THE PHYCOLOGIST

The Newsletter of the British Phycological Society

Editor: **Alison R. Taylor**

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The BPS Council committees have all been busy behind the scenes at a number of levels. The Biodiversity and Conservation committee have been particularly active recently and in this issue present a report to Council and an appeal for information regarding Important Plant Areas. This information is urgently required if algae are to be fully integrated into any conservation initiatives. The deadline for response to this appeal is December 1st so please respond if you are able. December 1st is also an important date to bear in mind as it is both the extended deadline for poster abstract submission and registration for the 52nd BPS winter meeting in Lancaster. The meeting has special sessions on algal cell signalling, algal physiology, applied phycology, taxonomy, ecology and ecophysiology. In addition to this diverse line-up of research talks there are a number of special lectures from invited speakers, a student wine reception and an exhibition celebrating the work of Irène Manton. The preliminary program is outlined in this issue and further information can be found on the BPS website.

The other contributions in this issue are also diverse and include Stefanie Kühn's account of the most recent work on diatom parasitoids and Frank Evan's illuminating biographical sketch of Mrs Gatty, the author of 'British Seaweeds'. Our next deadline for The Phycologist is January 31st 2004, so please contact the editor with your article or ideas for The Phycologist before then.

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Biodiversity and Conservation Committee
Report to the British Phycological Society Council, June 2003

The Biodiversity and Conservation Committee met for the second time on 9th May 2003 at the Environment Agency Offices, Wallingford. The meeting was kindly hosted by Jane Jamieson and we are grateful to her for her hospitality. With the exception of Brian Moss (unexpected crisis at Liverpool University) and Leigh Jones (expected baby), everyone was able to attend: Juliet Brodie (Chair), Gill Douglas (Secretary), Dave John, Jane Jamieson, Chris Maggs and Martin Wilkinson. The main points of the meeting are summarised below.

International Plant Areas (IPAs)

Dave John outlined the latest activity in relation to IPAs and it was agreed that the algae should have a much greater profile that they currently do which is virtually none. In order to achieve that there needs to be a Red Data Book of algae for the British Isles and a European Committee to act on behalf of the algae*. The committee have decided to compile an inventory of the best algal sites in the British Isles by asking the BPS membership to complete a questionnaire. Dave John has prepared a draft questionnaire based on that of other plant societies which we propose to circulate to the membership. Responses will be taken to an IPA meeting in Lancaster later in the year.

Red Data Book

To begin the process of determining which, if any, species of algae need to be listed in a Red Data Book, it is necessary to compile a list of species that are potentially under consideration for inclusion in the book. A possible way forward here would be to use the maps in *A check-list and Atlas of the Seaweeds of Britain and Ireland* (2003) by Gavin Hardy and Michael D. Guiry as a basis for checking the validity of the status of species deemed suitable for inclusion.

Mapping Scheme

The committee felt that it was an achievement that *A check-list and Atlas of the Seaweeds of Britain and Ireland* was finally in print, despite reservations about the reliability of some of the data included. For future mapping, it was determined that a much more reliable method of submitting records, almost certainly on-line, with all relevant data, would be a much more appropriate method.

The idea of using the current maps to assist in the determination of species to be possibly included in a Red Data Book (as above) was considered to be a suitable way of using and possibly improving the data.

Flora volumes

- *Seaweeds of the British Isles Volume 1 3b*: Juliet Brodie now has the final set of proofs. Once all details have been finalised and the proofs returned, the book will go into production.
- *Seaweeds of the British Isles Volume 3 Part 2*: Bob Fletcher reported that the second brown algal volume was progressing well and that he anticipated completion by the end of the year.
- *The Freshwater Algal Flora of the British Isles*: Dave John reported that the first printing had completely sold out and that a revision would be in print very shortly (June).
- A volume on the marine Cyanophyta was also discussed and this will be pursued.
- **Revision of the Floras**

  Although it was agreed that we did not want to reinvent the wheel, there was evidence from sales and a feeling that the seaweed flora books were still a viable option and that it would be valuable to update at least some of the current volumes, particularly in view of the impact of molecular data. The volume on the green algae in particular needs revision and Juliet Brodie hopes to coordinate this in due course. Appropriate people would be asked to contribute work for particular groups and reasonable but strict time limits would be imposed to ensure completion within an acceptable time frame.

Juliet Brodie
17th June 2003

* A European Committee to act on behalf of the algae is in the process of being launched, following a meeting at EPC3 in July 2003. (JB August 2003.)

Important Plant Areas – Appeal For Information

Some of you may have already have seen the request below to identify Important Plant Areas in the UK and may have already responded. We would like to extend this request to 1st December 2003. Responses received already form the basis of a list of the best algal sites/areas. It is important that we participate in this exercise otherwise the algae, other than stoneworts (charophytes) will be given scant regard in any new conservation initiatives.

Request to Identify Important Plant Areas
We would like to invite you to participate in an extremely important exercise for the BPS to identify the best and most important areas or sites for freshwater and/or marine algae by completing the following questions:

NAME AND LOCATION OF SITE:

REASON FOR PROPOSING SITE (E.G. HISTORY OF RESEARCH; NUMBER OF SPECIES; PRESENCE OF RARE SPECIES):

WOULD YOU BE WILLING TO BE CONTACTED TO SUPPLY FURTHER INFORMATION REGARDING THE SITE?

You can list as many sites as you want. This is part of a much larger project to collate a list of IPAs for the UK to support, inform and underpin existing areas such as Areas of Special Scientific Interest. Example of such a sites are Wembury, Devon, and Priests Pot, Cumbria, which have rich and well-documented algal floras.

For further background to the project please see below.

Please return your responses to Dave John (d.john@nhm.ac.uk) or Juliet Brodie (J.Brodie@nhm.ac.uk) at The Natural History Museum, Botany Department, Cromwell Road, London SW7 5BD, UK by 1st December 2003.

Thank you for your time.

IMPORTANT PLANT AREAS - BACKGROUND

(prepared by Jenny Duckworth, Plantlife International)

The aim of the project is to collate a list of IPAs for the UK to support, inform and underpin existing protected areas in the UK such as Areas or Sites of Special Scientific Interest. It is not a formal statutory designation but rather will act as a database to check that we are appropriately managing and protecting sites that are most important for plants in a European context. The project will be particularly useful at highlighting those areas of international importance that contain species or habitats listed on international conventions other than the Habitats and Species Directive, other species that are threatened throughout Europe, and also areas of exceptional botanical richness/diversity. For the purposes of this project plants are defined as vascular plants, bryophytes, lichens, algae and fungi, with the term 'plant' used as convenient shorthand to describe these taxa.

All UK Statutory Agencies, botanical and mycological societies and research institutions such as The Natural History Museum and Royal Botanical Garden Kew have been invited to become partners in the project.

IPA Selection Process

The IPA selection process will be a relatively rapid and objective assessment of where the best sites are for plants in the UK, which will be carried out between the autumns of 2002 and 2004. This inventory will be based on the best information that is available during the period 2002-2004 and will therefore inevitably still have some 'gaps'. Nevertheless, it will be a useful baseline from which to revise and refine the list, and should help prioritise future recording and research effort. The list of UK IPAs will be revised as more information becomes available and so it will be a dynamic process.

Three criteria have been developed for site selection across Europe that are based on:

- A - threatened species
- B - species richness/diversity
- C - threatened habitats.

Further information on the application of these criteria is available in the IPA Site Selection Manual (Anderson 2002), further copies of which are available from Plantlife.

Work has been started to collate information on sites for species and/or habitats that are likely to qualify under Criteria A and C in order to generate the first

draft 'long list' of sites to which thresholds can be applied and gaps identified. We are aware of the lack of Red Lists or site based species data for algae, but it should still be possible to ensure that exceptional sites for algae are included, particularly through Criterion B. A separate project is currently underway to identify the most important UK sites for charophytes, which will feed into the UK IPA project.

Once we have defined the criteria and produced the initial long list of sites (complete with gaps), that would qualify under Criteria A and C we plan to convene a workshop in October 2003, to which at least one representative from the British Phycological Society will be invited, which will address a range of issues, including the use of Criterion B for 'gap filling' and will clarify the process involved.

This project will provide an opportunity to ensure that the best sites for algae are recognised and conserved. The project considers all terrestrial, fresh and brackish water and intertidal habitats. We would welcome the views of the British Phycological Society over the inclusion of more marine habitats.

Algae and Criterion A

Sites for any algae listed on Appendix 1 [*Laminaria ochroleuca*] of the Bern Convention that occur in the UK would qualify for inclusion under this Criterion.

Algae and Criterion B

Criterion B provides a somewhat more flexible means for species and sites to qualify, and whilst being based on indicator lists for habitats can be used in a pragmatic manner to literally 'brainstorm' the best sites. The first step will be to identify which habitats are considered important for algae that are additional to those listed on the Habitats Directive and will therefore not be covered under Criterion C. The next step will be to draw up a draft long list of sites that are considered to be the 'best' examples of these habitats on the basis of expert opinion. This list can then be added to the draft long list that is currently been developed for other taxa, and any overlaps and gaps highlighted.

Algae and Criterion C

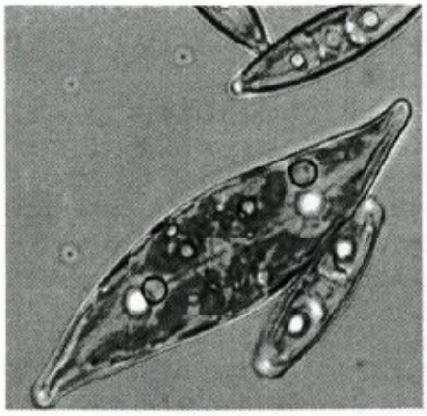
Habitats that are listed under Annex I of the Habitats Directive will qualify under Criterion C and so sites important for algae that occur in these habitats (e.g. naturally dystrophic lakes & pools; coastal lagoons) could qualify this way. The JNCC SAC database provides a readily available data source on habitats sites that would qualify under Criterion C. This database has been interrogated and a draft long list of sites that would qualify obtained, several of which may be considered important for algae.

Reference

Anderson, S. (2002). *Identifying Important Plant Areas*. Plantlife International

Meeting Report: Functioning of Microphytobenthos in Estuaries

Koninklijke Nederlandse Akademie van Wetenschappen, Amsterdam, 21-23 August 2003



Fifty scientists from eleven countries gathered in the heart of Amsterdam this summer to discuss the role of microphytobenthic algae in estuarine ecosystems. The conference was organised jointly by the Netherlands Institute of Ecology (J. de Brouwer, Veronique V. Creach, Jacco Kromkamp and Rodney R. Forster) and the University of La Rochelle (Gerard Prof. G Blanchard). The Royal Netherlands Academy of Arts and Sciences (KNAW) kindly sponsored the conference and allowed the use of their grandiose Trippenhuis building (built 1660-1664, in the style of Dutch Classicism), as well as providing several staff who did much to ensure the smooth running of the meeting. During coffee breaks, delegates had the opportunity to view many of the valuable works of art displayed in the Rembrandtzaal, including 'De voetwassing van Christus'.

The oral presentations of the conference were divided in eight sessions, with three speakers per session, covering themes from 'Taxonomy and systematics of microphytobenthos' through 'Use of stable isotopes in food web research' to 'Mudflats and socioeconomics'. Questions and answers for each speaker were recorded and will be included in the published proceedings of the meeting. A poster session on the second day of the

meeting was very well attended and many of the invited speakers had also brought posters of their own. The quality of the posters was high, and the session lasted considerably longer than planned. Thankfully, liquid refreshments were provided by the Academy throughout the session, and later in the evening the conference reconvened around an Indonesian 'rijstafel'.

Delegates had been asked before the meeting to suggest ideas for workshops on the hot topics in microphytobenthic ecology. There was a good response and three areas were selected for round-table discussions. Koen Sabbe chaired the first discussion on 'Biodiversity and ecosystem function'. Comments were made on the lack of trained taxonomists, and on the need to define key species which may be used to indicate environmental change. There was a wide-ranging discussion on the use of molecular methods in estuarine monitoring. A second discussion group, on 'EPS, Extracellular Polymeric Substances' was chaired by Keith Cooksey. This discussion centred around the (im)possibilities of quantitative isolation of extracellular secretion products and its functions for diatoms and mudflat ecosystems. Rather than being able to discuss solutions, a broad set of questions was put forward that should be addressed in future research. Accordingly the use of a relevant model organism was proposed to aid further research of EPS-secretion by benthic diatoms. Hugh Macintyre chaired a third, lively discussion on 'Microphyto-benthic sampling methods', in which a range of techniques used for measuring biomass or primary production were subject to close scrutiny. Little consensus emerged, and many participants enthusiastically defended their own favourite methods. The use of a new technique for estimating gas exchange rates via eddy correlation was described by Ronnie Glud. A summary of each discussion will be prepared for submission, and it is planned to publish the proceedings volume early in 2004. Abstracts and photographs from the meeting can be viewed at www.nioo.knaw.nl/ceme/MPB2003.

The BPS Annual Winter Meeting Lancaster University, 4th –7th January 2003

Extended poster abstract deadline December 1st
The organisers wish to encourage as many students and post-docs as possible to participate and have therefore extended the abstract deadline (for posters only) to December 1st. Please refer to the BPS website (www.brphycsoc.org) for details of submission and for the latest information about the meeting and how the BPS can support student travel and accommodation costs.

REGISTRATION DEADLINE FOR ALL PARTICIPANTS IS DECEMBER 1st.
Registration forms can be downloaded from the 'meetings' section of the BPS website (www.brphycsoc.org). The latest information regarding the Lancaster meeting will be posted on this website.

Lancaster Meeting Auction
Please support our student members by supporting the BPS auction! All proceeds of the auction are used to provide student bursaries. Any items for the auction should be brought to Lancaster or given in advance to any member of Council.

The following items have been donated by Professor Len Evans. Further information on these items can be obtained from Maureen Callow (m.e.callow@bham.ac.uk).

1) The typewriter used by Professor Irène Manton throughout her career at the University of Leeds. This typewriter is in 'original' condition and is thought to have been purchased by IM around 1930. The typewriter bears the name L C Smith & Corona Typewriters Inc., Made in USA.

2) A handbook of the British Seaweeds by L Newton (1931). Signed I Manton, Manchester University 1932.

3) A treatise on the British freshwater Algae by G S West & F E Fritsch (1927). Signed I Manton, The University, Manchester.

4) Morphologie and Biologie der Algen by F Oltmanns (1922) (in German) Signed I Manton, Manchester University.

PROVISIONAL PROGRAMME FOR THE BPS ANNUAL WINTER MEETING LANCASTER UNIVERSITY, 4TH –7TH JANUARY 2003

Sunday 4th January

3.00-21.00pm: Registration (Conference Centre Foyer)

4.30-6.30pm: BPS Council Meeting (Room 8, Conference Centre)

6.30-late: Lancashire Evening (Rooms 2 and 4, Conference Centre)
Lancashire hot-pot, apple pie and local cheeses, local ales and a band.

Monday 5th January

8.30-6.00pm: Registration (Conference Centre Foyer)

Lecture Theatre 1: Conference Centre

9.00-10.45am: Cell Signalling
Chair: Maureen Callow

9.00 Introduction
Maureen Callow

9.05 DIATOM SIGNALLING IN RESPONSE TO EXTERNAL STIMULI
Chris Bowler

9.45 DIATOM-DERIVED ALDEHYDES AS MOLECULAR SIGNALS IN BENTHIC MARINE ENVIRONMENTS
Gary S. Caldwell, Matthew G. Bentley and Peter J.W. Olive

10.15 ETHYLENE: FIRST INSIGHTS INTO THE FUNCTION OF A MULTIPURPOSE HORMONE IN MARINE ALGAE
Ina Pletter, Michael Steinke and Gill Malin

10.45-11.15am: Refreshments

11.15-1.15pm: Cell Signalling
Chair: Maureen Callow

11.15 SURFACE SELECTION AND INTER-SPECIES COMMUNICATION IN BIOFILM PROCESSES INVOLVING *ULVA* (syn. *ENTEROMORPHA*)
James A. Callow, Maureen E. Callow, John A. Finlay, Linnea Ista, Gabriel Lopez, Anthony B. Brennan, Claire Hellio and Anthony S. Clare

11.45 CELL-TO-CELL COMMUNICATION BETWEEN *ULVA* ZOOSPORES AND MARINE BIOFILMS
Karen Tait, Glen Wheeler, James E. Callow, Maureen E. Callow, Paul Williams, Muigel Cámara and Ian Joint

12.15 The Action Potential in Algae
Alison R. Taylor, Helen Goddard and Colin Brownlee

12.45 WAVES WITHIN WAVES: INTRA-CELLULAR SIGNALLING DURING ABIOTIC STRESS AND POLARIZED DEVELOPMENT IN *FUCUS* EMBRYOS
Colin Brownlee, Susana Coelho, Helen Goddard and Alison R.Taylor

1.15-2.30pm: Lunch

2.30-3.30pm: Algal Physiology
Chair: Alison Taylor

2.30 THE POTENTIAL ROLES OF PLASMA MEMBRANE REDOX ACIVITY IN DIATOM ECOPHYSIOLOGY
Margaret S. Davey, David J. Suggett, Jessica Tatton-Brown, Richard J. Geider, Alison R. Taylor

2.50 Calcium influx pathways in the calcifying marine phytoplankton *COCCOLITHUS PELAGICUS*
Helen Goddard, Toby Collins, Colin Brownlee and Alison R. Taylor

3.10 DIMETHYL SULPHIDE PRODUCTION: DO WE REALLY UNDERSTAND THE CONTRIBUTION OF THE VARIOUS MARINE PHYTOPLANKTON GROUPS?
Gill Malin and Michael Steinke

3.30-4.30pm: Refreshments and Poster Viewing/Presentations

4.30 -5.30pm: Founders Lecture
Chair: Eileen Cox

PROBING AND CHARACTERIZING THE CELL SURFACE OF DIATOMS
Rick Wetherbee

6.00-7.00pm: Wine receptions
a) Students and post-docs (Room C4 Biological Sciences)
b) Other delegates (Lancaster Environment Centre)

7.00-8.30pm: Dinner

8.30-late: Pub Night and Auction

Tuesday 6th January

Lecture Theatre 1: Conference Centre

9.30-10.30am: Special Lecture
Chair: Jim Callow

THE *THALASSIOSIRA PSEUDONANA* GENOME SEQUENCING PROJECT: REVEALING THE MOLECULAR SECRETS OF MARINE DIATOMS
Chris Bowler

10.30-11.30am: Refreshments and Poster Viewing/ Presentations

11.30-12.30pm: Applied Phycology
Chair: Matt Dring

11.30 BENTHIC DIATOMS AS INDICATORS OF NUTRIENT LOADING IN THE RIVER WYE
Martyn Kelly and Nicola Wiltshire

11.50 EARLY WARNING OF TOXIC CYANO-BACTERIAL BLOOMS
James S. Metcalf, Marianne Reilly and Geoffrey A. Codd

12.10 DIETARY SEAWEEDS AND BREAST CANCER PREVENTION
Jane Teas, Thomas Hurley, Larry Lamb and Helen Fitton

12.30-1.30pm: Lunch

1.30-4.45pm: The Manton Prize
Chair: Barry Leadbeater

1.30 INTRODUCTION
Barry S.C. Leadbeater

1.35 IS THERE A SYMBIOTIC RELATIONSHIP BETWEEN PERIPHYTIC BACTERIA AND THE GREEN ALGA *ULVA* (SYN. *ENTEROMORPHA*)?
Katrina Marshall, Maureen E. Callow, James A. Callow and Ian Joint

1.55 FREQUENCY OF SPATES AND BIOFILM DYNAMICS IN RIVERS
Joanne Moodie, Jackie D. Parry, Keith Beven and Alex Elliot

2.15 GROWTH AND PHOTOSYNTHESIS DURING MICROPHYTOBENTHIC BIOFIM DEVELOPMENT: AN INTEGRATED APPROACH IN A TIDAL MESOCOSM
Ed P. Morris, Rod M. Forster, Jan Peene and Jacco Kromkamp

2.35 THE CULTIVATION OF *PALMARIA PALMATA* FOR AQUACULTURE
Maeve D. Edwards, Matt J. Dring and K Lynn Browne

3.00-3.30pm: Refreshments (and arrival of special guests)

The Manton Prize cont...

3.30 CYANOPHAGES FROM THE BALTIC SEA
Caroline Jenkins and Paul Hayes

3.50 DO GRAZERS BEHAVE IN THE WAY THE FUNCTIONAL GROUP MODEL PREDICTS THAT THEY SHOULD?
Sara Marsham, Graham W. Scott and Michelle L. Tobin

4.10 USING CORALLINE ALGAE AS A BIOGENIC ARCHIVE
Charmaine Blake, Christine Maggs and Alastair Ruffell

4.30-5.00pm: Special Lecture

IRÈNE MANTON FRS (1904 - 1988) - LEGEND AND LEGACY
Barry S. C. Leadbeater

5.00-6.30pm: BPS 52nd AGM

7.00-8.00pm: Wine reception and canapés (Peter Scott Gallery)

8.00-late: BPS Formal Dinner Dance

Wednesday 7th January

8.30-9.30am: Registration (Conference Centre Foyer)

Lecture Theatre 1: Conference Centre

9.30-10.30am: Algal Taxonomy
Chair: Mike Guiry

9.30 REASSESSING THE SYSTEMATIC POSITION OF MONORAPHID DIATOMS
Eileen J. Cox

9.50 IS IT POSSIBLE TO DEFINE WHAT IS MEANT BY A SPECIES IN THE GENUS *PORPHYRA* (RHODOPHYTA)?
Juliet Brodie

10.10 The biogeography of Palmaria palmata (Rhodophyta)
Christine A. Maggs, Jim Provan and Remi Wattier

Lecture Theatre 3: Conference Centre

9.30-10.30am: Ecophysiology
Chair: Paul Hayes

9.30 **THE EVOLUTION OF SILICIFICATION IN DIATOMS: INESCAPABLE SINKING AND SINKING AS ESCAPE?**
John Raven and Anya Waite

9.50 MICROCYSTIN QUOTAS IN CYANOBACTERIAL COLONIES AND FILAMENTS
Louise F. Morrison, Fiona M. Young, Reyhan Akcaalan, James S. Metcalf and Geoffrey A. Codd

10.10 DMS AND RELATED COMPOUNDS DURING VIRAL INFECTION OF *EMILIANIA HUXLEYI*: A SECRET WEAPON?
Claire Evans, Willie Wilson, Peter Liss and Gill Malin

10.30-11.00am: Refreshments

Lecture Theatre 1: Conference Centre

11.00-12.20pm: Taxonomy
Chair: Chris Maggs

11.00 HEROIC FAILURE OR NEW DAWN? AUTOMATED IMAGE-BASED IDENTIFICATION OF MICROALGAE
David G. Mann, Stephen J.M. Droop, Y. (Julia) A. Hicks, A. David Marshall, Ralph R. Martin and Paul L. Rosin

11.20 GENETIC STRUCTURE OF A NORTH SEA *PSEUDO-NITZSCHIA PUNGENS* POPULATION Katharine Evans, Linda Medlin and Paul Hayes

11.40 CRYOBANKING: THE NEED FOR ACCURATE POST-THAW VIABILITY ASSESSMENT
Jane Pearson, John G. Day, Erica E. Benson and Keith Harding

12.00 ALGAEBASE: LISTING THE WORLD'S ALGAE
Michael D. Guiry

Lecture Theatre 3: Conference Centre

11.00-12.20pm: Ecology
Chair: Graham Scott

11.00 A HYPOTHESIS TO EXPLAIN THE ECOLOGICAL DISTRIBUTION OF CHRYSOPHYTES
Stephen Maberly, Lucy Ball and John Raven

11.20 CONTINUOUS OBSERVATION OF PHYTOPLANKTON PHYSIOLOGY AND PRODUCTIVITY USING FAST REPETITION RATE FLUORESCENCE DURING THE 2003 SPRING BLOOM IN THE ENGLISH LAKE DISCTRICT]
David J. Suggett, Stephen Maberly and Richard J. Geider

11.40 LAKE DEVELOPMENT, MEROMIXIS AND BIOLOGICAL STRUCTURE IN THE LOW ARCTIC OF WEST GREENLAND
N. John Anderson, Andrea Lami, Suzanne McGowan, Bianca Perren, Sergi Pla and David B. Ryves

12.00 DYNAMICS OF EPS PRODUCTION IN BENTHIC MARINE DIATOMS
Graham, J.C. Underwood, Astrid R.M. Hanlon, Matt Boulcott, Brent Bellinger and Mike Gretz

12.30 **Lunch**
BPS Council Meeting
(Room 8, Conference Centre)

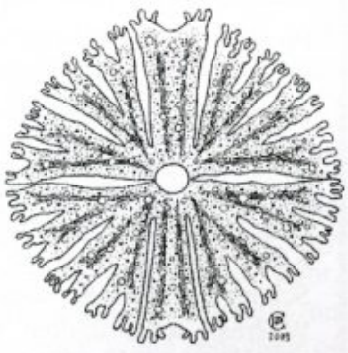
Freshwater Algal Identification Field Course Report

Christina Brodie

I arrived at my interest in algae via a somewhat unusual route. Originally having studied fashion and textiles, I moved on to botanical painting and drawing, eventually progressing to drawing microscopic subjects. An admirer of the work of artist Wim van Egmond, whose work can be seen online in microscopy magazine Micscape, and that of the 19th-century German artist Ernst Haeckel, author and illustrator of Art Forms in Nature, I was fascinated by the wealth of shape, form and texture to be found in their observations of microscopic plant life, and was inspired to create similar artwork. It being evident from my early attempts at pond dipping that I needed experience in collecting material, and a better understanding of the organisms viewed down my microscope, I enrolled on the Freshwater Algae course taught annually by Eileen Cox and Elliot Shubert at Kindrogan Field Studies Centre in Perthshire, Scotland.

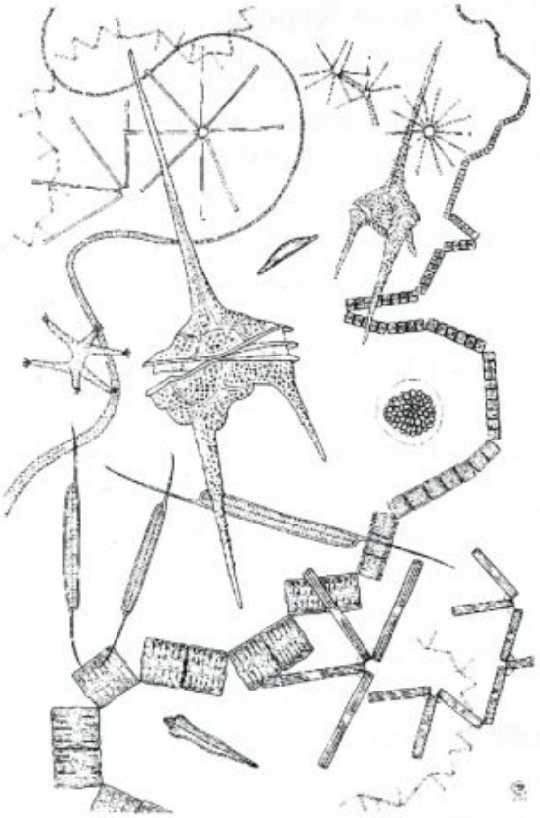
The course attracted a cosmopolitan range of participants, including biologists from water companies or environmental organisations, PhD students, artists (myself), or those for whom algae was, quite simply, a passion. For me, the course was a good introduction to the algae; for others, it offered a chance to build on prior knowledge.

A typical day would involve a short talk about one of each of the different groups of algae (for example, cyanobacteria or diatoms), a short excursion to a nearby locality to collect material, and identification using microscopes and an impressive selection of texts provided by Eileen and Elliot (Eileen's unique book Identification of Freshwater Diatoms from Live Material rapidly performed several circuits of the class). My main experience of algae had previously been limited to prepared slides as opposed to live material, and I mused on the challenge of following some of the more lively algae around a slide whilst simultaneously trying to draw them. Happily, my task was less difficult than I had expected; even the most meandering diatom, shape-changing euglenoid or tumbling, twirling dinoflagellate will gradually slow down after a while!



During the shorter excursions and the day-long midweek field trip, samples were taken from several localities within the stunning mountainous, forested and moorland Perthshire surroundings. These included lochs that varied in size and altitude, woodland and distillery streams, ponds, puddles and bird-baths! Examining the samples later in the laboratory, it soon became clear that the distribution of algal genera or species could be related to the natures of these water bodies. The water bodies themselves being micro-environments, prevailing environmental conditions within them, and frequency of species in a sample, could be shown to fluctuate considerably over a 24-hour period. A sister course, "Practical Algal Ecology", running simultaneously and partly taught by guest tutor John Kinross, provided data such as pH, temperature and dissolved oxygen measurements with which to correlate our records of the species found, therefore providing us with an enhanced understanding of species ecology.

By the end of the final day I was amazed to find that I had made drawings of about eighty to ninety different types of algae, approximately half the number we had successfully identified. Making annotated drawings of the algae found had proved invaluable to me over the week, enhancing my knowledge of algal genera and species and serving as an aide-memoire. The final task of the day was an algal count, followed by the time-honoured tradition of algal charades in the bar (which call more for an imitation of algal morphology than a "Give Us A Clue"-style approach, and which provided hilarious entertainment for the OU Geology students).



The course is to be highly recommended for its professionalism, its direct relevance to a wide spectrum of biological and environmental applications, high quality of teaching and resources and immaculate presentation of learning materials (a quick-reference booklet for us to keep). It is suited both to the professional who would like to improve their taxonomy, and to the beginner like myself, keen to develop their understanding of and interest in algae. I gained an immense amount from it, and would rate it as being excellent in every way.

Christina Brodie
Email: cmbrodie@supanet.com

Marine Diatom Parasitoids - A Neglected Group of Tiny Predators

Stefanie Kühn

Diatoms are a very successful group in aquatic ecosystems and a major group of primary producers in marine ecosystems. When Hensen (1887) coined the term "plankton", he pointed out that diatoms built up high biomasses and should, therefore, deserve special interest. He attempted to quantify diatom densities and estimate primary production. As loss factors of phytoplankton he considered grazing by animals and infections by parasites, as far as the latter were concerned, he never qualified nor quantified the impact of parasites on diatom mortality. In the following decades the concept of a size-related linear food chain dominated thinking in pelagic ecology and it was only in 1980s that realisation dawned on the scientific community that marine food webs are highly complex. The term "microbial loop" was introduced to describe relationships among microbial communities, but was then broadened into the concept of a "microbial network". Grazers of phytoplankton are generally considered to be larger than the algae, such as zooplankton, or of comparable size, such as dinoflagellates. Since the tiny organisms that infect diatoms were considered as "phycomycetes" or fungi, they became the domain of mycologists. Mycologists, however, established about 40 years ago the method to sample phycomycetes by baiting them with pine pollen. Hence, mainly saprophytic chytrid and thraustochytrid species were isolated and described, whereas all protists obligatorily infecting phytoplankton were missed.

In recent years, careful observation of living plankton has revealed that most of the planktonic diatoms in the North Sea (German Bight) are infected by various taxa of flagellated protists. This group of herbivores has occasionally been termed "parasitoid" in the limnic literature because they prey on organisms much larger than themselves and produce numerous offspring in the process. Unlike in parasitism, the unicellular hosts are invariably killed by the parasitoids, mostly within less than a day. Generally, parasitoids only infect healthy algae, especially since most parasitoids require intact host plasma membranes for their various feeding modes.

Phytoplankton parasitoids comprise various taxonomic groups, such as chytrids (fungi), oomycetes, plasmodiophorids, cercomonads, amoebae, euglenids, dinoflagellates, kinetoplastids, stramenopiles and species of unknown affiliation (e.g. Drebes and Schnepf 1998, Drebes et al. 1996, Kühn 1997, Kühn et al. 1996, Norén et al. 1999, Schnepf et al. 2000, Schweikert and Schnepf 1996). Whereas some diatom parasitoids remain during feeding with their body outside the frustule, others

invade the host cell. Some parasitoids, e.g. chytrids and oomycetes take up nutrients osmotrophically, others have developed characteristic modes of phagocytosis. The stramenopile nanoflagellate *Pirsonia,* for example, squeezes a pseudopod into the cell, species-specifically either between the girdle bands or through the rimoportulae (tubular openings in the frustule). This specialised pseudopod phagocytises and digests the diatom protoplast. Digested material is then transported into the part of the body that remains on the outside of the frustule, which grows, divides and forms offspring (Drebes et al. 1996). Contrastingly, the cercomonad *Cryothecomonas aestivalis* enters the diatom and phagocytises the entire host protoplast before dividing inside the frustule and thus forms offspring (Drebes et at. 1996).

Since many parasitoids are colourless nanoflagellates and do not preserve well when fixed they are likely to remain unrecognised in plankton samples counted with the traditional Utermöhl technique. Most parasitoid protists are specialised on only one or a few host species. For freshwater ecosystems it has been assumed that infections by host-specific parasitoids can alter the abundance, composition and succession of phytoplankton populations (Van Donk 1989). Reports on epidemic infections (characterised by rapid changes of infection rates leading to high prevalence of infection) among marine diatoms are still scarce but imply that the impact of parasitoids on the planktonic community has been largely underestimated: the oomycete *Lagenisma* infected up to 92% of the *Palmeria hardmania* population from Kingston Harbour, Jamaica (Grahame 1976), and up to 42% of *Coscinodiscus granii* and 58% of C. concinnus in Dutch coastal waters (Wetsteyn and Peperzak 1991). More than 65% of *Guinardia flaccida* was infected by *Pirsonia* sp., and up to 35% of *Guinardia delicatula* was invaded by *Cryothecomonas aestivalis* (Tillmann et al. 1999; the dinoflagellate *Gyrodinium undulans* killed 85% of an Odontella aurita population (Drebes and Schnepf 1998). Epidemics, however, occur only sporadically and are not predictable but coincide generally with periods of high diatom growth and water temperatures of 15°C or higher.

Laboratory studies on the interactions between *Pirsonia* and its host *Coscinodiscus* showed that spreading of infections was not only determined by physico-chemical parameters (temperature, light, turbulence, pH) but also depended strongly on internal biological factors, such as the behaviour of the flagellate (e.g. chemosensory responses, swimming patterns, age of flagellates, selectivity for host species and individual host cells), and varying susceptibility of host diatoms to infection (Kühn and Hofmann 1999). In experimental cultures, no resistant diatom host strains developed. Different susceptibilities, and even resistance, of the marine diatom *Licmophora juergensii* isolates to infections by the oomycete *Ectrogella* were reported by (Raghukumar 1978), and it was considered that this was caused by genetic differences of the diatom isolates.

Why are most parasitoids specialised on only one or a few host species? It is generally acknowledged that among prey and predators an evolutionary arms race of selection pressure forces prey to evolve strategies to avoid predation (Verity and Smetacek 1996). Conversely, predators have to evolve means to counteract improved defence mechanisms of prey. Diatoms are unicellular plants that have their protoplast enclosed in a siliceous cell wall. Although the frustule does not prevent ingestion by copepods when sizes are compatible there is circumstantial evidence that intact frustules could be the result of an unspecific basic resistance against infection by parasitoids. *Rhizamoeba schnepfii*, an amoeba specialised to feed host-specifically on marine diatoms, starved on intact *Coscinodiscus granii* or *Odontella obtusa* cells but fed successfully on protoplasts with damaged frustules (Kühn 1996). Likewise, some *Pirsonia* species were visibly chemotactically attracted by diatoms but then either failed to attach to the frustule or penetrate although the flagellates attached to naked protoplasts.

The examination of ribosomal SSU sequences of phytoplankton parasitoids, e.g. *Phagomyxa* and *Cryothecomonas,* indicate that differences in nucleotides among parasitoids strongly reflect differences in their host ranges (Kühn et al. 2000, Bulman et al. 2001). Host specificity has also been observed for strains of the marine parasitic dinoflagellate *Amoebophrya ceratii* (Koeppen) Cachon, an obligate parasite of other dinoflagellates with genetic divergence among strains (Coats and Park 2002, Gunderson et al. 2002). Phylogenetic analysis of *Cryothecomonas* suggested that the species with the broadest host range evolved prior to the separation of the other two strains with a much narrower host range, evolution thus perfecting parasitoids in their host specificity. Phylogenetic studies with *Pirsonia,* however, do not support this assumption as the species with the broadest host

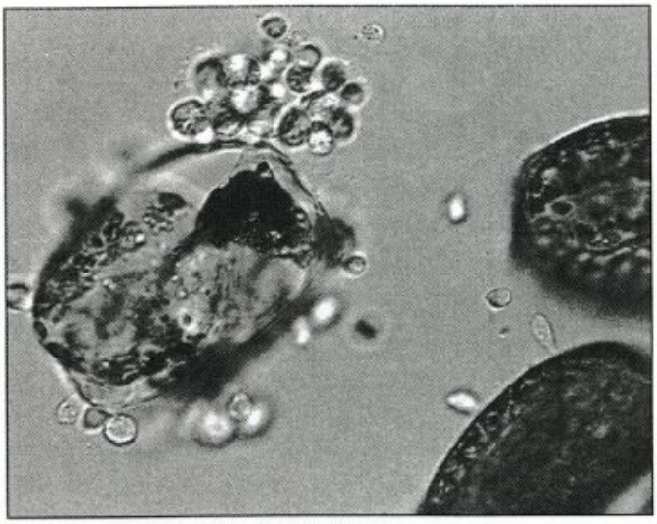
range apparently evolved last.

Surprisingly, there are no recent reports on the occurrence of diatom parasitoids from oceanic regions other than the German Bight (North Sea). Some parasitoids must have been introduced together with their non-indigenous hosts to the North Sea, as e.g. *Amoeba biddulphiae*. This amoeba was described by Zuelzer (1927) to only feed inside *Odontella sinensis*, a diatom from the Indio Pacific which had only been observed two decades previously in the North Sea for the first time. Likewise, *Thalassiosira punctigera* is not indigeneous to the North Sea but was observed here to be infected by a very host specific parasitoid, *Pseudaphelidium drebesii* (Schweikert and Schnepf 1996). However, a shift in the availability of hosts may also affect the survival of parasitoids: The large *Coscinodiscus* wailesii only appeared in the North Sea about 30 years ago and now seems to supersede *C. granii*. For many years, beginning mid-August, *C. granii* was infected by the oomycete Lagenisma, which was then increasingly found inside *C. wailesii,* but has not been observed for the last 5 years.

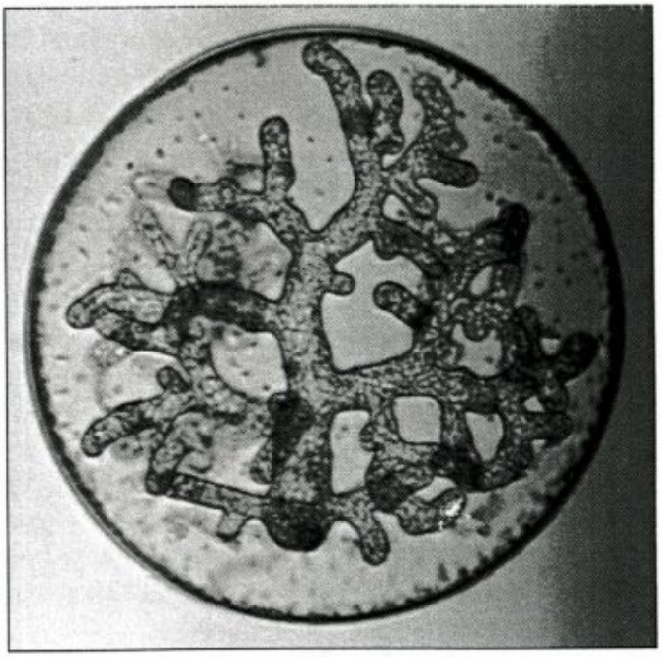
There are still many open question on parasitoids, for example their spatial and temporal occurrence, autecology and role in the marine food web. Phytoplankton parasitoids are an interesting group of protists and certainly deserve more scientific attention.

Figures

1. A **plankton sample** collected from the German Bight (North Sea) in September. Several infections by various parasitoids are indicated (arrows).



2. Infection of ***Thalassiosira punctigera*** by *Pirsonia punctigerae*. The flagellates get access to the diatom protoplast by penetrating the frustule through openings (fultoportulae) with specialised pseudopod that is then used for phagocytosis and digestion.



3. ***Lagenisma coscinodiscii*** infecting *Cosinodiscus wailesii.* This parasitoid is easily recognised once its conspicuous sporangium is formed.

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Stefanie Kühn

Email: skuehn@uni-bremen.de

Mrs Alfred Gatty (1809-1873), Author of "British Seaweeds"

Frank Evans, 15 Thirlmere Avenue, North Shields, NE30 3UQ.

Mrs. Alfred Gatty is today remembered by three separate groups of people for different aspects of her legacy. These are firstly her children's stories, secondly her sundial book and thirdly her seaweed volumes. In all these fields she produced remarkable work.

She was born Margaret Scott on 3 June 1809. Her mother was Mary Ryder who, in 1807 had secretly and against her family's wishes married a clergyman twice her age. The clergyman was Rev. Alexander Scott, DD. He was a former naval chaplain and a man with a considerable claim to fame for Admiral Nelson had died in his arms at the Battle of Trafalgar in 1805.

Immediately after Trafalgar Scott had come ashore to a parish at Southminster, about three miles north of Burnham on Crouch, but from there in 1817 had moved to a larger parish in Catterick. At this time he was also appointed a royal chaplain. Meanwhile Mary Scott had borne him two daughters, Horatia in 1807 and Margaret in 1809, followed by a short-lived son. Sadly, Mary died at the age of twenty six when Margaret was only two. The motherless children spent part of their growing years with their father in Catterick and part with the Earl and Countess of Tyrconnel who lived nearby - a couple said to be childless, wealthy and probably bored. They also visited Ryder relatives in Hendon and from there had easy access to London, where the growing Margaret spent much time in the Print Room of the British Museum, copying prints. She possessed many skills and had considerable artistic talent including an interest in etching on copper. As a young woman she received painting lessons in the fashion of the time but her forte, as she in time discovered for herself, lay in drawing in pencil. She played the piano and spoke several languages, being apparently self taught. These languages included French, German, Latin and Italian and she even attempted Chinese. For a time she kept her diary in German, writing it up in black letter script. Some of her translations from German and Italian, including verses from Dante's "Inferno" were published around 1830. This linguistic facility had been inherited from her father and in time passed to her second daughter, Juliana. At one point in her life Juliana noted that her library included books in twenty five different languages.

During the period up to her marriage we may imagine Margaret Gatty pursuing the interests of a young woman from a good family in provincial surroundings, supervising the household, formally calling and receiving, and attending balls and functions. However, it is likely that she and her older sister also followed the clerical tradition of the time in acting as unpaid curates to their father.

One day in 1839 a young priest named Alfred Gatty arrived in the Vicarage for a visit. He was the man Margaret was to marry. He had been invited from a parish ten miles away to spend a few days with Rev. Alexander Scott. After some vicissitudes Alfred Gatty and Margaret Scott were married on 8 July 1839.

Alfred Gatty was born in 1813 and was thus four years younger than Margaret. He was the son of a well-to-do solicitor who practised in central London, and it was there that Alfred was born. A small event of his childhood was his acquaintance with Admiral Bligh, on whose knee he sat from time to time. The admiral wore around his neck a bullet suspended on a blue ribbon. This was the bullet which had been used to weigh out allowances of food during the heroic open boat voyage following the "Bounty" mutiny. From Admiral Bligh the bullet in time came into the possession of the Gatty family.

From Charterhouse and then Eton the young man went up to Oxford, graduating with a BA in 1836. He entered the church and became curate in charge at Bellerby and it was from here that he visited Alexander Scott. Following the wedding it was arranged that Alfred Gatty should become curate in charge at Southminster, the parish still held in plurality by Alexander Scott. But the unexpected death of the Vicar of Ecclesfield, an aged Ryder relative of Scott's wife, Mary, altered this arrangement dramatically. The living was in the gift of another Ryder relative, who despite Alfred's youth proceeded to appoint him to Ecclesfield as vicar. And there he remained for the next sixty four years accompanied, for thirty four of them until her death, by Margaret.

Married at thirty, Margaret proceeded to bear ten children, eight of whom survived to adulthood and

most of them to a considerable age. Of the eight, four were boys and four girls. Some became distinguished and two of the sons were knighted. The oldest boy, Reginald, had a law degree from Cambridge and in time took holy orders, becoming a vicar like his father. The second son, Alfred, rose to become Garter King of Arms. He began his working life as a prolific popular song-writer and hymnodist and is perhaps still remembered today for his hymns. He changed his name from Gatty to Scott-Gatty and was knighted in 1904. The Gatty family made extensive use of nicknames and Alfred was known in the family as "Brownie". It is said that this name, having crept into one of Juliana Gatty's children's stories, a fairy story called "The Brownies", was picked up by Lord Baden-Powell as the name for the junior branch of his newly formed Girl Guide organisation. Lady Baden-Powell later confirmed this.

The third son, Stephen, also became a lawyer and practised as a barrister before becoming a colonial law officer. His final post was as Chief Justice of Gibraltar. He, too, was knighted. The fourth son, Charles, unlike his brothers did not go to university. He had a varied life as an author, shopkeeper in central London and parliamentary candidate.

Mrs. Gatty's first-born was her daughter Margaret, known as Madge. Madge's life's work appears to have been to marry a local squire and bear him nine sons. The second daughter, Juliana, ("Julie") is probably the one best known to the world. Unlike her siblings she died fairly young, aged only forty three, but during her working life she continued in her mother's tradition of writing children's stories. She was renowned in the family as a teller of tales and her mother's publication, "Aunt Judy's Magazine" gave her an outlet for many of them. In all she wrote over a hundred stories before her unfortunate early death from cancer, leaving behind numerous volumes of tales.

The third daughter was Horatia, known in the family as Dot. (It may be noted that the names Scott, Nelson, Horatio and Horatia abounded among the Christian names of the Gatty children.) Horatia was the child whose interest in collecting most paralleled Margaret Gatty's. She was said to have become a minor authority on seaweeds at an early age. She accompanied her mother on all her seaweed collecting expeditions and undertook much of the laying out and preserving of specimens. She was later to take a large part in continuing her mother's work with "Aunt Judy's Magazine", being first joint editor with her sister Juliana and subsequently sole editor. The year before her mother's death she saw Mrs. Gatty's two books, "The Book of Emblems" and "The Book of Sundials" through the press. Horatia lived to a great age, dying in 1945 within two months of her hundredth birthday.

The fourth daughter of the family was Undine ("Diney"). She was born in 1848 and it was in this year that Mrs. Gatty retired to Hastings for some five months to recover from the birth and it was then that she first took up her interest in seaweeds.

Margaret Gatty, by this time nearly forty and having borne seven children, was doubtless a little weary. Although not very domesticated (for the first twenty five years of her occupancy there were no curtains in the vicarage dining room) there were for her the constant strains of motherhood and worries about money. A court case about an inheritance was not settled in her favour until after her death. Her husband's incumbency of the parish was at first a temporary one. But her character has been described as that of a scientist.

During her life she evoked an interest in fungi, she introduced homeopathy into her family and welcomed the use of chloroform, especially in dentistry and childbirth and indeed made use of this new anaesthetic herself on such occasions.

Although much of her energy went into the production of children's stories her interests, her powers of observation, her orderliness, accuracy, curiosity and persistence were those of a researcher. She had always been a collector and her gathering of mottoes, particularly sundial mottoes, began as a girl. Here, in seaweeds and away from domestic cares, was a new and totally untested field for her to sample.

Her granddaughter, Christabel Maxwell wrote of her: "She threw herself into her new hobby with the enthusiasm of youth and studied voraciously all that she could find on the subject. She collected seaweeds wherever she went and encouraged her friends to do the same; she kept an aquarium and welcomed rapturously any addition to it; and her letters became full of strange drawings and algological names." She began to put together hand-prepared books of seaweeds and to sell them to friends; the profits from this endeavour she distributed among the needy of Ecclesfield parish.

Her absorption in the subject prompted Juliana to compose a parody of Charles Kingsley's "Sands of Dee", the first couple of verses of which ran:

O Gattys! Go and call your mother home,
Call your mother home
At least in time for tea!
The breakfast, lunch and dinner go and come
Unheeded, at the sea.

The creeping tide came up along the sand,
And round and round the sand,
But not a step moved she.
Her children shouted to her from the land.
She shouted to the sea.

It was while she was at Hastings that a local doctor introduced her to the work of Professor William Harvey of Trinity College, Dublin. His Phycologica Britannica (1846-51) was currently appearing and Margaret Gatty fell upon it. She commenced an extensive correspondence with him which lasted for ten years until he finally called at the Ecclesfield vicarage to meet her. He described her in the following words: "She is slight, tallish and intellectual looking and withal quiet: at least as yet nothing very mercurial has broken out. But there is evidently the mercury below the surface.." Their accord was immediate and she obtained his permission to produce, with some guidance from him, her popularising version of his book. This appeared in two volumes in 1863 under the title: *British Sea-Weeds. Drawn from Professor Harvey's "Phycologica Britannica".* In them she attempted to avoid technical terms (*ramuli* become *branchlets,* etc.) and to keep her presentation simple.

A comparison of the two works shows that Margaret Gatty's illustrations are original and she did not make direct use of the plates of the earlier publication. It is likely from an occasional resemblance that she did not see all the species she lists but redrew some of her nearly four hundred figures from Harvey.

The other possible source for her illustrations would have been "Nature-Printed British Seaweeds" by Johnstone and Croall (1859), but the prints of these authors are different again.

Mrs. Gatty's "Seaweeds" was in use by students well into the twentieth century until the nomenclature finally became badly outdated and newer publications displaced it. Modern readers will find

the long introduction to her work of historical interest. In it Mrs. Gatty describes the appropriate attire for a lady shore collector of her time. On the subject of petticoats she says: "If anything could excuse a woman for imitating the costume of a man, it would be what she suffers as a seaweed collector from those necessary draperies." Trousers were impossible, of course. And: "Verily we women are all 'more or less' (as seaweed descriptions have it), at the mercy of our dress!" But she strides across the shore devoid of jewellery, in her boy's boots and her woollen skirt, wearing no shawl or draping lace until we may encounter her, as she says, face down on a rock, peering into a rock pool for half an hour at a time, collecting weed. From her introduction we learn of places where she collected, Filey, Scarborough, Berwick, Douglas in the Isle of Man and the Scilly Isles, to which must be added Hastings. Mrs. Gatty's extensive collection of seaweeds is currently held at the Weston Park Museum, Sheffield.

During much of her married life Margaret Gatty wrote stories for children. Her first book, entitled "The Fairy Godmothers", appeared in 1851 and by the time her seaweed book was published, twelve years later, the number of her children's books had also risen to a dozen. These included "Parables from Nature", which became a series, continuing until the fifth and last of the issue in 1871. It is indicative that she requested for payment for her "Fairy Godmothers" not a royalty but a copy of "Dr. Johnston's book on zoophytes". This would presumably be the 1847 edition of A History of the British Zoophytes by the Berwick physician George Johnston. For the second edition of her own book she received from the publisher a copy of A History of the British Sponges and Lithophytes by the same author. Over the years she visited Johnston, collected with him and corresponded with him from the time of her first interest in seaweeds up to his death in 1855.

From 1866 she edited a new monthly magazine for

children for the publishers Bell & Daldy, which she called "Aunt Judy's Magazine". For this she was paid £10 a month, all of which she appears to have passed to her husband. The magazine continued for some years after her death, edited first jointly by her daughters Juliana and Horatia and subsequently by Horatia alone until its demise in 1885. During the life of the magazine its readers contributed through Margaret Gatty and her daughters towards a fund for the Great Ormond Street Hospital for Children in London. By 1871 £1000 had been raised and an Aunt Judy's Cot was established, to be joined by a second in 1876, and other gifts followed.

In 1863, at the height of her literary and scientific powers, Margaret Gatty's health began to fail. She started to suffer the initial symptoms of the paralysis which would eventually be the cause of her death. Over the next ten years she slowly deteriorated, finding it difficult and then impossible to write, first with her right hand and then with her left, and suffering the advance of what is now believed to have been multiple sclerosis. She died on 4 January 1873. In the year before her death she published two volumes that represented another aspect of her life's interest. The first was a book of a hundred and twenty four pages entitled "The Book of Emblems". In the book she takes mottoes of various sorts and writes two to four pages about each, with the addition of a picture. Examples of the thirty one rather odd titles are:- "The hunchback sees his neighbour's hump, not his own," and "Roasted pigeons fly into nobody's mouth."

The second book of 1872 was more significant and while the emblem book collected together a few mottoes "The Book of Sundials" represented a lifetime's work of recording sundial mottoes. The first edition was hers with a few continental additions by Eleanor Lloyd, a family friend. It contained 377 sundial mottoes. In 1889 a second edition was produced by her daughter Horatia, again with the assistance of Miss Lloyd. It was much enlarged, listing 759 dials and now included an appendix on dial construction. This was contributed by Wigham Richardson, a Tyneside shipbuilder who in time was to unite with Swan and Hunter to form Swan, Hunter and Wigham Richardson, the builders of the famous liner "Mauritania".

A third edition, little changed from the second, appeared a year later. The fourth edition and the one best known and now much sought after was brought out in 1900. It was completely rewritten by Horatia and Miss Lloyd, being enlarged to 530 pages and with many line drawings and a few photographs. The number of dial mottoes rose to 1682. Astronomical tables were added, together with a section on portable sundials. The final result is magnificent but most credit must go to Horatia Eden as she had now become. It is nevertheless a most fitting tribute to Margaret Gatty.

And what of her husband following her untimely death? He had settled comfortably into the parish and was respected by his parishioners to the extent that they contributed the sum of £120 to pay for the expense of a Doctorate of Divinity from Oxford for him. (Were such doctorates really bought and sold by universities in those days?). He continued as vicar of Ecclesfield for the next thirty years and in 1887 married again, a woman twenty four years younger than himself. He died in 1903, ending the Gatty connection with the parish and leaving a small literary legacy. But of the many remarkable Gattys the most outstanding of all was the one who always wrote under the name "Mrs. Alfred Gatty".

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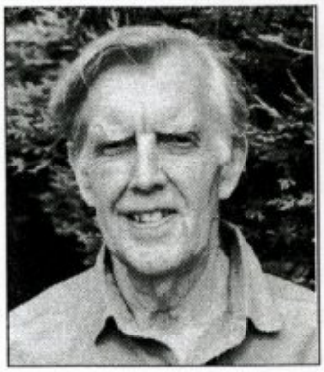
Professor Alan J. Brook Appointed MBE



Alan Brook has spent his research career studying freshwater algae and particularly desmids. A botany graduate of Kings College, Newcastle (then part of the University of Durham), after war service in the RAF, he gained his PhD in 1949 for a thesis on the algae associated with the slow sand filter beds of waterworks. In the same year he was appointed to a lecturership in the University of Khartoum, Sudan, and here began studies on the ecology of Nile river phytoplankton. He continued his studies on algae when appointed botanist at the Freshwater Fisheries Laboratory, Pitlochry, Perthshire, here studying the effects on algae following the enrichment of Scottish hill lochs with mineral nutrients. It was in his study of oligotrophic lochs of the area that their desmids first captured his attention. A move to the University of Edinburgh and a lecturership in botany meant that lochs, lochans and peat bogs were still easily accessible, so that his special interest in desmids continued. He was awarded a DSc by the University Edinburgh in 1962 and elected a Fellow of the Royal Society of Edinburgh in the following year. He moved to the US in 1964 to become a Professor of Botany at the University of Minnesota, later becoming Professor and Chairman of the newly-established Department of Ecology and Behavioural Biology in that University. In the United States his research interests turned from desmids to blue green algae (cyanobacteria) and especially the latter's occurrence and seasonal distribution in meromictic lakes. Returning to the UK in 1973, he became Reader in Freshwater Biology at the University of Reading but at the same time helped in the establishment of the Independent University College of Buckingham (now the University of Buckingham). At Reading he returned to desmids and wrote his Biology of Desmids, published as a Blackwells Botanical Monograph; at the same time he began to study the accumulation of group II metals by these algae. He moved to Buckingham in 1978 to become Professor of Life Sciences, Dean of Science and later Pro-Vice Chancellor. On his retirement, he forged research links with the Nuclear Physics Department in Oxford, and in collaboration with their Scanning Proton Microscope Unit, continued to study further aspects of the accumulation of the elements strontium and barium by desmids. Recently he has contributed, with David Williamson, the desmid chapter to the new Freshwater Algal Flora of the British Isles, of which he is also one of the editors. The first volume of the British Desmidiaceae is soon to be published by the Ray Society. He has written or co-authored some 100 papers on the ecology, taxonomy and physiology of freshwater algae.

Alan Brook is a keen musician and has for the past 15 years been co-director of the Buckingham Summer Festival, in which performers of national and international reputations participate. For his contribution to the musical life of Buckinghamshire, he was appointed MBE in the recent Queen's Birthday Honours List.

Thanks to Pat Brook for supplying this biographical sketch.

51st Annual General Meeting of the British Phycological Society, National University of Galway, 4pm on the 4th January 2003

Present: 26 members were present.

Apologies: None

1. Minutes of the 50th AGM held 4th January 2002

The minutes were approved. Proposed by Matt Dring and seconded by Mike Guiry.

2. Matters Arising

There were none

3. Presidential Report

(i) Eileen Cox reported that the 50th Winter Meeting held at Greenwich had been a success and thanked everyone for their contributions.

(ii) She reported that since the Freshwater and Marine Algal Floras were complete, those committees had been terminated. Three new committees had been formed:

Conservation & Biodiversity Committee (Chair – Juliet Brodie)
to discuss matters that were previously discussed by the algal flora committees.
Communication & Education Committee (Chair – Jackie Parry)
to increase the profile of the Society and increase membership and retention.
Awards & Training Committee (Chair – Eileen Cox)
formally the Algal Affairs Committee and would manage bursaries, student applications for funding etc.

(iii) The terms of office for eight members of Council had come to an end. Many thanks were due to Juliet Brodie, Murray Brown, Dick Crawford, Chris Gibson, Linda Medlin, Bruce Osborne, Mike Guiry & Graham Scott although Mike Guiry had become Vice-President Elect and Graham Scott, the Hon Membership Secretary. Jackie Parry was the new Secretary but Council still had a vacancy for Hon Editor of The Phycologist. Volunteers for the latter were welcomed.

(iv) Members were informed of the death of Prof. Maud Goodward, aged 92. She was one of the first ordinary members of the Society's Council and an obituary will be prepared for the next issue of The Phycologist. It was suggested that either John Dodge or Gordon Leedale might be an appropriate author.

Barry Leadbeater to approach John Dodge and Gordon Leedale

3. Reports from officers

a) Honorary Secretary

Juliet Brodie reported that 39 papers and 37 posters had been presented at the meeting. Thanks were due to all authors, those that chaired sessions and the judges of the Manton and Poster Prizes. Thanks also went Mike Guiry for hosting the meeting and Ailbhe for ensuring it ran smoothly.

b) Honorary Treasurer

Elliot Shubert spoke to the financial document and highlighted that the financial position of the Society was very good and there were no anticipated increases in subscription rates. The journal had continued to perform well financially and Taylor & Francis had provided a one-off payment of £10K and had agreed to award an annual student prize, which would start next year. A total of £4285 had been awarded to students to attend conferences and the algal identification course, and to fund summer bursaries. This funding had increased from the previous year (£2679), primarily due to the reintroduction of the summer bursary scheme.

c) Honorary Membership Secretary

Juliet Brodie spoke to a paper produced by Murray Brown. The membership was in decline and there was a need to increase recruitment and retention in the future. The Communication and Education Committee would address this problem while the Membership Secretary would concentrate on subscriptions etc. She thanked Murray for his role as membership secretary and wished his successor, Graham Scott all the best in his new role.

Q: Brian Whitton asked for the names of the three members who had died this year. As appropriate, obituaries should be included in *The Phycologist.*

Jackie Parry to contact Graham Scott

d) Honorary Editors of the EJP

Chris Maggs reported that the Journal was doing better than ever with (i) the impact factor increasing from 1.276 to 1.351, (ii) 53 papers being published compared to 41 the previous year and (iii) the presence of a new associate editor, Dr Ichiro Mine from Kochi, Japan. Preparations are complete for the change from CUP to T&F and transition will be smoothed by the retention of the copy editor. The Feb 2003 issue is on course for timely publication. She paid tribute to Susan Loiseaux-de Goer who on her retirement had published her last paper in the journal and provided the design for the front cover.

Eileen Cox thanked Chris Maggs, Matt Dring, the editors and reviewers for all their hard work.

e) Honorary Editor of The Phycologist

Bruce Osborne gave an overview of the current situation of The Phycologist, which was not good. The lack of material from members meant that the publications were thin. As he had retired from his position as Hon Editor, he left just one message:

"Please submit material. The success of the Phycologist depends on you!!!!"

Material that would be considered useful includes meeting reports, historical information, phycological tips, reports on courses, jobs etc. He thanked all those who had contributed something and which his successor (yet un-appointed) all the best.

Eileen Cox thanked Bruce for his work with the publication and informed members that there would no longer be three editions of the Phycologist per year. Instead there would be two – one in Spring and one in Autumn. She assured members that the Spring edition would be circulated even if a full-time editor had not been appointed.

f) Algal Affairs

Chris Gibson spoke to his report, highlighting that more money than ever had been paid out to students for bursaries and travel to conferences and courses. He stressed that there were funds available for students and encouraged members to view the details on the Society website. He was particularly excited that students from Eastern Europe had attended the Winter Meeting and encouraged Council to expand this. He thanked all the reviewers he had used in the past and informed members of his retirement as chair of this committee. The new committee (Awards and Training) would be chaired by Eileen Cox.

Eileen thanked Chris for chairing this committee.

g) Freshwater Algal Flora Committee

Dave John reported that the launch of the publication, held at the Natural History Museum, had been a great success. Over 100 people attended and included the authors, David Bellamy and guests. The book was publicised via (i) an article in The Guardian newspaper, (ii) a 12 minute slot on Material World (BBC radio 4) and (iii) and article in the FBA Forum. Sponsorship of £15K meant that the cost of the book was reduced from £100 to an affordable £75 which was considered good value for money (at 700 pages and a CD-Rom). 900 copies had been printed during the first run and the second run (500 copies) will occur shortly, as corrections have already been made to the first edition. Dave John thanked the Society for funding the project.

h) Marine Algal Flora Committee

Juliet Brodie spoke to the paper produced by Bob Fletcher. The final meeting mainly concentrated on reviewing the progress within the flora volumes and the mapping project. The Rhodophyta by Juliet Brodie, The Cyanophyta by Brian Whitton and the Mapping Scheme by Mike Guiry (and Gavin Hardy) are in press but The Fucophyceae is not. BF envisages the completion of a final draft in early 2003. Bob also expressed thanks to all who had been involved

Eileen echoed Bob's thanks to all those involved in the project and particularly to Mike Guiry, without whom, the mapping Scheme would never have been completed.

Eileen Cox moved that the reports be accepted. Proposed by Mike Guiry and Seconded by Paul Hayes. Eileen then thanked the Council members.

4. Election of the Members of Council

Eileen Cox informed the members of the changes to Council membership.

(v) Eileen Cox was to become Immediate Past President
(vi) Barry Leadbeater was the new President of the Society
(vii) Mike Guiry was the new Vice-President Elect
(viii) Jeanine Olsen was the new Overseas Vice President
(ix) Jackie Parry was the new Secretary
(x) Graham Scott was the new Membership Secretary

Four places for ordinary members were available on Council. Three were for three years, to replace Bruce Osborne, Linda Medlin and Murray Brown, while one was for one year; the final year of Jackie Parry's ordinary membership. No call for nominations had been published in The Phycologist and Eileen Cox apologised for this oversight. Council had therefore suggested the following nominees, who had been approached during the conference,

For the three year posts
Dave John, Stephen Maberly and Dagmar Stengal

For the one year post
Thomas Wiedemann

The members were happy for these nominees to be become members of Council.

Eileen Cox reported that Council had considered co-opting a student member onto Council and this was Charmaine Blake. If this proved successful after a 1 year trail period, the constitution would be changed. Members were happy with this idea.

5. Auditors

The Society will remain with the current auditors. Proposed by Mike Guiry and seconded by Graham Underwood.

6. Any Other Business

(i) Eileen Cox informed members that the production of a Jubilee Review was in progress and was being co-ordinated by Trevor Norton. The book should be available for distribution at EPC3
(ii) Matt Dring reminded members of the dates for EPC3 (21-26th July 2003) and its location (Queens University, Belfast). Members were encouraged to distribute flyers to publicise the event.
(iii) Eillen Cox informed council members that the next Council meeting would be held immediately after the AGM.
(iv) Ailbhe Macken commented that, since the Society was experiencing a decline in

membership and new members were being sought from the rest of Europe, the name of the Society might require changing i.e. remove the 'British'.

(v) Eileen Cox thanked Mike Guiry and his team for a very relaxed and successful conference and hoped that this would not be the only time the Winter meeting was held outside of Britain.

(vi) Barry Leadbeater echoed Eileen's thanks to Mike and also thanked Eileen for her work as president over the past two years.

The meeting ended at 5.15pm.
Jackie Parry

New Student Member of BPS Council

My name is Charmaine Blake and I'm the student representative for the BPS for the following year. I'm currently in the 3rd year of my PhD at Queen's University Belfast working on isotope records in maerl forming corallines, supervised by Christine Maggs.

The BPS would like to get feedback from all members about what they want from the Society and this includes what student members want! Please respond by filling in the questionnaires circulating this autumn. There are opportunities for student members to become more involved and ideas for an annual student meeting/workshop are currently being investigated. We could also have a student section of the Phycologist where students could ask for feedback on their projects etc. We would greatly appreciate any further ideas from student members.

Student membership is very reasonable and student presentations are always encouraged at the winter meeting with the Manton prize and also an additional prize for student posters. Don't forget not only does the Society offer financial support for student members attending its own meeting, but also for other conferences and field courses!

At the 2004 winter meeting in Lancaster a wine reception is planned specifically for the students and 'new-post-docs', and this should be a great opportunity for students to get together. Myself and Graham Scott from University of Hull will hosting it and we look forward to seeing you all there, with all your ideas!

Feel free to email me about BPS matters

See you in Lancaster!

Call for Nominations for BPS Council Officers

The term of office of our Treasurer and three ordinary members have been completed and the BPS Council therefore welcomes nominations for these posts to start in January 2004. Nominations in writing along with confirmation from the nominee that they are willing to stand should be sent to the Council Secretary, Jackie Parry, Department of Biological Science, Lancaster University, Lancaster, LA1 4YQ, UK, email: j.parry@lancaster.ac.uk by December 1st 2003.

The Annual General Meeting of the British Phycological Society will take place at 5.00 pm on Tuesday January 6th 2004 at The Lancaster University Conference Centre.

2003
British Phycological Society
Council Officers (January to January)

President
Dr Barry SC Leadbeater (2003-2005)
President Elect
Prof Mike D Guiry (2003-2005)

Immediate Past President
Dr Eileen J Cox (2003-2005)
Vice Presidents
Prof Mike D Guiry (2003-2005)
Dr Jeanine L Olsen (overseas; 2003-2005)

Hon Secretary[1]
Dr Jackie D Parry (2003-2006)

Hon Treasurer[2]
Prof L Elliot Shubert (2001-2004)

Hon Membership Secretary[3]
Dr Graham Scott (2003-2006)

Editor of the Phycologist[4]
Dr Alison R Taylor (2002-2006)

Webmaster
Prof Mike D Guiry

Editors of the European Journal of Phycology
Dr Christine A Maggs (1994-)/Prof Matt J Dring (2000-)

Ordinary Members of Council
(3-year term of office)

Dr Paul Hayes (2001-)
Dr Rod Forster (2002-)
Dr Steven C Maberly (2003-)
Dr Maureen Callow (2001-)
Dr Graham Underwood (2002-)
Dr David John (2003-)
Dr Thomas Wiedemann (2003-2004)
Dr Dagmar Stengel (2003-)

Addresses

1. Dr Jackie D Parry
Dept Biological Science
Lancaster Univesity
Lancaster LA1 4YQ
UK

Email: j.parry@lancaster.ac.uk
Tel: +44(0)1524 593489

2. Prof L Elliot Shubert
Dept of Botany
The Natural History Museum
Cromwell Road
London SW7 5BD
UK

Email: e.shubert@nhm.ac.uk
Tel: +44(0)207942-5606

3. Dr Graham Scott
Dept Biological Sciences
University of Hull
Hull HU6 7RX
UK

Email: g.scott@hull.ac.uk
Tel: +44(0)1482466424

4. Dr Alison R Taylor
Marine Biological Ass.
The Laboratory
Citadel Hill
Plymouth PL12PB
UK

Email: arta@mba.ac.uk
Tel: +44(0)1752633348

Instructions for Contributors

Copy which is submitted for publication in 'The Phycologist' should be concise and informative. Articles should be scientifically sound, as jargon free as possible and written in a readable scientific magazine style. Unless absolutely essential references should not be included. All types of relevant material will be considered, these include job advertisements, scientific reports, book reviews, news items of topical interest, meeting announcements, grant awards, promotions, appointments, profiles of eminent phycologists and obituaries. If you are interested in submitting material that does not fall within any of these broad categories, or you are unsure of the appropriateness of a potential article, then contact the editor. Suggestions for future articles or a series of articles are welcomed.

Copy should be submitted, preferably as attachments to email or on disc (ms Word for Windows or Rich Text Format). Illustrations and photos to accompany copy is welcomed and should be supplied as JPEG or TIFF file no less than 600 dpi resolution. The editor reserves the right to edit the material before final publication.

Submission of Copy and Deadlines

Copy should be submitted to: Dr Alison Taylor, Marine Biological Association of the United Kingdom, The Laboratory, Citadel Hill, Plymouth, PL1 2PB
Tel. +44 (0)1752 633348
Fax. +44 (0)1752 633102,
E-mail: arta@mba.ac.uk

Deadlines are January 31st for the Spring issue,
July 31st for the Autumn issue..

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