



The Phycologist

The Newsletter of

The British Phycological Society

THE PHYCOLOGIST

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CONTENTS:

Editorial	2
Winter Meeting 1996	3
Winter Meeting 1995 Applied topic report	5
Notes and Notices	7
Forthcoming Meeting	10
The Culture Collection of Algae and Protozoa (CCAP)	15

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EDITORIAL

This issue is probably going to be the shortest and most important of the year. This is because it contains the call for abstracts for the Winter meeting at Lancaster in January 1996. Last year because of production problems a separate mailing was required but this year I am a little more organised and the call for abstracts and the second issue are together. It should be a good meeting as Jackie Eccleston-Parry and Roger Jones have been hard at work preparing the venue. There will be some new elements to the winter meeting which are described in this issue.

I should apologize for the slow appearance of issue 40. This was down to me concentrating on my research and some printer problems. I am sorry if this caused any grief to anyone.

Slowly but surely I have been learning the ways of the World Wide Web. I am still not totally convinced as to the immediate use of this information outlet. I went on a staff development course and they showed me how easy it is to transfer pages of wordprocessed text to the WWW. I had a go. You can now find the abstracts of the papers and posters from the Winter meeting at Portsmouth on the Web with other pages from volume 40 of *The Phycologist*. There is an article in this issue on phycological web pages. If this is of interest to readers please write to me and I will try to have an update page on the WWW.

There are a number of large and small meetings coming up which I have included in this issue. I have not given the booking forms so if you are interested in attending any of these meetings please write to the organisers. I would like to thank John Anderson for writing a report on the last Nordic Diatom meeting.

BPS Winter Meeting 1996 Lancaster:

The 1996 winter meeting will be held at The University of Lancaster with Drs Jackie Eccleston-Parry and Roger Jones kindly acting as local secretaries. The meeting will start with a poster session during the evening of Tuesday 2nd January. Following the pattern of the last three years there will be an "applied" day on Wednesday 3rd January with invited and contributing speakers on "Nuisance Algae and Their Control". There will be a Founders lecture and a special session on "Photosynthesis and growth". The Manton prize will again be awarded for the best student presentation. Individuals wishing to be considered should indicate this beside their abstract.

Call for Abstracts

Papers or posters are invited on any algal topic, but those related to the special sessions will be particularly welcome. If you wish to submit a paper or poster, please send two copies of the name(s) and address(es) of the author(s), title and abstract (to fit the layout on the accompanying sheet) to the **Honorary Secretary** no later than **October 6th 1995**. Tick whether paper or poster, Manton prize or BPS poster prize. The abstracts will be collated into a booklet for distribution at the meeting and abstracts of papers and posters given at the meeting will be published in the first issue of the Phycologist. The total time allowed for each paper (including discussion) will be 20 minutes and papers can only be accepted on the understanding that they may be timetabled on any day of the meeting.

Offers of papers/posters with abstracts must reach the Honorary Secretary (Dr E.J. Cox, Department of Botany, The Natural History Museum, Cromwell Road, London SW7 5BD. UK) by **6th October 1995**. Late submissions will not be accepted.

Applied Session: "Nuisance algae and their control"

Morning Session: Freshwater

Modelling algal development. Tony Bailey-Watts (IFE)
Advances in understanding algal toxins. Geoff Codd (University of Dundee)
NRA strategy on blue-green algae. Geoff Philips (NRA)
Problems with algal control in Lough Neagh. Ivan Heaney (NI)
Control of cyanobacteria by biomanipulation. T. Kairesalo (Helsinki)
Use of barley straw to control nuisance algae. Irene Ridge (OU).

Afternoon Session: Marine

Programme to be announced.

Special topic: "Photosynthesis and Growth"

John Raven (University of Dundee).
Matt Dring (Helgoland)
Colin Brownlee (PML)
Richard Geider (PML)
Stephen Maberly (IFE, Windermere)
Andrew Johnston (University of Dundee)

Titles to be announced.

Special topic: "Resting stages"

For a number of reasons this special topic was suggested slightly later than normal. It is to be organised by Prof Chris Gibson (IN, 01232 661 166) and Dr Jane Lewis (Westminster, 0171 911 5000). If you would like to be considered for this session please contact either Chris or Jane.

BPS Poster Prize

The British Psychological Society has decided to award a prize for the best poster at the Winter meetings. The prize will be called the British Psychological Society Poster Prize and will have the value of 150 pounds sterling. If you are interested in having your work considered please tick the relevant box on the Abstract form. The prize is intended for post graduate work and is open to students up to a year after finishing their PhD. The main criteria on which the posters will be judged is the scientific content. Not all students have the same graphic and printing facilities.

At the Lancaster winter meeting the poster size will be 80 cm wide by 150 cm high. Poster presenters are asked to include a small photograph of themselves on their poster. On the Tuesday evening presenters will be expected to stand next to their posters for at least an hour. Six student prize posters will be selected and on the Wednesday evening each student will give a 5 minute presentation which will be judged by Prof. Brian Moss and his panel.

Student Summer Grants.

The British Psychological Society has decided to initiate an award of a small grant for undergraduates who are interested in studying psychology. An amount of 500 pounds will be available to fund a psychological project lasting 6 to 8 weeks. This award is intended for students at the beginning or end of their final undergraduate year. Application will consist of one page of A4 paper detailing the aims of the project. A final report will be required for publishing in the Newsletter. If you are interested contact, Dr. E.J. Cox Department of Botany, Natural History Museum, Cromwell Road, London.

entitled 'Valorisation of marine algae by evaluation of chemical constituents and biological activities' was presented by Dr. Clive Barwell, University of Portsmouth, in collaboration with Dr. Mariano Bellota of the Cuban Centre for Marine Bioactive Substances, Habana, Cuba. It served as an introduction to valorisation of algae and algal products and began by revealing that the English word valorise derives from the French, meaning - to raise the value of a commodity by artificial means - and that valorisation of algae may be understood to mean the application of technical and scientific processes to increasing the value of algae and algal products. A wide range of algal products was considered such as; gelling agents (alginate, carrageenan, agar), human food products and animal feed supplements, seaweed extracts for use in agriculture and horticulture, and high-value biochemicals for use in biomedical research and diagnosis of disease. It was explained that the interests of the University of Portsmouth and Cuban centres are focused upon high value products such as: anti-viral and neuroactive compounds, agarose, biliproteins, cell surface recognition molecules (lectins) and human food products and that research and development in these areas is conducted within an association of laboratories based in the UK, France, Spain and Cuba. The presentation concluded by asserting that all scientists contributing to the development of knowledge concerning algae and algal products are in fact involved in their valorisation. This is because exploitation of algae and algal products depends upon knowledge of their status, ecology, productivity, physiology and biochemistry and chemistry.

Subsequent speakers dealt with examples of valorisation through their research into particular algal products. Professor David Rogers, University of Portsmouth, spoke on algal lectins. He explained that lectins are glycoproteins of wide occurrence but currently unknown function in algae. However, they exhibit important and sometimes novel specificity for cell surface sugars which makes them of great interest as biomedical reagents for use in study of cell surfaces and the delivery of drugs to tissues such as the eye. He also made the point that purified algal lectins are a current high-value commercial product and good example of algal valorisation. Dr. Ray Griffin, University of the West of England, gave a lecture on gold-labelled algal lectins. This described a joint project, with the previous speaker, concerned with their development and application as reagents for use in biomedical research. This presentation contained exciting illustrations which lead one to easily imagine that the lectin reagents, viewed by the electron microscope, were revealing the location and alignment of glycoproteins on cell surfaces.

After coffee the applied topic continued with another talk by Dr. Clive Barwell upon 'Evaluation of some European marine red algae as sources of biliproteins'. These, as far as the algae are concerned, are photosynthetic pigments. However, when isolated and purified they exhibit absorbance and fluorescence properties which have led to important application as labels of monoclonal antibodies used widely in biomedical research and diagnosis. In addition, it was explained that, subject to satisfactory formulation and stabilisation, these red and blue pigments have great economic potential as natural colourants of foods and cosmetics.

The next two presentations were concerned with seaweed extracts and their use in agriculture and horticulture. Professor Gerald Blunden, University of Portsmouth, gave an account of the production and uses of seaweed extracts. He then illustrated his own extensive studies upon the effectiveness of algal extracts and some chemical constituents, namely betaines, in a wide range of applications such as; preservation of citrus fruit colour, root crop yields, the enhancement of leaf chlorophyll content and protection of plant roots. The final presentation was given by Dr. Bjorn Gabrielsen, Research Director of a Norwegian Company, Algea A/S, which specialises in the production of seaweed extracts and meals for

agricultural and horticultural use. This company pays particular attention to control of condition for harvesting algal raw material and its subsequent processing and hence valorisation of the product. Dr. Gabrielsen described how a high value algal product, manufactured in Europe, may benefit the cash crop economy of developing countries such as Indonesia. He concluded by observing that probably like many others at the meeting he came unaware of the meaning of valorisation. However, as a result of the Applied Topic he now understood both its meaning and importance in algal science and biotechnology. He also realised that he had been, for some time, his company's Director of Valorisation.

Clive Barwell
University of Portsmouth.

NOTES AND NOTICES

WANTED

If anyone knows where Karen Rouen can get hold of the following books please contact her. 26 The Green, Levens, Kendal. Cumbria. LA8 8NH. Tel No. 01228 25151 or Fax No. 01539 721441.

STARMACH K. Flora Sladowodna Polksi

- Vol. 2 (1966) Cyanophyta Glaucophyta
- Vol. 4 (1974) Cryptophyta Dinophyceae Rapidophyceae
- Vol. 5 (1968) Chrysophyta I. Chrysophyceae
- Vol. 6 (1964) Chrsyophyta II. Bacillariophyceae
- Vol. 19 (1972) Chrsyophyta III. Ulotrichales, Ulvales.... etc

THE SYSTEMATICS ASSOCIATION

The Systematics Association was founded in 1937 as the "Committee on Systematics in Relation to General Biology and Evolution" to provide a forum for discussion of the general, theoretical and practical problems of taxonomy. Its first publication, *The New Systematics* (1940), edited by Sir Julian Huxley, has since become a classic.

Since then, the Association has pioneered discussion on many new developments in biosystematics. The Special Volume series, developed from symposia organized by the Association, have been among the first in their respective fields to assess the implication of advances for the subject. Several symposia are organized each year by the Association. Topics covered have included chemotaxonomy, scanning electron microscopy, data

processing, biological identification with computers, molecular biology, and the systematics and evolution of particular groups.

For further information contact: Z. Lawrence, International Mycological Institute, Bakeham Lane, Egham. Surrey TW20 9TY UK. Tel No: 01787 470111 Fax: 01784 470909

WWW

As I mentioned in the editorial I have been slowly turning my hand to writing pages for the World Wide Web. In future I hope most of the newsletter will appear on the web. Once the text has been written it does not take long to transfer it, always permitting there is enough space on my mainframe!

There are two Windows programs which allow to reach the web, Mosaic and Netscape. If you run one of these and type in the following address at the URL box and hit the enter you should find the BPS page.

<http://www.dundee.ac.uk/~amjohnst/bps.htm>

This will give you a contents page with text in a different colour. Drag your mouse to one of these and you will see at the bottom of the screen an address appear for that article. Click on that and you will go to that page..... and keep on going. I hope you find it useful. I hope to increase the number of links to other phycological pages.

Other pages that may be of interest are:

Coralline algae,	D. Keats	SA:	HTTP://192.102.9.90/CLINES.HTM)
Diatoms,	R. Sweets	USA:	http://www.indiana.edu/~diatom.html
Seaweeds,	M. Guiry	Ire:	http://seaweed.ucg.ie/Seaweed.html
Indian Ocean Algae,	R. Moe	USA:	http://ucjeps.herb.berkeley.edu/rlmoe.tioc.ioto.c.html

There are bound to be more which I will cover in future issues. CAP are preparing a page dedicated to the *European Journal of Phycology*.

NORDIC DIATOM MEETING

The 13th Nordic Diatom meeting was held at the Department of Ecological Botany, University of Uppsala (Sweden) at the beginning of May. the meeting was organized by Susanna Hajdu, Elina Leskinen, Ann-Marie Robertsson, Pauli Snoeijs, Eva Willén and Torbjörn Willén.

Held biannually, the Nordic meeting fills the gaps between the international diatom meetings. Apart from people from the mainland Nordic countries (Sweden, Norway, Finland and Denmark), this year the meeting was distinguished by visitors from the Baltic States and

Russia. The organisers must be congratulated on finding the funds to assist with visitors from countries where travel money still is not that easy to obtain. Another interesting aspect of the meeting was the sex ratio. Unlike the usual scientific meetings which tend to be dominated by the male gender, women are usually well represented at the Nordic Diatom meeting and 1995 was no exception. Of the 45 participants, at least 65% were female!

As well as the usual mixture of oral and poster presentations by students and more established academics, there were interesting discussions on the role of diatoms in environmental monitoring, cell biovolumes and how to take it into account in interpreting species data, as well as a discussion on changing nomenclature in diatom taxonomy and the willingness to use the new names, or not, as the case may be.

The meeting started with an excursion to sites of ecological and geological interest around the area surrounding Uppsala and a visit to the ecological experimental area at the Forsmark nuclear power plant. The meeting dinner was held at the Hotel Linné in Uppsala, where the dining room overlooks a garden originally tended by Carolus Linneaus. Another connection with the past was provided by the screening of a television interview with Astrid Cleve Euler, dating from 1961.

John Anderson
Geobotany Division
Geological Survey of Denmark
Copenhagen

MARINE ALGAL MAPPING SCHEME

I have recently taken over the administration of the marine algal mapping scheme, following on from the sterling work done over many years by Trevor Norton.

At present, new recording cards are in preparation, with updated nomenclature. Once these are available, the scheme will be relaunched in a blaze of publicity - the aim being to produce an Atlas in a few years time.

In the meantime, any previous/current/new recorders are invited to contact me to let me know if they want supplies of the new cards when they are available, and to signify their wish to be involved in the project.

Please contact me by fax (0191 222 7891), e-mail (f.g.hardy@newcastle.ac.uk), or at the address below.

F.G. Hardy, Department of Marine Sciences and Coastal Management, The University, Newcastle upon Tyne, NE1 7RU.

FORTHCOMING MEETINGS.

1st European Phycological Congress, 11-18th August 1996

This meeting will provide a board forum for phycologists from all over Europe and overseas for communication and discussion on many fascinating aspects of phycology - from molecular to organismic subjects, including freshwater and marine habitats as well as applied and basic research. The Congress will take place on the campus of the University of Cologne.

We cordially invite you to participate and come to Cologne, one of the most exciting cities of Germany. It originated from Roman times, offers a wide variety of scenic impressions, and is world wide renowned e.g. for its gothic cathedral.

Michael Melkonian, Chairman, Local organizing committee.

Registration Fees.

Regular DM 300,- Students DM 150,-

Scientific Program

Plenary Lectures, Symposia, Mini-symposia and Poster sessions.

Plenary Lectures and Speakers.

Chlamydomonas reinhardtii, a powerful model system for studying the biogenesis and function of the photosynthetic apparatus. J.D. Rochaix (Geneva, Switzerland)

Feedbacks and forcing between ocean circulation, atmospheric radiation and algal photosynthesis. P. Falkowski (Brookhaven, NY. USA)

Biotechnologies and marine macroalgae: challenges, dreams and facts. B. Kloareg (Roscoff, France)

The role of biodiversity in phycology R.A. Andersen (Bigelow, ME. USA)

Cyanobacterial and algal toxins: production in European waters, management, issues and fundamental advances. G.A. Codd (Dundee, UK)

Suggested titles for Mini-symposia

Algae as indicators of pollution.

Parasites of algae

Algal life histories

Population genetics of algae

Cytoskeleton research

Algal biochemistry

Terrestrial and soil algae.

Symposium Titles

Species concepts in algae.
Algae of the polar regions.
Algal biotechnology.
Molecular phylogeny.
Red tides and algal-bacterial interactions.
Synthesis and function of cell wall components.
Algal symbiosis and origin(s) of chloroplasts.
Photosynthetic C-uptake and global carbon cycle.
Robert Lauterborn Centenary.
Molecular clock in circadian rhythms.
Sensory pigments.
Algae of the Baltic.

For further information please contact Prof Melkonian
Botanisches Institut, Universitat zu Koln, Albertus-Magnus-Platz. D-50923 Koln Germany
[49] (0)221 470 2475 Fax [49] (0)221 470 5181
Email: MMELKON@BIOLAN.UNI-KOELN.DE

Fourteenth International Diatom Symposium 1996

The Fourteenth International Diatom Symposium will be held in Tokyo, 1996. The first circular of the symposium will be mailed soon to over 1000 people including all the members of the International Society for Diatom Research.

In accordance with the decision of the general meeting at the previous Italy Symposium, the Japanese Society of Diatomology and the International Society for Diatom Research cordially invite you to attend the 14th International Diatom Symposium (14th IDS) which will be held from September 2-8, 1996 at the National Olympic Memorial Youth Centre in Tokyo, Japan.

LOCATION

The venue lies near Shinjuku Station which is the busiest station in Tokyo as well as in the world. After arriving at Narita International Airport, you must travel 66 km (41 miles) to Tokyo.

There are several ways to reach Shinjuku, the direct "limousine" buses, JR (Japan Railway) trains and Keisei-line (private) trains. A taxi would be very expensive. More information will be provided in the Second Circular. You can reach the venue within 7 minutes from Shinjuku Station, 4 minutes, by the Odakyu-line (private) to Sangubashi and then 3 minutes on foot.

PROGRAM

Papers concerning all aspects of diatom research are welcome for both oral and poster

presentations. The Registration, the Reception on Monday (September 2) and the Banquet on Friday evening (September 6) will also be held at the same venue.

WORKSHOPS

Rather than a few large formal workshops in a lecture format, we would prefer to have numerous smaller informal discussions. The evenings of Tuesday (September 3) and Wednesday (September 4) will be reserved for such workshops.

ACCOMMODATION

The venue is the former accommodations of the Olympic athletes during the Tokyo Olympics held in 1964, and because of age, all the buildings have been recently reconstructed. Therefore all the rooms are new and clean. It is managed by the government so the accommodation fee is very cheap by Japanese standards but since it was built for young athletes almost all rooms are for single use.

At the time of printing this circular, the room charge in the Lodging Building A was 2300 yen (about US \$ 27) per night per person, but each unit of ten rooms must share communal bath and toilet facilities, and lodgers must make their own beds as it is self service. The charge in Lodging Building D is 4000 yen (about US \$ 47) per night per person, but each room has a bath, toilet and telephone. Prices in Japan are very stable but the fluctuation of the exchange rate may make things more expensive for those participants visiting from outside Japan.

A three meal package will be available in the dining room for 1700 yen per day.

CONFERENCE LANGUAGE

The official language of the conference will be English. No translation service will be provided.

TOPICS

Some of the topics expected to be covered in Freshwater, Marine, Fossil and Applied Diatomologies are: Taxonomy, Morphology, Cytology, Physiology, Life Cycle, Biochemistry, Ecology, Toxicology, Genealogical Evolution, Palaeoenvironment, Palaeoecology, Stratigraphy, Molecular Biology, Environmental Assessment, Industrial Techniques (Manufacturing Industry), Forensic Science, Science Education, etc.

EXCURSIONS

A mid-week excursion is planned for Thursday (September 5) to Mt. Fuji and Kawaguchi-ko (Kawaguchi Lake). On the way to Mt. Fuji, we can observe characteristic vegetation and will have an opportunity to collect freshwater diatom samples at the lake, approx. 7,000-9,000 yen.

Post-symposium academic tours are also planned because there are many interesting places for the participants in Tokyo and around Japan. Of course, participants are free to take one of the many regularly scheduled package tours offered by various tourist agencies.

- (1) Oligocene and Neogene fossil diatoms in Joban area. Tour participants will visit the Joban area (former coal-mines, 200 km northeast of Tokyo) where there will be an opportunity to sample Oligocene, Miocene and Pliocene

marine diatoms as well as Early Miocene non-marine diatom fossils. 12 persons, first-come-first-serve. September 8 to 10 (three days), approx. 20,000-25,000 yen.

- (2) Freshwater and fossil diatoms in Shiobara and Nikko. Tour participants will visit Oogane to sample Miocene marine diatoms, and visit Shiobara to sample Pleistocene lacustrine diatom deposits, and finally visit Chuzenji-ko (Chuzenji Lake) in Nikko (150 km north of Tokyo) to collect living freshwater diatoms. A stop at the famous shrine Toshogu in Nikko will be included. September 8 to 9 (two days), approx. 25,000-30,000 yen.
- (3) Freshwater, lake and river diatoms in Nikko. Tour participants will visit Yuno-ko (Yuno Lake), Chuzen-ji-ko (Chuzenji Lake) and some ponds in the Senjo-gahara high moor located in Nikko National Park. Nikko is most famous as the site of the magnificent Toshogu (Tosho Shrine). September 8 to 10 (three days), approx. 50,000 yen.

REGISTRATION

Depending on exchange rates, approximately 20,000 yen for members of the Japanese Society of Diatomology and the International Society for Diatom Research, 25,000 yen for non members, 2,000 yen for accompanying persons. We hope to offer lower registration fees for students.

PRELIMINARY REGISTRATION AND SECOND CIRCULAR

Deadline for receipt of the preliminary registration form enclosed is September 30, 1995. Second circular will be distributed in the end of 1995 to those who have made the preliminary registration. It will give further information about program, abstracts, registration, accommodations, field trips, together with a note of the estimated costs.

ALL CORRESPONDENCES SHOULD BE ADDRESSED TO:

Dr. HIROMU KOBAYASI
Convener (14th International Diatom Symposium)
TOKYO DIATOM INSTITUTE, HONCHO 3-8-9-813,
HONCHO 3-8-9-813, KOGANEI-SHI, TOKYO
184 JAPAN TEL./FAX. +(81)-423-84-7795

Deadline for receipt of the preliminary registration form is **September 30, 1995**.

First Asia-Pacific Phycological Congress 1996.

The dates have now been finalised for the First Asia-Pacific Phycological Congress 1996.

The Congress will be held 21st July - 26th July 1996, at the University of New South Wales, Sydney Australia.

The First Circular was ready for distribution in the middle of July. Could you please register an expression of interest to the e-mail address j.vivas@unsw.edu.au. and provide contact details.

I look forward to hearing from you.
Robert J. King

British Diatomists' Meeting

Kindrogan Field Centre, Enochdhu, Blairgowrie, Perthshire October 6-8 1995

The meeting of the British Diatomists this year will be held in the heart of Scotland, at the Kindrogan Field Centre in Perthshire. The centre is situated in a quiet and beautiful highland glen, on the banks of the River Ardlie. An impressive range of habitats is within walking distance, including hill tops (mountains!?) nearly 3000 ft high. The area is rich in wildlife including golden eagles, pine marten and, no doubt, a few diatoms!

Comfortable accommodation with library, lounge and bar facilities is based in an old Victorian estate house. There are additional bedrooms, teaching areas and conference rooms in the home farm buildings behind, with facilities for those with mobility restrictions. Most of the rooms are single or twin. Meals are good but no choice of menu is offered, although special diets can be catered for. The cost of the weekend will be 72 GB pounds per person, rising to 78 GB pounds per person for a single room.

The centre can be reached easily by car, and there is a train station 9 miles away in Pitlochry; coaches also stop there. We can arrange to pick you up from Pitlochry if necessary. More details will follow nearer the time, after you have booked. Please plan to arrive at the centre by 6.00 pm for a glass of sherry before dinner.

Do make a point of coming this year. Autumn in this part of the country is very pretty. And Kindrogan is not nearly as inaccessible as it sounds, being less than two hours by road or rail from Edinburgh, which is itself just north of Watford! If it would help, we may be able to ferry a limited number of people to Kindrogan from Edinburgh and back again by minibus; please indicate when you book if this would be of interest.

We look forward to seeing you at Kindrogan. The deadline for booking and for payment is 24 August 1995, but PLEASE book as soon as possible - we have already paid a deposit! The centre may reallocate unbooked space after that date. If you cancel after 5 September 1995 you are likely to be liable for the full amount. For a booking form please write to myself at the address below.

Stephen J.M. Droop
Royal Botanic Garden, Edinburgh EH3 5LR, UK
Tel.: +44 131 552 7171; Fax: +44 131 552 0382
s.droop@rbge.org.uk; stephen@rbge.org.uk

THE CULTURE COLLECTION OF ALGAE AND PROTOZOA (CCAP)

The Culture Collection of Algae and Protozoa functions as the national service collection for algae and protozoa in the UK, acting as a depository for strains of prokaryotic cyanobacteria (blue-green algae), eukaryotic microalgae, small seaweeds and free-living non-pathogenic protozoa. Freshwater algae and all protozoa are maintained at the NERC, Centre of Ecology and Hydrology (CEH), Institute of Freshwater Ecology (IFE) Windermere Laboratory. Marine Algae are kept at the NERC, Centre for Coastal and Marine Science (CCMS) Dunstaffnage Marine Laboratory.

CCAP has just published the 6th edition of its catalogue, giving details of the current holdings maintained at both of the CCAP sites. The catalogue also lists the services which are provided (see the synoptic table below) and full information on media used for the varied organisms in the collection. It is available directly from CCAP for £7.00 including P & P. To order a copy, or for additional information please contact:

Culture Collection of Algae and Protozoa
Institute of Freshwater Ecology
Windermere Laboratory
Far Sawrey
Ambleside
Cumbria
LA22 0LP
UK

Tel: 015394 42468
International tel: +44 15394 42468
Fax: 015394 46914
International fax: +44 15394 46914
E-mail: CCAP@IFE.AC.UK

In addition to a hard copy version, an innovation associated with the 6th edition is that it should soon be available on the internet. A searchable database is currently under construction and this will be accessible at the following URL: <http://wiua.nwi.ac.uk/ccap/ccaphome.html> The home page and some of the appendices are completed, in draft form, and these may be viewed at the above URL. The strain data and final sections will be added in due course.

The address for those requiring specific information on marine algae is now as follows:

The Curator
Culture Collection of Algae and Protozoa
Dunstaffnage Marine Laboratory
P O Box 3
Oban
Argyll PA34 4LE
UK

Tel: 01631 562244
International tel: +44 1631 562244
Fax: 01631 565518
International fax: +44 1631 565518
E-mail: CCAPN@DML.AC.UK

CCAP Products and Services

Products and Services

Site

Provision of cultures and associated information	W,O
Patent and confidential depository	W,O
A limited identification/taxonomic service	W,O
Starter cultures for aquaculture	O
Starter cultures for biotechnology	W,O
Cultures for ecotoxicity testing	W,O
Cryopreservation of algae and protozoa	W,O
Fundamental and applied contract research	W,O
Consultancy	W,O
Customized training courses	W,O
Educational resource materials and publications	W

W. Windermere site

O. Oban site