



THE HYDROLOGICAL SOCIETY OF S.A. INC.

C/o Water Resources Branch
Box 1751, Adelaide, S.A. 5001

NEWSLETTER NO. 65

JUNE 1990

EDITORIAL

"THE DRIEST STATE IN THE"

I was shocked to learn recently of the existence in Adelaide of a group of householders who take careful note of their water consumption about one month prior to the end of the annual water allocation period. They then compare consumption with their E&WS allowance and, if significantly lower, set taps running freely to ensure they get the water they've paid for. This has to be the down side of the "user pays" principle - "payer uses"!

In the same week that I learned of this group's existence, I attended a meeting of water-interested people and heard the key speaker apologise to his audience for using that overworked description of South Australia: "the driest state in the driest continent on Earth".

Tired and hackneyed though the phrase has become, how many of us can claim that the personal use we make of our water resource reflects anything other than - at best - a superficial recognition of our "driest State....." environment? As a society, we -

- spray an estimated 300 litres of (filtered!) water per person per day in Summer onto lawns and gardens to sustain grass and plant species introduced, largely, from colder/wetter lands and then pay \$100, or more, "excess" water bill;
- divert some 400 litres (average) of storm runoff per person per day to the ocean, causing pollution of recreational waters and of the coastal environment;
- dispose of some 160 litres of sewage per person per day from our homes, and ultimately, after treatment, to the ocean where it is alleged to cause serious problems in the coastal zone;
- use over 1200 litres of industrial water (including irrigation) per South Australian per day.

So, how much have we really learned about living within our limited water resource "budget" in 150 years of European settlement?

Very little, it seems - but the overall picture is changing rapidly.

The origins or causes of this change are hard to pin-point; the annual "excess" water bill faced by most Adelaide households has undoubtedly had its influence, along with a general "greening" of the Australian electorate in the wake of greenhouse concerns and local crises, e.g. Strathalbyn, Milang in the Summer of '90.

On the institutional front, the Clark/Fisher report on stormwater as a resource, together with the recent Seminar and (E. & W.S.) Workshop on Wetlands (30/31 May 1990) have made important contributions to the discussion, and the ANZAS/AWWA Symposium, "Future Directions in Water Resource Management" (Friday 20 July 1990), promises to explore further the "new thinking" that is emerging from these initiatives.

Will it last? Are we witnessing yet another "flavour of the month" enthusiasm that will disappear from the public and bureaucratic agenda as soon as the season "breaks".?

Permit a retiring HYDSOC Newsletter editor his answer in the form of a vision for Adelaide in the 21st Century, which is -

- lawn/garden watering, generally, from storm runoff and house-water re-use sources only;
- sewage flows reduced by at least 50% with no discharge to the ocean;
- River Murray pumping to Adelaide reduced to 25% of present rate;
- industrial water demand reduced by 25% - 50%, and,
- water recreation domains restored and maintained as safe and enriching environments for South Australians of all ages.

I am convinced these goals can all be achieved, but only by a community which is fully conscious of its role and responsibilities in the driest state of the driest continent on Earth.

JOHN ARGUE

FROM THE HYDROLOGICAL TRAPS

FLOODING IN THE FAR NORTH

[Reporter : Chris Wright]

Flood waters from the Cooper Creek entered South Australia at Innamincka on 12th May, isolating Innamincka and moving rapidly to the west. Water flowed down the full length of Strezlecki Creek which is a branch of the Cooper. On the Cooper itself, floodwaters moved rapidly into the Coongie Lakes area and into the channel country to the North West of Moomba. By the end of the month, Moomba was isolated and floodwaters were beginning to move south towards the Koperamanna Crossing on the Birdsville Track. The crossing is expected to be affected by mid-June and it is probable that water from the Cooper will enter Lake Eyre by August 1990. The flood reached roughly the same height as the well-documented 1974 flood, but is only about half the volume of the '74 flood, and will not be sufficient to fill the lake without contributions from other river systems.

Nevertheless, the path of the flood down the Cooper has been unexpectedly rapid, and the steepness of the rising limb of the hydrograph at Nappa Merrie and Innamincka has been exceptional. The flood peaked at Windorah around 28th April and by 16th May had already reached its peak at Innamincka. From there, flood water spread to the north and west into branches of the Cooper and spilled south into Strezlecki Creek. The recently upgraded causeway at the Strezlecki Crossing was inundated by floodwaters on 20th May and by 21st May floods had reached Lake Blanche. Within the Cooper itself, the flood had reached a point some 120 km west of Innamincka by 23rd May. Cloudy conditions for the whole of that week have prevented any broad scale measurement of the rate of advance of the water. Hopefully in subsequent weeks, it will be possible to follow its progress. It is estimated that water will reach the Koperamanna Crossing on the Birdsville track by mid-June, and it would take about a month to reach Lake Eyre from Koperamanna.

Flooding is also occurring on the Diamantina River, but of much less magnitude than the Cooper. It is not clear at this stage whether there is sufficient water to pass through Goyder's Lagoon and the Warburton and on into Lake Eyre.

For anyone interested in statistics, the areas currently covered by floodwaters are as follows :

- Lake Yamma Yamma (south-west of Windorah) 945 sq. km
- Coopers Creek from Windorah to the S.A. Border 6,000 sq. km
- Coopers Creek in South Australia 10,600 sq. km
- Goyder's Lagoon (Diamantina) 1,800 sq. km

Total flooded area is about 20,000 square kilometres, or a quarter the area of Tasmania. For South Australians it is equivalent to the area enclosed by going from Adelaide to Clare, across to Waikerie, down to Taillem Bend, on to Victor Harbour and back to Adelaide!

DRAINAGE SUBSIDY SCHEME - PRIORITY SETTING

[Reporter : Bill Lipp]

The Stormwater Drainage Subsidy Scheme Advisory Committee has recently completed priority setting for projects for the 1990/91 financial year and all Councils have been advised of the status of their projects. The Committee was set up in (part) to determine which projects should have the highest priority for funding from the Drainage Subsidy Scheme following reduced levels of funding being made available to the scheme by the State Government.

The Committee consists of representatives from the Local Government Association, the Local Government Engineers Association, the Department of Environment and Planning and the Department of Road Transport.

The Committee proposes to examine, in more depth, the operation of the Subsidy Drainage Scheme with the first priority identifying where further drainage studies need to be carried out.

The priority setting process only applies to projects. Drainage studies, land acquisitions (associated with projects Councils intend building with subsidy assistance) and flood warning schemes (with the involvement of the Bureau of Meteorology) and not subject to priority setting.

GAMMON RANGES EXPEDITION

[Reporter : Chris Wright]

The next expedition to the Gammon Ranges will leave on 30th June, returning on 12th July. There will be 8 leaders and 25 expeditioners. The party will establish a Base Camp at Arcoona Creek, and undertake monitoring projects including vegetation, trapping and identifying of small mammals, installation of a new Pluviometer logger, and some preliminary bushwalking trials. This will be followed by a 5-day hike through the Gammon Ranges in parties of 8, and will include data recovery from the pluviometer on the Gammon Plateau. It is understood that the E&WS Department will be looking for a suitable site for setting up a river gauging station on Arcoona Creek, which will then provide rainfall and runoff data for the life of the project, which at this stage looks to be about 10 years. At the time of writing there are still one or two places left for leaders with a scientific background. Members of Hydsoc with a background in Hydrology, Geology, Water Quality or other similar fields of interest who may be interested in joining the expedition should contact Chris Wright on 278 8818 (h) or 366 2269 (w).

HELPS ROAD DRAINAGE STUDY

[Reporter : Bill Lipp]

The City of Salisbury, in association with the City of Elizabeth and the City of Munno Para, has commissioned Lange, Dames and Campbell Pty Ltd to undertake a drainage study of the Helps Road Drainage System with a view to identifying the optimum strategy for upgrading the drain and the adjacent Burton estate drain downstream of the Adelaide-Port Augusta railway line.

The catchment is a mixture of urban and rural land and is characterised by a number of features that impede direct runoff into the drainage system. A major component of this study, will be to quantify the effect of these features over a range of recurrence interval floods prior to proceeding with an analysis of the various options available for upgrading the two systems. The study will be eligible for a subsidy from the Subsidy Drainage Scheme.

GAWLER FLOODPLAIN STUDY

[Reporter : David Kemp]

The Town of Gawler has commissioned Lange, Dames and Campbell Pty Ltd to undertake a study of the flood plains of the North Para, South Para and Gawler River within the Gawler township.

The study will be undertaken on the basis of the wealth of historical data available locally on previous floods. The floods will be ranked, and approximate recurrence intervals assigned. Flood levels will be determined where possible. By this means, it is hoped that a clear picture of the flood risks will be gained, and a floodplain mapped for the 100 year Average Recurrence Interval flood.

The study will extend the floodplain mapping completed west of Gawler and will be eligible for a subsidy from the Subsidy Drainage Scheme.

NOTICE

21ST BIRTHDAY OF THE HYDROLOGICAL SOCIETY

This year is the 21st birthday of the Hydrological Society. The inaugural meeting was held on the 14th March 1969. To celebrate our 21st birthday, a dinner is planned for 7.30 p.m. Wednesday 1st August 1990 at the Stonyfell Winery. An informal event is planned. Spouses and/or friends are invited to join in the celebration. The menu includes soup, a choice of 2 pasta dishes, 1 meat dish, salads, dessert, a cheese and fruit platter, coffee and tea. Drinks will be provided from 7.30 p.m. to 11.00 p.m. The cost of the evening will be \$25.00 per person. For more information, please contact, Anwen Auckland (274 7521), Paul Harvey (226 2502) or Angus Simpson (228 5874).

ARTICLES

A GLIMPSE OF THE WETLANDS SEMINAR

[Contributed by John Argue]

Preamble

An afternoon seminar titled "*Wetlands for Wastewater Management*", organised by E. & W.S. Department, AWWA and HSSA, was held at Charles Hawker Conference Centre on Wednesday 30 May 1990. The capacity audience of 160 included some 60 delegates from E. & W.S. Department.

The seminar programme included four papers and a summary/discussion, all by interstate speakers who are leading figures in Australian research/application of wetlands principles and technology :

- Prof. Peter Cullen (Univ. of Canberra) - "*Wetlands and Urban Stormwater*".
- Dr. Janet Dunbabin (NSW Dept. of Agriculture and Fisheries) - "*Wetlands and Industrial Wastewaters Containing Heavy Metals*".
- Mr. Brian Mackney (Byron Shire Council, Northern NSW) - "*Wetlands and Domestic Wastewater*".
- Prof. Arthur McComb and Dr. R. Froend (Murdoch Univ., Western Australia) - "*Wetlands and Catchment Streams*".
- Dr. David Mitchell (Murray Darling Freshwater Research Centre, Albury-Wodonga) summarised the proceedings and presented Peter Cullen's paper in his absence owing to a missed air transport connection in Melbourne.

Space does not permit a full report on the Seminar in this edition of the Newsletter - only a "glimpse" is provided in the form of an outline of Peter Cullen's paper on Wetlands and Urban Stormwater. Those interested in more details are referred to the full Proceedings which will be available shortly from AWWA or our own Society.

Peter Cullen's Paper - Introduction

Dr. Cullen's paper opened with a warning concerning the dangers and pitfalls inherent in thoughtless application of wetlands concepts - in particular, designation and/or construction of wetlands using principles and practices developed in hydrologically dissimilar places. He referred to the NCDC Wetlands Guidelines (to be published shortly), devised for Canberra and the A.C.T., which he believed could be

applied in South Australia as a "first approximation" only. Studies on local (existing) wetland domains and close monitoring of new wetlands would provide the ultimate data base for South Australian practice.

The particular pollutants found in storm runoff from urban catchments which can be successfully controlled in wetland environments include coarse material, nutrients, microbial and toxic materials. Concentrations of these pollutants in urban stormwater are 7 - 10 times their concentrations in (equivalent area) rural catchment runoff.

Strategy

In developing a strategy for managing urban stormwater via wetlands, the first question to be asked is "what water quality properties should characterise wetland discharge into the receiving water domain?". There are three main elements which can be employed to achieve the goals of the strategy :

- control pollutant movement at site of origin as much as possible,
- trap sediment and litter along drainage lines, and
- detain/retain stormwater in ponds as long as is possible.

It is important that those involved in developing the strategy, approach the task from the viewpoint that urban stormwater is a resource to be harvested, and not refuse to be "disposed of" as completely and as quickly as possible.

Design Elements

The main design elements which have been employed in the A.C.T. to implement the strategy are :

1. inlet zone : use of "gross pollution traps"
2. macrophyte zone : use of "marsh plants" to take up nutrients, heavy metals, oils, etc.
3. open water zone.

In a region which is hydrologically similar to Canberra, it is recommended that 20% - 30% of pond surface area be set aside for ZONE 2; this should be immediately downstream of ZONE 1 and should have water depth controlled at 0.3 - 0.6 m.

Pond volume and, hence, retention time is the single most important design parameter. To "size" and "shape" a pond, the designer must firstly estimate runoff volume (say, 30% of rainfall), and then consider the likely hydrodynamic behaviour of the pond. Knowledge of local wind (direction, velocity, etc.) is an essential ingredient of this, together with a layout of islands to promote suitable flow directions and patterns.

Edge treatments also require careful consideration. In sections where the growth of marsh plants is not desired, e.g. near residences, then stone or timber edging should be employed. Alternatively, edges sloping at 1 in 8 will discourage macrophyte growth; edge slopes of 1 in 15 and flatter will encourage it. The latter slopes should be employed in zones set aside for wildlife.

Maintenance

The need for constant monitoring, clearing/thinning of macrophyte beds and other general maintenance operations cannot be too strongly stressed. An important "natural" maintenance element is the population of introduced fish which can play a vital role via the food chain: silver perch have been used to good effect in the Canberra environment. Wetland technology, although employed in many cultures, e.g. Asia, from pre-historic time, is relatively new to western civilisation and is therefore still, essentially, "experimental".

Reprint of a recent, relevant letter to the Editor of AWWA's "Crosscurrent":

Re-use of Wastewaters for Irrigation A Short Term Answer - A Long Term Problem?

There is currently a wave of enthusiasm about the nation advocating the re-use of wastewaters, particularly for irrigation.

This enthusiasm seems to be sparked by community concern about the nation's widespread salinity problems present on land and in numerous waterways. It also seems to be fuelled by misconceptions concerning the quality of community wastewaters.

Euphemistically, they are frequently described as 'domestic' wastewaters, and as such, in the old Chinese tradition, it is thought that they 'must be good for the garden'.

Of course those conceptions disappeared long ago with the growth in urban living, and today community wastewaters reflect community lifestyles.

The wastewaters collected and treated under normal circumstances will contain traces of the many compounds used in and about the homes and industries which make up the community.

They will contain salts, predominantly sodium and bicarbonate/carbonate ions and these salts will be present at levels of 400 - 800 kilograms per million litres. The wastewaters will contain traces of organo-chlorines, residues of organic solvents, alkalis from cleaning compounds and synthetic detergents of various types, to name but a few of the chemical compounds likely to be present in a typical community effluent.

Town wastewaters are a 'cocktail' which, following normal secondary treatment processes, will contain a range of trace residues, salts and nutrients, the latter being present at a concentration of about 20 kilograms per million litres, or approximately 0.002%.

This latter point is made expressly because it is a common community perception that their wastewaters have a significant fertiliser value.

However, any fertiliser value is somewhat insignificant and is far outweighed by the relatively high salt content, and particularly the presence of sodium and bicarbonate/carbonate ions.

Town wastewaters can have adjusted sodium absorption ratios in excess of 9, a level which is generally considered risky for irrigation and indicative of severe future soil problems such as sodicity and alkalinity if applied to land.

Therefore the use of treated town wastewaters, when judged by existing criteria and recognising their complex nature, should be seen as having at least a risk of creating adverse long term effects, both in soils and in groundwaters.

Admittedly, the disposal of treated town wastewater generated by inland regions is a formidable problem, particularly when it is desirable to have minimum environmental impact resulting from the disposal.

However, this formidable problem may never be adequately solved if the true nature of community wastes is ignored and the consequences of their long term use are not clearly understood.

It would be interesting to receive comments from practitioners and investigators involved with the re-use of wastewaters, particularly with regard to control of longer term soil and groundwater impacts.

B. L. REIDY
Executive Officer,
Latrobe Valley Water & Sewerage Board

EFFECT OF MICROBIOTA ON IRRIGATION CHANNEL SEEPAGE

[Contributed by Santo Rogusa]

The aim of this project is to study the effect of microbiota on the saturated hydraulic conductivity of channel linings.

A preliminary look at the available literature suggested that algal growth and the production of polysaccharides by bacteria greatly reduces the hydraulic conductivity of soil under saturated conditions.

Initially polysaccharide, organic carbon and chlorophyll concentrations (algal levels) were measured at 14 sites just before the start and at the end of the irrigation season. Sites selected were fed from three major water sources (i.e. Murray, Campaspe and Goulbourn Rivers) in the Shepparton region of Victoria.

The results showed :

- a) A wide range of polysaccharide, organic carbon and chlorophyll concentrations in different parts of the channel system. Some of the polysaccharide concentrations in sediment samples were high enough to suggest that clogging was occurring.
- b) Samples taken just before the start of irrigation showed lower polysaccharide concentrations, especially when water levels within channels were lower. This implies that seepage during the initial stages of the irrigation season is higher than in later stages.
- c) lower chlorophyll concentrations found in all samples taken before the start of the irrigation season is probably associated with lower winter temperatures.
- d) Polysaccharide concentrations were linearly related to organic carbon content of channel lining material. Since organic carbon content is easier to measure, it could be used to indicate the polysaccharide levels in channel lining material.

Five bacterial types and 2 - 3 algal types have been isolated and purified from channel lining material. These organisms will be tested in relation to their ability to clog channel lining material from 3 sites.

GOOD NEWS FOR CARBON-14 USERS

[Contributed by Fred Leaney]

The carbon-14 laboratory, now housed at the Adelaide site of the Division of Water Resources, originated deep within the bowels of the neighbouring Division of Soils. During the '70's three prominent members of the Division of Water Resources, namely Jeff Turner, John Dighton and Graham Allison, were instrumental in developing the carbon-14 laboratory primarily for dating dissolved bicarbonate precipitated from groundwater samples in South Australia. In fact, a major part of Jeff's Ph.D. thesis concentrated on the use of radiocarbon to differentiate groundwater contributions from confined and unconfined aquifers to the Blue Lake, a maar lake in S.E. South Australia. Following years resulted in analyses of traditionally "dateable" samples such as peat, shell and charcoal, to the more obscure samples such as seaweed and "vintage" port.

During the last 5 - 10 years, the carbon-14 laboratory has been fine-tuned to the extent that it now operates commercially analysing samples from throughout Australia as well as overseas. A recent international inter-laboratory comparison showed that results from this laboratory compared favourably with those obtained from other participating laboratories.

Despite this success, this laboratory, like all conventional radiocarbon laboratories, has been limited by the size of sample required for an accurate analysis. Samples containing less than 1 g of sample were virtually impossible to date, while people submitting samples containing less than 5 g of carbon were forced to accept less than maximum possible accuracy. Hopefully, however, this situation may not be the norm for much longer.

In conjunction with Dr. Sie from the Heavy Ion Accelerator Facility (H.I.A.F.) section of the CSIRO Division of Exploration Geoscience, and Ms. Barnett, a Ph.D. student from the Adelaide-based Centre for Groundwater Studies, we are currently developing a system for carbon-14 analysis of samples in the mg range using accelerator mass spectrometry (A.M.S.).

Samples for analysis will be prepared by the Division of Water Resources and analysed using the accelerator mass spectrometer at the H.I.A.F.. Although, at this stage, the project is still in its

infancy, several samples have been prepared and run giving a good stable carbon beam. Further verification with existing carbon-14 standards is planned for the near future before commercial application can proceed, and although placing a time frame on development is difficult, I hope commercial operation may be possible within a year.

The implications to researchers in the Water Industry will be obvious to some and, hopefully, enlightening to others. Traditionally, carbon-14 analysis of water samples has been a laborious process as 100 - 200 litre samples of water must normally be collected in the field and the dissolved bicarbonate precipitated in-situ prior to conversion and analysis by the laboratory. With the advent of A.M.S. dating, samples may now be sent directly to the laboratory as groundwater in 500 ml glass bottles, making it comparable to sample collection for routine chemical analysis. Similarly with materials other than water, sample size need no longer be a constraint on accuracy.

The expected cost for this new procedure will be greater than conventional radiocarbon costs, although hopefully only marginally so. This additional cost, however, is more than justified when one considers :

- the reduction in cost of sample collection;
- the reduction in error bars and possibility of extending "dateable" material to 40,000 - 50,000 years B.P.;
- the provision of an accurate carbon-14 age for samples having insufficient size to date conventionally.

NOTICE

HALOGENATED ORGANICS AND THE ENVIRONMENT

ADELAIDE, 4-5 OCTOBER 1990

THEME

Halogenated organic compounds are man-made chemicals that rarely occur in nature, are difficult to biodegrade or decompose, and may have harmful environmental effects. They are foreign to living things and some members of this family of organics are known to be toxic, mutagenic, persistent, bioaccumulating, and are thought to cause harmful disturbances in biological systems.

The increased public awareness of environmental issues over the past 5 - 10 years has resulted in more stringent environmental requirements for industry. Recently, the discharge of chlorinated organic compounds from pulp bleaching processes in the pulp and paper industry and the environmental impact of these substances have received attention from the public, industry and government.

Because of environmental concern there is a growing momentum in several jurisdictions to control the discharge of chlorinated organics by legislation. The Australian Federal Government's commitment to decrease the amount of chlorinated hydrocarbons discharged in the environment materialised in stringent environmental guidelines for the pulp and paper industry.

Despite a long history of chlorine use for drinking water disinfection and bleaching of wood pulps, the environmental impact of chlorinated organics is not well understood. The actual long-term effect of halogenated organic compounds in the environment is not known.

It is the objective of this conference to review recent developments related to the formation of halogenated organics during chlorination processes, measurement and characterisation of halogenated organic compounds, environmental impact and treatment technologies.

The technical programme has been structured to bring together the experience of representatives from research institutions, industry, consultants and government.

The Conference is being presented by Australian Centre for Water Treatment and Water Quality Research. For more information, contact :

Mr. George Levay
(Conference Convenor) Telephone :
A.C.W.T. & W.Q.R.. (08) 343.3130

Mr. Kevin Brett
(Conference Manager) Telephone :
Techsearch. (08) 267.1755

SECRETARY'S PAGE

News from the Executive Committee is that the Society is in good shape financially, and that almost all subscriptions are now up to date.

A meeting on Chaos, addressed by Dr Tony Roberts, Senior Lecturer in the Department of Applied Mathematics at Adelaide University, was well attended and we were given a series of examples of "order out of Chaos" compiled on Tony's computer and displayed on the overhead using a clever module which could reproduce the display on the computer screen. Tony discussed the theory of Chaos, and was able to compile his programs while we watched. It was a most interesting talk, which has tantalising prospects for removing the "noise" from data sets, such as annual rainfall series.

The next meeting will be held on Thursday 14th June, and will be on the subject of microbiology in groundwater, a topic on which a great deal of interest has centred in recent years.

The Annual General Meeting is fast approaching, it will be held on 9th August. Members should start thinking about nominations for next year's committee. Nomination forms will be sent out within the next two months.

EDITOR OF THE NEWSLETTER

[Graeme Dandy]

As a Society, we owe a great debt to John Argue for his untiring work as editor of the newsletter over the last five years. One of the significant benefits of society membership, is the regular update of ongoing, hydrological activities, provided by the newsletter. John has enhanced an already high standard of publication by changing the format to allow more news to be provided in the available space. He has been very successful in ensuring regular contributions from a number of different areas of the Society, and in so doing has broadened the coverage provided by the newsletter and increased the interest in it. For many hours of hard work and dedication, **WELL DONE JOHN!**

REFLECTIONS OF A DEPARTING EDITOR

When I undertook the task of editing HSSA Newsletter No. 48 of June 1985, I did not realise what I was letting myself in for - one of the most rewarding and interesting activities of my professional career. The "rewards" have come from the many contacts made via the Newsletter, the ready response of Members to appeals for copy, the opportunity to make a significant contribution to the Society's activities, and the many "pats on the back" received from genuinely appreciative people.

The other side of the coin is, of course, the mad scramble to get articles together, typed, "fitted" and delivered for printing by the deadline. They have been interesting days.

I take this opportunity to thank all those who contributed editorials, articles and news items over the past five years. Without such support there would be no Newsletter.

If I have a regret, or rather disappointment at some editorial goal not achieved, it relates to the lack of a "Letters to the Editor" page. The main purpose of the Guest Editorial each issue was to have Members reaching for their pens (oops!), PC's, to fire literary salvos at some editorial excess appearing above the name of Richard Clark or Don Armstrong or Graham Allison. Maybe as I.P.E. (Immediate Past Editor), I shall rectify this situation.

But the time has come for change, and I am delighted to be handing over the reins to Claus Schonfeldt who, I believe, will carry the HYDSOC Newsletter to new heights with his characteristic energy and flair. I wish him every success in the job and can assure him with confidence of the continued support of that small army of reporters and contributors who will keep at bay that dread of all Editors - NO COPY!

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