1950's and has been expanding ever since. Groundwater resources were increasingly used especially for irrigation purposes, and this practice contributed considerable to the avoidance of famines that

plagued for example China and India in earlier times. Doubts, however, have arisen about the possibility of maintaining the current level of groundwater withdrawals beyond the end of this century since most of the aquifers tapped do not have a large natural recharge and are pumped extensively.

It is for this reason that the United Nations Department of Technical Co-operation for Development (UNDTCD) has engaged in comprehensive groundwater-balance investigations and artificial recharge studies in the region. Within the framework of the Drinking Water and Sanitation Decade, several countries are making considerable efforts to provide thousands of villages with groundwater supplies. This is especially the case in the countries of the Indian sub-continent. In countries or areas that until recently have not engaged in significant groundwater development activities, for example Malaysia, Bhutan and the Laos People's Democratic Republic, large scale actions are now being planned.

In the past 30 years much progress has been made in the exploration and development of groundwater resources. However, continuance of using groundwater resources is put at risk by its very success. Not only may excessive groundwater abstraction lead to depletion of groundwater reserves, it can also induce sea-water intrusion in coastal areas, and ground subsidence, which is a major threat to at least two major metropolitan areas, Bangkok and Shanghai. Agricultural development based on the widespread use of fertilizers and pesticides and the pollution caused by industrial wastes are threatening groundwater quality. For these reasons most countries in Asia are required to conserve the quality and quantity of groundwater resources through adequate control, allocation and management.

A very useful source of information about the groundwater resources of the Asian countries is the recently published reference book: "Groundwater in continental Asia: Central, Eastern, Southern, South-eastern Asia". (Natural Resources/Water Series No. 15), prepared by the Department of Technical Co-operation for Development (1986), New York NY, USA, United Nations (sales no.E.86.II.A.2).

This publication is a treasure of knowledge on groundwater resources and development in Continental Asian countries. It provides information about the hydrogeology and the groundwater resources of each region. The degree of accuracy varies from country to country. For some countries very specific information is given, while for others the information provided on hydrology and geology is more general and limited to a preliminary evaluation of aquifers. However for most of the 20 countries surveyed, very useful information has been collected from organizations, consultants and specialists.

FEMALE CARETAKERS CENTRAL IN IDRC FILM

In developing countries women and children are the primary drawers of water. Every day hours are spent and energy wasted in bringing home water that is often contaminated.

The new film of the Canadian International Development Research Centre (IDRC), "A handle on health", pictures women who play an active part in ensuring a safe uninterrupted water supply. They help to control the water delivery system and are maintaining and manufacturing their own hand pumps. The film demonstrates that active involvement of the whole community, in community water supply and sanitation, can help to alleviate the burden of many people.

Using experiences from projects in Ethiopia, Malaysia, the Philippines, Sri Lanka and Thailand, the film shows how simple, durable hand pumps can be designed, tested and manufactured in developing countries with low cost materials. This saves scarce foreign exchange resources and also provides employment.

The 27-minute film, produced by IDRC's Communication Division, is available in 16 mm film and video cassettes (U-matic, VHS, and Betamax formats) and is available in English and French. The film can also be borrowed from some Canadian Embassies or High Commissions in developing countries. For purchases contact IDRC Communications Division, P.O. Box 8500 Ottawa, Ontario, Canada, K1G 3H9, or write to the nearest IDRC office for more information.

THIS NEWSLETTER IS ISSUED BY IRC, AND DOES NOT NECESSARILY REFLECT THE VIEWS AND POLICIES OF WHO, OR ANY OTHER ORGANIZATION CITED.

With its partners in developing countries and with United Nations agencies and donor organizations, IRC assists in the generation, transfer, and application of relevant knowledge through programmes for water and sanitation improvement.

These information-oriented programmes include: 1. Information Support and Services; 2. Technology Development and Transfer; 3. Manpower Development and Training; 4. Community Education and Participation; and 5. Programme Evaluation and Planning.

Support is provided by means of publications and training material, seminars and courses, research and demonstration projects, as well as by general support to the development of national capacities.

Requests for information on IRC should be addressed to IRC, P.O. Box 93190, 2509 AD The Hague, The Netherlands.