British Phycological Society

NEWSLETTER

JUNE 1973 NUMBER 5.

SARGASSUM SURPRISE!

Farnham, Fletcher and Irvine report in Nature (1973, 243 : 231) the occurrence of Sargassum muticum on the Isle of Wight. At least 30 plants, some of which were 1m (3feet) in length, were observed growing in lower littoral pools. Sargassum occasionally occurs as drift on the coast of Britain. However, a comparison of material from the recent find with that of S. bacciferum (the usual drift species) proved conclusively that the latter was not involved.

Druehl in a letter to Science (1973, 179:12) discusses the introduction of certain plant and animal species to the north west coasts of America. One such species, Sargassum muticum, was introduced as a result of the introduction of the oyster, Crassostrea gigas, from Japan without any period of quarantine. S.muticum, a common plant in Japanese waters, has now colonised some 1500 miles of the coastline of north west America, where it grows 6 - 7 metres long from mid tide level to about 8 metres below low water in the types of habitat generally colonised by Zostera. Subsequently, Druehl unearthed information on the introduction of Japanese oysters into European waters, and thus predicted the occurrence of S, muticum in the eastern Atlantic.

Both Druehl and Fletcher, Farnham and Irvine have in their articles called for international control on the transplantation of plants and animals into alien coastal waters.

How should we treat this newcomer to our coastline? Is it now too late to rush to the coast and pull up all the S.muticum one can lay hands on? Should we do this anyway? (See below). Introductions to the marine flora of the U.K. and Ireland are by no means a novelty for during the past one hundred years Colpomenia peregrina, Bonnemaisonia asparagoides and Asparagopsis armata, for example, have arrived on the British and Irish scenes. Papers and displays presented at the B.P.S. winter 1972 meeting intimated, and in other cases showed conclusively, that introductions (other than Sargassum) continue, by hook or by crook, to turn up. More will probably follow.

Ian Tittley.

CONTENTS.

VIIIth International Seaweed Symposium

Details appended

SARGASSUM MEETING.

A group of phycologists and representatives of other interested parties met at Portsmouth on the 4th and 5th of May to consider the problems created by this unwelcome introduction. By this time the known population had risen to several hundreds of plants, the larger more than two metres in length and growing 2cm per day, the growth rate still accelerating, while - more ominous still - one plant at least had become fertile. After careful deliberation this group decided by an overwhelming majority that the situation was sufficiently serious to merit an all-out attempt to eradicate the Sargassum from Britain while there is still some chance of accomplishing this. The only practicable method appears to be hand removal, since each plant must be removed in its entirety and no free-floating fragments or attached bases left to regenerate - as they will. Accordingly, any phycologists who are in a position to assist in this urgent task, especially in the next vital few months, are asked to contact Dr. Gareth Jones, Department of Biological Sciences, Portsmouth Polytechnic, King Henry I Street, Portsmouth PO1 2DY. Failure to act now may mean dreary wastes of Sargassum in the lower littoral of sheltered lagoons all round our coasts to match the suffocating sameness of Spartina meadows at higher levels, as well as tedious hours spent removing the tough stringy strands from outboard motors and fishing gear, an all-too-frequent occupation in British Columbia at present.

D.E.G.Irvine.

MEETING OF NATIONAL BIOLOGICAL SOCIETIES - 1972

Representatives of 14 National Biological Societies together with representatives of the Biological Records Centre (the organisers), the Nature Conservancy and various Museum and Biological Associations attended the 1972 meeting at Juniper Hall Field Centre on Saturday 18 November. These annual meetings provide a valuable opportunity for discussion of common problems and airing of views relating mainly to matters of biological recording and conservation and summarise developments in these fields during the year. It may be useful to outline the main points arising from the present meeting in order to keep members up to date with developments in the study of diverse groups of organisms to put in perspective our approach to the study of British algae.

Biological Recording

In addition to marine algae, marine schemes are now operating for molluscs, echinoderms and isopods, and schemes are being organised for marine dinoflagellates and sea anemones. There was a lengthy and involved discussion on the relative merits of the various systems of delimiting sea areas for marine recording.

In Europe, the first part of the Atlas of European Plants - Pteridophytes, was published in 1972. Other schemes are projected for mapping European birds and invertebrates.

At the Biological Records Centre the 'Instructions for Recorders' booklet was prepared and is now available to all mapping scheme organisers for their recorders. Field cards for ants, caddis flies, mammals, marine molluscs, marine isopodes and echinoderms were also produced last year. Atlases for reptiles, and amphibians, moths, ants and orthoptera are in preparation and the BSBI Atlas of the British Flora is being prepared for reprinting.

Codes of Conduct

An insect collecting code has now appeared, the BSBI Flowering Plant Code is being reprinted in an extended version which includes lists of rare and endangered species and a Nature Photographer's Code and Common Code are in preparation. It was hoped that the latter, in the form of a Wildlife Code, would be included in the projected

MEETING OF NATIONAL BIOLOGICAL SOCIETIES - 1972 Contd.

AA/Reader's Digest Countryside Encyclopaedia.

Endangered Species

As recording and mapping reveals the rare and endangered species in a particular group they are included in the BRC Red Data Book for Britain. The vascular plant section was planned to be completed early this year and lists of rare and endangered species of macrolepidoptera are being published in several entomological periodicals.

Dr Bruce Forman, Nature Conservancy Conservation Officer for England, described what is being done or planned to ensure the safeguarding of endangered species of plants and animals in the British Isles (see also Conservation Committee section of this Newsletter) It was pointed out that effective and successful conservation measures for endangered species demand a knowledge of 1) Their status in terms of numbers:
2) Their distribution, but particularly their precise localities:
3) Their habitat requirements and other conditions necessary for success:
4) What represents a viable population of the species:
5) What factors have led or are leading to their gradual disappearance.

Information Retrieval in Musuems

Dr. J. Cutbill of the Sedgwick Museum of Geology, University of Cambridge described the work of the Information Retrieval Group of the Museums Association (IRGMA), a group of over 200 working on the use of computors for information retrieval in Museums. Systems are already in operation at the Sedgwick Museum and the Natural History Museum, the latter by Dr. David Williams who demonstrated a prototype form for zoological specimens.

Multidisciplinary Recording.

Mr. J.A. Bateman, Keeper of Zoology, National Museum of Wales reported on the initiation of a programme of multidisciplinary field recording by the new Biological Recording Group for Wales. This novel and valuable approach was started as being the best way of remedying the dearth of site information in Wales available for visiting students, for developers, planners and objectors to proposed developments. The two meetings held so far have been highly successful. This approach ensures that records come from areas for which information is required and that records can be acquired for areas known to be largely unrecorded for most species.

A further NBS meeting is scheduled for November 1973.

David J. Hibberd
Linda M. Irvine.

REQUEST

Spirulina spp. growing in culture - not necessarily pure - are requested for a comparative study now under way. Please give whatever details you know about preferred media, temperatures and light intensities and regimes.

Ralf A. Lewin
S.I.O.
University of California,
San Diego
La Jolla
California 92037
U.S.A.

WINTER MEETING OF THE SOCIETY AT ROYAL HOLLOWAY COLLEGE. 3 - 5 January 1973.

By kind invitation of Professor E.J.Bourne, and with the permission of the College Authorities, this year's winter meeting was held in the Chemistry Department of Royal Holloway College. Accommodation was provided at the nearby Founder's Building. For the first time the programme was extended to cover two-and-a-half days, in the course of which 33 papers were presented in sessions on the ecology of freshwater algae (Chairman, Frank Round), this session included a number of contributions from John Evans' research group at Royal Holloway and the Metropolitan Water Board with Dr Ridley; ecology and taxonomy of marine algae (Chairman, Dr M.T.Martin); life histories of algae (Chairman, Harry Powell); cytology and fine structure (Chairman, Gordon Leedale) and physiology, biochemistry and metabolism of algae(Chairman, Dr Elizabeth Percival). Harry Powell's Presidential Address on the ecology of the large marine algae in the West of Scotland was given on the morning of Thursday 4 January, with some striking illustrations of growth forms and growth rates of Laminaria digitata in sea lochs in the vicinity of the Dunstaffnage Marine Laboratory at Oban. Great pleasure was also expressed when Dr Elsie Conway followed the Presidential address with her account of Porphyra life histories in the Pacific Ocean. The participation of members from Europe, Canada and the United States was also noted with pleasure. Abstracts of the papers will be published in Vol.8 of the Journal. This year there was a disappointing response to the request for demonstrations. In previous years this was always a popular meeting place for members between sessions, and it is hoped that better support will be forthcoming at the next Winter Meeting.

The Society Dinner was held on the evening of Thursday 4 January. This proved an attractive occasion, with candlelight illumination for an excellent meal. Whilst formality was kept to a minimu, special tribute was paid on this occasion by the President to commemorate Dr Mary Parke's election to a Fellowship of the Royal Society, and Dr Parke was presented with a boquet by Dr Elizabeth Percival. The President also expressed the thanks of the Society to the College Author ities for permission to hold the meeting. The excellent standard of catering throughout the meeting was particularly appreciated and special thanks accorded to Dr Percival for her work as Local Secretary. The 21st Annual General Meeting was held on the morning of Friday 5 January, with 52 members in attendance. On this occasion the meeting passed with acclamation the Council's proposal that Dr Parke be elected an Honorary Member in recognition of her services to the Society and to Phycology. A proposed change in the Constitution was also accepted, as a result of which members retired from full-time employment now have the privileges of full membership on payment of a reduced fee. The annual reports of the various officials were also presented. The Hon. Secretary reported a membership of 515, and also referred to several meetings held in the year under the auspices of the Society (these meetings have been reported in previous numbers of the Newsletter). The Hon. Treasurer presented the Balance Sheet for the year, pointing out an income of over £2000. Some drawing on reserves would be necessary in future to support the development of the Journal, but no curtailment of the Society's activities would result. The Hon. Editor reported on the enlarged Journal for 1972, with the volume size being 392 pages - a much larger size than ever before. The great support for the Journal in the number of papers submitted had necessitated a re-negotiation of the contract with the publishers so that a quarterly Journal would be issued in 1973 (as Vol.8). The work of the Marine Algal Flora Committee progresses well, with part of the first volume (on the Rhodophyta) probably going to press in 1973. It was hoped that the remaining two sections would appear at yearly intervals. The volume on the Chlorophyta may come out during the course of publication of the Phodophyta sections. Progress was also reported on the Phaecphyta volume. Some gratification was expressed that the major project was now approaching publication

WINTER MEETING OF THE SOCIETY AT ROYAL HOLLOWAY COLLEGE - Contd.

The Mapping Scheme now included 216 collectors to whom 5,000 cards had been issued. Amongst other developments, a common species list was being produced, in consultation with the Biological Records Centre. Reports were also received on behalf of the Field Meetings Secretary, the Algal Conservation Committee, and the Hon Editor of the Newsletter.

The following officers were elected: President, Dr F.E.Round; Vice-President, Professor P. Gayral and Professor W.D.P.Stewart; Ordinary Members of Council, Dr D.Irvine, Dr C.Johnston and Dr B. Whitton. Dr H.Pearson was elected to fill the casual vacancy caused by Professor Stewart's election to Vice-President.

The meeting ended with votes of thanks to all the officials, and Dr J.Dodge proposed the vote of thanks to the retiring President, Harry Powell. As always with these meetings the Society is indebted to the local secretary for carrying out the great amount of work involved in organisation. Dr. Elizabeth Percival and her helpers did a magnificent job on the occasion of our first visit to the Chemistry Department at Royal Holloway College, and all members who attended will wish me to extend our sincere thanks to Dr Percival and her research students.

Immediately one Winter Meeting ends, your Hon Secretary has to make plans for the next one. The 1974 meeting will be held in the Botany Department, University College, London, from Wednesday 2 January to Friday 4 January. Accommodation will be provided at the nearby Commonwealth Hall.

A.D.BONEY.

LETTERS TO THE SOCIETY

From Dr M.W.Parke F.R.S.

The Laboratory
Citadell Hill
Plymouth.

11. January 1973.

Dear Dr. Boney,

May I ask you to convey to the Council and all members of the British Phycological Society my very great appreciation of the honour they have conferred on me by making me an honorary member of the Society. I was so overcome by all the kind things said and done by you all that I could not at the time convey my most sincere thanks to you all. Please will you do this for me.

Yours very sincerely,

Mary Parke.

From Prof. Vernon W. Proctor.

A suggestion for the British Phycological Society's Newsletter. Could not a page of listings of available libraries, reprints and rare books be carried from time to time? I would be quite willing to pay a little extra for the publication of such as well as airmail postage to the U.S.

I suppose the situation is quite similar the world around. Old Professor X suddenly drops dead. No one knows what to do with his reprints. His family and colleagues have no idea who might be interested in the Phodophyta of Borneo and consequently over the next year or two a life-time's effort may be consigned to the trash can. I would greatly appreciate the opportunity of purchasing reprints dealing, in my case, with the charophytes. And from the opposite side of the coin, I'd much rather see someone have mine when I'm gone than gathering dust in some attic

Contd...

Friends assure me that such listings are carried by the mammologist's newsletter in this country and that it serves a very worthwhile function. I hope that you will at least consider the possibility.

Yours sincerely

Vernon W. Proctor
Professor of Biology.

Dept of Biology
Texas Tech University
P.O.Box 4149
Lubbock
Texas 79409.
U.S.A.

CONSERVATION COMMITTEE

Conservation of Endangered Species - World Wildlife Fund.

A substantial sum of money has been made available through the World Wildlife Fund specifically for the conservation of endangered species in the British Isles. This grant is primarily intended to support survey research and other activities which will form the basis for conservation advice and management in this field. It is not intended that the money should be used for land acquisition for which alternative sources of support are available.

The fund is being allocated by a committee of the World Wildlife Fund. In order to assist the committee in the selection of projects suitable for support a small Working Group has been set up under the Chairmanship of Dr B. Forman, Nature Conservancy. The society is represented on the Working Group by Dr D.E.G.Irvine, a member of the Conservation Committee.

Suggestions from members on specific algal projects should be sent to Dr B. Forman, The Nature Conservancy, Belgrave Square, London.SW1 8PY on the special pro forma available from the same address. With relation to British marine algae the position so far seems to be that there is no clear example of any species at present known to be sufficiently threatened to qualify as endangered and in a position to be protected, but members may think otherwise. Among the freshwater algae certain Characeae would appear to be to be an obvious case for study, particularly in increasingly heavily polluted areas such as the Norfolk Broads.

Please contact me over these or any other algal conservation matters at: The Culture Centre of Algae and Protozoa, 36 Storey's Way, Cambridge, CB3 ODT.

David J. Hibberd.

REQUEST:

G. Blunden, and W Farnham request air dried material of Ptilota plumosa for screening haemaglutinin and antibiotic activity (see Br.phycol. J., 7 : 279).

Dept. of Pharmacy
Portsmouth Poletechnic
Park Road
Portsmouth.
Hants.

THE PHARMACEUTICAL SOCIETY OF GREAT BRITAIN.

A Colloquium: Advances in our knowledge (of cryptogams) since the time of Holmes.

The Pharmaceutical Society, London, November 1972.

Edward Morell Holmes, Curator of the Materia Medica Museum of the Pharmaceutical Society, November 1872 - 1972.

Three papers were presented at the Colloquium dealing with aspects of the cryptogamic disciplines in which E.M.Holmes was involved. All three speakers, Dr E.V. Watson (University of Reading), Dr.D Hawksworth (Commonwealth Mycological Institute), Mr.J.H.Price (B.M.N.H.), reminded us of some of Holmes' multifarious activities. Holmes' "Cryptogamic Flora of Kent", for example, a mammoth task intended to complement the then relatively recently published 'Flora of Kent' Unfortunately however, this project only came to completion as far as the Mosses and Lichens were concerned.

Since that period, and more recently, the British Bryological Society, the Lichen Society and the British Phycological Society, have commonly undertaken major projects such as species mapping and flora compilation. Drs Watson and Hawksworth discussed in some detail the effects of pollution, and the decline in suitable habitat availability on their respective floras. Both phenomena have in fact brought about considerable changes in the moss and lichen floras of southern and central England since the time of Holmes. For the algae, Mr. Price discussed, inter alia, the differences in attitude with respect to species designation between modern and Victorian phycologists. Mention was also made of the considerable advance in knowledge of algal life histories (as a result of improved culture technology) since the time of Holmes.

All three authors included in their discussions the progress made by workers abroad through the production of local floras and listings, consideration of range extensions and large scale phytogeographical studies. In order for the latter types of studies to succeed Dr Watson stressed the need for improved co-operation between workers, and a vastly improved method for the overall assessment and distribution of all available background data.

The Colloquium was followed by an evening meeting at which Prof.E.J. Shellard (Chelsea College, University of London) spoke on the life of Holmes. A small display of Holmes' collection was also presented. Papers presented at the ColloqùiumMeeting will be published in a forthcoming issue of the 'Journal of the Linnaean Society'.

Ian Tittley.

JOHN SINCLAIR HERBARIUM

John Sinclair, born in 1913 at the Bu of Hoy in the Orkneys was a far-travelled and well-known scottish botanist; he died in the Orkneys in 1968. He had already made arrangements to go to Singapore where he wished to retire. John Sinclair was a graduate of Edinburgh University, and after the war returned to Edinburgh in order to take up a post in the Royal Botanic Gardens Herbarium. After leaving Edinburgh he spent nearly twenty years stationed in Singapore at the Botanic Garden, part of the time as Curator of the Herbarium. Although known primarily for his interest in vascular plants he also collected many cryptogams. Indeed, his first published account covered an aspect of them - the algae, and his last days - unknown to him at the time, were in fact examining another aspect - the mosses. His personal herbarium includes a large collection of algae which has now been incorporated into the Edinburgh folders, and part of which required immediate attention. The mounted specimens are in excellent condition and include specimens from Malaysia and India particularly, as well as material from mainland and island Scotland; especially valuable are his collections from the Orkneys, Shetlands and Barra.

JOHN SINCLAIR HERBARIUM - Cont.

The algal material is very welcome, as the Edinburgh Herbarium lacks in specimens from the period between the active collecting period of Traill, Greville and contemporaries, and the collecting activities of the present herbarium staff. An obituary to John Sinclair appears in Gard. Bull. Sing. 23, 1 - XX111 (1968);

Roy Watling, R.B.G. Edinburgh

PROGRESS OF THE SEAWEED MAPPING SCHEME.

To date, over 5,000 record cards have been distributed to 216 collectors. A steady stream of records have been received and processed (Fig 1.) Work has also begun extracting records from published lists and from herbarium collections.

All older records (pre-1950) are being processed separately from those of more recent date. A comparison between recent collections and those made in former years on the same shores reveals that in some regions changes in the composition of marine flora appear to have taken place. For example, on the Isle of Cumbrae in the Firth of Clyde, less than half of the 278 species recorded at the turn of the century by Batters seem to be still present. Areas where such changes appear to have taken place are being carefully re-investigated to ensure that the old records were not simply misidentifications or just extremely rare algae that might be encountered only very occasionally.

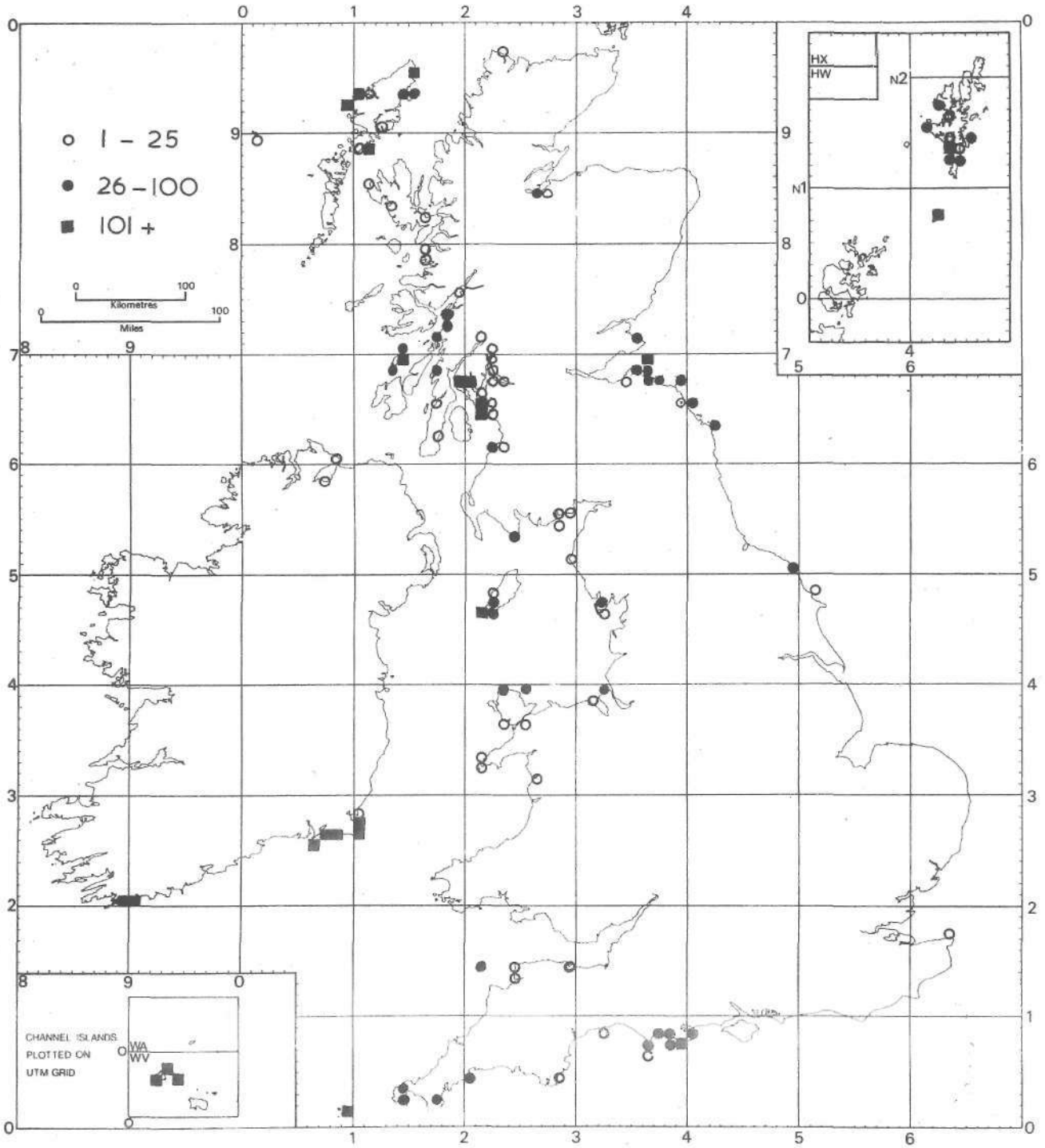
Most amateurs tend merely to record a few of the commonest species which they are sure they can identify. Many are also interested not just in seaweeds, but in shore animals too. To meet the needs of this group the Biological Records Centre proposes to publish a 'Common Species Card' for littoral organisms. The list of seaweeds for this card has been produced.

A few preliminary hand-drawn maps have been produced for publicity purposes. They show the distribution of a few well-recorded species. It is unlikely that we will be in a position to carry out any meaningful mapping on the majority of species for a least a couple of years.

It is anticipated that the coming year will bring an increasing pressure of work for the completion of the forthcoming algal floras of Fife, Kent and Mull and a complete revision of the British Phodophyceae, all these records will be submitted for processing.

Trevor A. Norton.

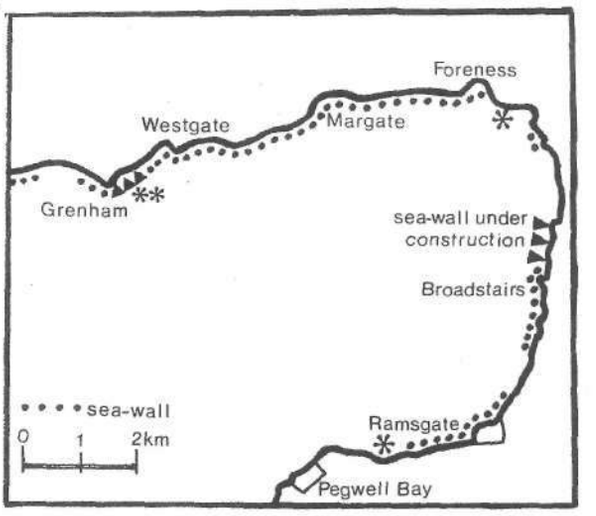
SEE OVER FOR MAP



The number of species recorded in each 10 km square. More than 100 species of seaweed can be found on most rocky shores. Are the shores in your area well recorded?

COSTAL CONSERVATION ON THE ISLE OF THANET.

The Isle of Thanet is that area of land, formerly an island and now the easternmost peninsula of Kent (fig.1). Its 25km of coastline consists of chalk cliffs, bays, headlands, caves and tunnels formed as a result of marine erosion. These various chalk formations support distinct algal communities. The rapid rate of erosion of the Thanet coastline (c. 35cm per annum, vertical erosion) has necessitated much coastal protection work by the local authorities which has taken the form of sea-walls, promenades and barriers across the mouths of caves and tunnels. These activities have resulted in the restriction and often destruction, of algal communities formerly considered as widespread. The 14km length of coastline for which Margate council is responsible has now been almost totally 'protected' by means of artificial construction leaving three stretches of 'unprotected' coastline, in total, less than 3 km in length, only parts of which support chalk-cliff algal communities.



* proposed SSSI's
** Epple Bay site

The flora of the chalk cliffs, caves and tunnels at Westgate (Thanet) was the subject of detailed taxonomic and ecological investigations carried out before the second world war by P.L.Anand. Anand started his researches with preliminary examinations of the chalk-cliff floras present at a number of localities in south east England and, as a result of these preliminary examinations, undertook detailed investigations at Westgate, together with comparison studies at Beachy Head, Sussex. Out of 99 species detected as present on the cliffs at Westgate Anand made 33 new algal records (this number includes the description of two new genera and thirteen new species), many of which belong to the Chrysophyceae, Prasinophyceae, Haptophyceae, Cyanophyceae and Phaeophyceae. Mambers of these classes individually or as communities, were observed by Anand, as forming in nature recognisable coloured 'zones' on cliff faces, and on the sides and roofs of caves and tunnels. Further research by Anand on the flora of the then extant sea-walls, revealed the inability of many of the chalk-cliff species to colonise the artificial substrata.

Since the second war, much coastal protection has been carried out on the north coast of Thanet; the cliffs at Westgate are now completely obscured, stacks and headlands have been knocked down, and all bays, caves and tunnels have been filled in. Recent preliminary investigations of the chalk cliff flora of Thanet reveal an absence of a number of species described by Anand as abundant. Notable by an absence are the species of deep caves and tunnels, perhaps not surprisingly since caves and tunnels represent the most serious threat in terms of coastal erosion and are usually the first parts of the coastline to suffer artificial 'protection work'. From a recent preliminary survey of the Thanet coastline only ten open caves were found to be present, six of which bear algal communities on the walls. Previous studies indicate that forty years ago many more caves were present around the coast of Thanet. Even as recently as 1964 the presence of numerous caves was recorded at Birchington, a locality now almost totally protected by sea wall construction. The remaining stretches of 'natural cliff' are at present being studied in detail, and it is hoped that this will be completed before the Thanet authorities carry through their intention of constructing further lengths of sea-wall (a 1km length is at present being built between Broadstairs and Stone Bay): the ultimate aim is the complete 'protection' of Thanet by means of concrete sea walls.

Further recent examination of other chalk-cliff sites in Kent and Sussex, and limestone coastlines in other parts of England have thus far failed

COASTAL CONSERVATION ON THE ISLE OF THANET Contd.

to reveal cliffs with algal communities as abundant as on Thanet. Indeed, corresponding sites on the Pas-de-Calais coastline of northern France are devoid of these cliff communities. Investigations undertaken on the Fecamp-Etretat chalk coastline of Normandy have, on the other hand, revealed an abundance of such communities on unspoiled cliffs, stack, arch, cave and tunnel formations.

Despite the latter situation, the Kent Trust for Nature Conservation has presented the Nature Conservancy with a case for the designation of two sites on Thanet, Epple Bay (near to the classic Westgate site of Anand) and Botany Bay, as S S S I's (Sites of Special Scientific Interest) solely because of their unique algal communities. Unfortunately, such action can only be an interim measure. Coastal development and urbanisation will inevitably bring about the extinction of these plant communities.

POST SCRIPT:
Communication with the Nature Conservancy and others reveal that local authorities in Kent have decided that the length of coastline at Epple Bay, Westgate, will undergo 'coastal protection' within the next year. Thus, the rich cave-cliff algal communities present there will be destroyed within one year. Another less rich site near Ramsgate is being proposed as an alternative S.S.S.I to Epple Bay.

Ian Tittley.

SARGASSUM MUTICUM.

The new marine algal introduction to the British Isles, Sargassum muticum, not content with having brought about reverberations throughout phycological spheres of interest in this country, has at the same time hit the national news headlines. A front page story in The Times (Saturday May 26 1973), and an article in the The Observer largely repeated facts published recently in Nature, and gave some details of the clearance operations being organised by Dr Gareth Jones (Portsmouth Polytechnic). The nuisance value of S. muticum was further stressed by Dr Jones on BBC radio 4 "World on Sunday", and BBC-TV programme "Newsweek".

Since clearing operations were started during mid-May, with man-power, organisation and finance so far largely provided by Portsmouth Polytechnic with the assistance of groups organised by Dr D Irvine and financed by the Polytechnic of North London, the main populations of Sargassum in Bembridge Lagoon have now been removed. This was carried out by hand and involved the filling of nearly 70 sacks, the combined wet weight of which was approximately two tons. Scattered plants still occur over a wide area (partly due to dispersal assisted by gale force weather conditions preceding the clearing), thus the next phase of the operation involves the detailed examination of the shore for any remaining plants, and for young plants which may have germinated in the meantime. At the time of removal at least one third of the Sargassum population was fertile. Final removal of the algal material to an inland dump will be undertaken by the local authorities.

COLLECTIONS OF MARINE ALGAE II

Resulting, in part, from the circular distributed to B.P.S members in the U.K., the following additional data has come to light.

NAME.	PRINCIPAL COLLECTORS	LOCALITIES
CAMBRIDGE College of Arts and Technology	I.G.Hornsey	Anglesey, Devon, Dorset
DOUGLAS The Manx Museum	Further to previous article Rev.Theophilus Talbot Coll	I.o.M.
EDINBURGH Royal Botanic Gardens	Herbs., Walker-Arnott, Brodie, Sinclair, Greville	World wide
GLASGOW Dept. of Botany, The University	Berkeley, Brodie, Conway, Dickie, Gatty, Greville, Hore, Harvey, Sowerby, Wight and Wise.	Argyll, Antrim Ayr, Bute, Devon, Down, Europe, N.Amer- ica, India
LIVERPOOL, Museum	Herbs, Valley & Ralfs.	U.K., Ireland
LONDON, Dept of Botany, Queen Mary College.	Fritsch Coll., General British coll., Coll., formerly held at Whitechapel Museum	
LONDON Polytechnic of North London	Mrs J Etherington, Dr D Irvine	Cornw., Devon, Dorset, Dun- barton, Fife, Hants, Northhum Sussex, C.I., Ireland.
NORWICH The Nature Conservancy Coastal Ecology Unit	D.Downing, S Goodband, J.Pizzey, D.Ranwell	Anglesey, Argyll E.Loth.Essex Norfolk.Pembs. Ross &Crom.
PLYMOUTH Marine Biological Association	Batters, Bigwell, Boswarva, Brebner, Cocks, Holms, Dr G Boalch, Dr M Parke, H.B.Moore	U.K., mainly Devon & Cornwall
PORT ERIN, I.oMan, Marine Biological Stn., Liverpool Univ.	Dr. M. Parke	Devon, I.o.Man
ST.ANDREWS, Fife, Univ. of St Andrews	(1) Herb Gatty(incl.Cutler Griffiths, Cocks, Turner) (2) Herb Greville (3) Harvey	Anglesey, C., Cornw.Devon, I.oM., IoW., Northumb.Suss. Yorks. Ayr, Arran, Bute Cromarty, Hants Devon, Ireland, Co Dublin & Co Clare, Australia, N.Zealand, Ceylon.

(4) Herb von Mueller (Austr.,N.Z.) (5)L.T.Mereditch (Tasmania) (6) Rev. R.J.Clough,(Aden, Burma, Ceylon) (7) Merrifield (W.Indies) (8) Hall (Massachussetts, N.Jersey) (9) Maria da Cattray(Faro, Italy) (10) Jack (Arbroath) (11) Cleghorn(Fife) (12)E.P.Killip (Cuba, Florida) (13) Dr. Dunn(St.Andrews)(14) Herb Blackler (U.K., Europe, N.America) (15) M.M.McDonald)St. Kilda).

COLLECTIONS OF MARINE ALGAE II Contd.

SHEFFIELD, Museum — Herb Mrs Gatty

WINCHESTER, County Museum Service — Mrs. Fothergill

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PHYCOLOGICAL ACTIVITIES IN NEW ZEALAND.

Workers on the algae in New Zealand are rather thin on the ground, or in the water, and in spite of many opportunities, many fields are untouched.

Most freshwater algologists are working on phytoplankton. One area which has attracted a great deal of attention is the lakes in the hydrothermal area centred round Rotorua. These lakes are relatively shallow and have been beset by two major problems. Firstly there has been the invasion of the lakes by exotic waterweeds (Lagarosiphon major, Elodea canadensis and Egeria densa) which have taken over vacant ecological niches and have become nuisances to boat owners and fishermen. A team from the Botany Department, University of Auckland, headed by Professor V.J. Chapman and Dr J.M.B.Brown is tackling this problem. The second problem is increasing eutrophication by the effluent from weekend residences and small communities which rely on septic tanks for sewerage. The phytoplankton of these lakes has been studied by Dr V.Cassie (Botany Dept., University of Auckland) and Dr G.R.Fish (Fisheries Research Laboratory, Ministry of Agriculture and Fisheries, Rotorua). Dr Cassie is continuing to study the plankton algae of lakes in the North Island of New Zealand, and the seasonal cycles of algae in sewage oxidation ponds. Dr Fish has discontinued routine sampling of Lake Rotorua, and is now engaged in a co-operative effort in monitoring Lake Rerewakaitu in an effort to reduce its present eutrophication. Dr Ann Chapman (School of Sciences, University of Waikato, Hamilton), although a zoologist, is interested in the limnology of the lakes in this area and has research students working on the algae.

Relatively little is being done on the South Island lakes. Dr. Elizabeth Flint (Freshwater Research Section, Ecology Division, D.S.I.R., Christchurch) is examining the phytoplankton of some South Island lakes and trying to relate their distribution to the different kinds of lakes.

Miss Ruth Mason (Botany Division, D.S.I.R., Christchurch) is collecting Charophyta for a monograph on the New Zealand species by Dr R.D.Wood (University of Rhode Island, U.S.A.)

The hot springs which are a noted tourist attraction, and which appear to be a fertile source of research have been virtually neglected by the indiginous algologists. Most of the work on them has been done by visiting algologists (and it may perhaps be noted in passing that the original culture of Mastigocladus used by Professor G.E.Fogg in his work on nitrogen fixation came from a New Zealand hot spring).

Marine research is more advanced than freshwater research. Professor V.J.Chapman (Botany Department, University of Auckland) is continuing his work on the description of the New Zealand Rhodophyceae and is now working on the Ceramiales. He has research students working on New Zealand crustaceous coralline algae, the ecology of Pterocladia and the effect of pollution on Gracilaria.

Dr Murray J. Parsons (Botany Division, D.S.I.R., Christchurch) is studying the taxonomy and morphology of the New Zealand species of the Ceramiales, especially the Dasyaceae and Rhodomelaceae.

Dr M. Mayer (Botany Department, University of Canterbury, Christchurch) has been investigating the life histories of Monostroma spp. in culture. The University of Canterbury is interested in the pollution of the local Avon-Heathcote estuary, and research students have been working on associated algal topics

Contd..../

PHYCOLOGICAL ACTIVITIES IN NEW ZEALAND Contd.

The economic aspects of the larger seaweeds has attracted attention in recent years, and Dr Ray Bailey (Applied Biochemistry Division, D.S.I.R., Palmerston North) is analysing Gigartina polysaccharides in collaboration with Dr Parsons. An extensive project on the large fucaleans, Durvillea spp., is based at Kaikoura, and involves studies of the distribution, quantities, biology, alginate content and effects of harvesting on D. antarctica and D. willana. Dr Robin South (Edward Percival Marine Laboratory, University of Canterbury, Kaikoura) is the principal investigator, and is also carrying out general floristic investigations on the bethic algal marine flora of the Kaikoura region. Dr H.W.Johnston (Botany Department, Victoria University of Wellington) has a programme under way dealing with the chemical analysis of edible seaweeds of the South Pacific, which is being extended to local New Zealand species.

Mr. F.I.Dromgoole (Botany Department, University of Auckland) is completing a study of the metabolism of Carpophyllum species in relation to their ecology.

Miss Nancy Adams (National Museum of New Zealand, Wellington - formerly known as the Dominion Museum until March 31st 1973) is working on the marine algal flora of the Wellington district. The long established Marine Research Laboratory at Portobello, Otago, part of the University of Otago, Dunedin, has at present no algological workers.

Marine micro-algae are at present only being studied at the University of Auckland's Marine Research Laboratory at Leigh. Dr. F.J.Taylor has completed a five year study of the phytoplankton and nutrients at a station in the Hauraki Gulf, and is now commencing a study of the ecology and productivity of the micro-algae of intertidal sand and mud deposits.

There is thus plenty of scope for algological research by visitors, especially at the relatively low level of survey work. Most Universities have freshwater field stations which can be used as temporary headquarters. Each of the four main Universities (Auckland, Wellington, Christchurch, Dunedin) has a marine research station with resident staff. Fuller details of these marine stations are included in a leaflet prepared for the New Zealand Marine Sciences Association by the writer of this note. He would be pleased to send a copy to anyone interested and will endeavour to supply any other information.

Dr. F.J.Taylor,
Marine Research Laboratory
Leigh.
New Zealand.

REQUEST.

Material of Plumaria elegans, Lomentaria articulata, Corallina officinalis, Callithamnion sp., for Mr. G. Wighan, Zoology Dept., University of Reading, Whiteknights Reading R G 6 2 A J
Scrape samples from open rock surfaces (not rock pools) to include basal sediment. The samples should be approximately a handful. Material should be preserved in 70% alcohol in polybags. The following details are also required:

1. Name of site and 6 figure grid reference.
2. Time and date of collection.
3. Approximate height of sample above low water at time of collection.
4. Brief notes on microhabitat e.g. seaward or land facing.
5. Estimate of shore exposure.

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Padina pavonia Messrs. J.H.Price, D.Richardson & I.Tittley, Dept of Botany, British Museum (Natural History), Cromwell Rd. London.SW7 5BD request unpublished records of P.pavonia for Ireland, U.K., North France, Belgium and Holland.

THE CULTURE CENTRE OF ALGAE AND PROTOZOA.

It is now well over thirty years since Professor E G Pringsheim came with his cultures as a refugee from Prague to London and later to Cambridge. The intervening years have seen the Collection grow from little over a hundred strains to well over a thousand and the demand for cultures rise from a hundred or so to five or six thousand annually.

During the war years, Pringsheim had only his wife to assist him with the cultures and visitors to the Botany School in those days will never forget the cultures arranged in racks and orange boxes at various north facing windows. After the war, I first assisted Pringsheim and then on his retirement in 1951, took over the curatorship. For many years, I had only two technicians, part-time assistance with washing-up and the normal services available in a large university department.

As the demand for our cultures grew, it became clear that expansion of staff and facilities was essential and that it was hardly fair to expect one university to shoulder the burden. Support for expansion came from many quarters, not least were resolutions from the British Phycological Society, the British Section of the Society of Protozoologists, and the International Botanical Congress at Edinburgh. This was about the time that the Research Councils were being reorganised. The demand and the opportunity were matched and it was decided to establish a Culture Centre as a component body of the newly formed Natural Environment Research Council.

The Centre with at present, a staff of eighteen is arranged in sections; Dr D.J.Hibberd in charge of freshwater algae, Dr J H Belcher, the marine algae and Dr F.C.Page the Protozoa, each with two assistants. Dr E M F Swale is in charge of electron microscopy with one technician. Sections are responsible for the maintenance and supply of the cultures in their fields. They pursue research which at present, is largely in the realms of taxonomy and fine structure of flagellates and rhizopods. An important part of the Centre's activity is providing information and advice and to this end we are building up a library and pamphlet collection relating to our organisms as well as appropriate card indexes.

A Preservation (or should it be a Conservation ?) Section is planned, but not yet in being. Its aim is to investigate and carry out the long term maintenance of cultures by freeze-drying or in liquid nitrogen. Both these methods show considerable promise and it is confidently expected that a large proportion of the cultures could be preserved within a reasonable time. Preservation is intended to reduce the risk of mutation, contamination, mislabelling and accidental death. It allows greater freedom in the timing of subculturing and, in the case of freeze-drying, saves space and reduces the dangers arising during transit.

The Centre maintains nearly two thousand strains and just under half of these are freshwater algae. The number of marine cultures was greatly augmented recently by the acquisition of the Butcher Collection and Dr Parke's Plymouth cultures. The Butcher Collection was made in an attempt to provide a foundation for studies on the plankton of estuaries and inshore waters likely to be involved as food for shell fish. Dr.Parke's collection arose in conjunction with taxonomic fine structure and life history studies of the nannoplankton.

There are now well over two hundred strains of Protozoa (including colourless algae) which were considerably augmented by many rhizopod cultures added by Dr Page.

About three-quarters of the cultures supplied are used for teaching in universities and other places of higher education. Over ten per cent are used for research. About ten per cent go overseas. About forty five specially selected strains are maintained in regular supply for teaching. Disappointment can result when other strains are requested out of curiosity, ignorance or misplaced hopes. On the other hand, given a little time, we can produce good teaching material of say, four or five different strains of Euglena or of Ankistrodesmus which provide a useful insight into specific differences.

Contd....

THE CULTURE CENTRE OF ALGAE AND PROTOZOA Contd.

About a quarter of the strains held are of taxonomic type material, some dating back to the end of the last century. We are always willing to accept cultures of newly described taxa or strains used in important research. A list of strains which is regularly brought up to date is available free of charge to institutional applicants; the address is CCAP, 36, Storey's Way, Cambridge, CB3 ODT.

E A GEORGE.

PUBLICATIONS OF INTEREST TO PHYCOLOGISTS.

Contributions to the Systematics of the Benthic Marine Algae of the North Pacific. Edited by Isabella A Abbott and Munenao Kurogi

1972 xiv 280 pages, 6 plates. US $15.

Twenty papers followed by discussions are included, which were presented in the U.S.-Japan Seminar on North Pacific benthic marine algae, held in Sapporo, Japan, August 13-16 1971. The papers discuss the systematics of troublesome or commercially important taxa of green, brown and red algae with respect to new knowledge of morphology, physiology, ecology and biochemistry through laboratory culture studies, field culture studies, field ecological studies, ultrastructural studies, chemical studies of cell wall and crossing and breeding studies of interspecific hybrids. All of the papers are significant contributions to science.

"CHONDRUS CRISPUS"

Published by the Nova Scotian Institute of Science and issued as a special issue of volume 27 (1973). This volume is dedicated to Miss Constance J. MacFarlane and Dr.E.G.Young in recognition of their contribution to phycology.

Contents include:

Biology of Chondrus crispus (A.R.A.Taylor and L.C.-M.Chen).

Cytology and Genetics of Chondrus crispus.(L.A.Hanic)

Ecology of Chondrus crispus (A.C.Mathieson and J.S.Prince)

Physiology of Chondrus crispus (R.G.Buggeln and J.S.Craigie)

Ultrastructure and Histochemistry of Chondrus crispus (E.M.Gordon and E.L.McCandless).

Chemistry of Carrageenan (W. Yaphe).

and Bibliography of Chondrus crispus (E.M.Campbell)

Available from:

Nova Scotian Institute of Science,
Science Library,
Dalhousie University,
Halifax, N.S. Canada.

$6.00 soft cover
$9.00 hard cover.

M E E T I N G S

Marine section of the International Biological Program

Symposium on the Eastern Mediterranean

The symposium will be held . the International Oceanographical Institute of the Royal University of Malta, from September 11 - 15 1973

The symposium will be divided into five sections:
Biological effects of Suez Canal migration
Effects of damming the Nile River
Exchange between the Mediterranean and Black Seas
General Biology, Geology, Physics and Chemistry of the Eastern Mediterranean.

Abstracts of papers to be given, and registrations for the symposium to be submitted before May 1 1973
Apply to:

Neil C Hulings
Organiser
Dept of Botany
American University of Beirut
Beirut
Lebanon

PHRITISH PHYCOLOGICAL SOCIETY

Summer Field Meeting
Kirkwall, Orkney, Scotland - July 28 - August 4 1973.

For further details:-

Dr T A Norton
Botany Dept.
The University
Glasgow. W2.

ANNUAL COLLOQUIUM OF THE SOCIETE PHYCOLOGIQUE DE FRANCE

8 - 11 November 1973

Station Biologique de Roscoff.
Further information from:-

Prof. Mme Gayral
Laboratoire de Biologie Cellulaire et D'Algologie
39 Rue Desmoueux
1400 Caen. France.

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N.S.W. LICENCES KELP GATHERERS.

Persons wishing to gather kelp or seaweed for commercial purposes in New South Wales will need a special licence to do so in future.
This was announced in late July by the N.S.W. Chief Secretary, Mr. Ian Griffith, who said that in view of the importance of seaweed to the fisheries of that State there was increasing need to control and regulate the cutting and removal of seaweeds from certain areas.
He said that modern scientific investigation had clearly shown the importance of aquatic plants in relation to food chains of fishes.
'There has been an increasing number of inquiries from people seeking to cut and remove seaweeds, and the demand from local people and from overseas will likely increase as greater emphasis is placed on harvesting the recources of the sea in the future' he said.
Licences will be issued for specific areas and holders will have to comply with certain conditions.

Extract from Australian Fisheries 31 (9) : 33. 1972.

NEW MEMBERS TO MARCH 1973.

AGHAJANIAN, J.G., Botany Dept., Univ.North Carolina, Chapel Hill, N. Carolina 27514 U.S.A

AKATSUKA, I., Biology Dept. Science Faculty, Tokyo Metropolitan Univ, Fukazawa, Setagaya, Tokyo, Japan.

AYKULU, J. Mrs, Ankama Univ, Fen Fakultesi, Botanik Kursusu, Ankara, Turkey.

BEALES, R.A., Dept. of Biology, Paisley College of Technology, High Street, Paisley PA1 2BE Scotland.

BENHAM, B.R., 20 Stanley St, Whitefield, Manchester

BELIVEAU, D.J., Botany Dept, Univ Alberta, Edmonton, Alberta.Canada T6G 2E1.

BIRCH-ANDERSON, P., Nattegalevej 66, DK 2700 Copenhagen N.V., Denmark.

BOERNER, Ralph E., Dept. of Botany, Nelson Biological Laboratories, Rutgers College, Rutgers Univ, New Brunswick, New Jersey 08903. U.S.A.

BOILLOT, A.Dr. Laboratoire De Botanique, Universite de Rennes, Beaulieu 35500, France

BRICKLEY, M.J., 16 Munroe St, Woburn, Mass. 01801. U.S.A.

BUCHANAN, J.S., 5 Coxburn Brae, Bridge of Allan, Stirlingshire RK9 4PS

CARROLL, D.M., Botany Dept, University College, P O Box 78, Cardiff CF1 1XL.

CHRETIENNOT, M-J. DR., Atation Marine d'Endoume, Rue de la Batterie des Lions, 13007 Marseille, France.

COLES, S.M.Dr., Coastal Ecology Research Station, Nature Conservancy, Colney Lane, Norwich, Norfolk NOR70F

COLLIER, A.W., Dept. of Biological Science, Florida State Univ, Tallahassee, Florida 32306, U.S.A.

CORTEL-BREEMAN, A.M.Dr., Dept of Plant Systemmatics, Biological Center, Kerklaan 30 postbus 14, Haren (Gr)Netherlands

COUGHLAN, S., Marine Biology Dept, Marine Science Labs, Menai Bridge, Anglesey.

CRONBERG, G., Trelleborgsv. 32, S 230 42 Tygelsjo, Sweden.

ESSER, Stephen C., Dept of Botany, Univ of Maryland, College Park, Maryland 20742. U.S.A.

FILION, C., Botany Dept., Univ Glasgow, Glasgow W2

FOSTER, M.S. Dr., Dept Biological Sciences, California State Univ, 25800 Hillary St, California 94542 U.S.A.

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GOODERHAM, K., Grey College, Durnham Univ, Durham City, DH I 3LG

van GORKHAM, H.J..Dr., Bipohysical Lab, State Univ, Shelpenkade 14a, Leiden, Netherlands.

GOULDER, R. Dr., Dept Plant Biology, The University, Hull.

GRITTEN, M. Mrs., School of Plant Biology, Univ Coll. North Wales, Bangor, North Wales.

HADI, R.A.M., Botany Dept, Univ Glasgow, Glasgow. W2.

HALL, J.A. Dr., Water Pollution Research Lab, Elder Way, Stevenage, Herts.

HARDY, D.Mrs., 14 Stirling Close, Windsor, Berks SL4 4PW

HEPTON, C.E.L. Dr., Tremont, Cusgarne, Truro, Cornwall.

HEYWOOD, P. Dr., Dept of Microbiology, Yale Medical School, New Haven Conn. 06510, U.S.A.

HINTON, GS.F., Botany Dept, Univ Glasgow, Glasgow. W2.

HOLTON, R.W. Dr., Dept Botany, South Rd, Univ Durham, Durham.

HOOPER, R., Dept of Biology, Memorial Univ of Newfoundland, St.John's Newfoundland.

NEW MEMBERS Contd.

JEPHSON, N.A., Upper Glynn Lodge, Belmont Road, Bangor, Caerns.

JOLLEY, E.T., Miss, Dept of Botany/Microbiology, Univ College of Wales, Aberystwyth, Penglais, Abersystwyth. Card.

LOWE, R.L. Dr., Dept Biology, Bowling Green State Univ, Bowling Green Ohio 43403 U.S.A.

MAULGOOD, B.K., Botany Dept, Univ of Glasgow, Glasgow. W2.

McBride, D.L., Botany Dept, Univ of California, Berkeley, California 94720. U.S.A.

MENEZ, E.G., Smithsonian Oceanographic Sorting Center, Smithsonian Inst, Washington D.C. 20560 U.S.A.

MIN-THIEN, U., Botany Dept, Univ Adelaide, Adelaide, S.Australia 5001 Australia.

MITCHELL, M., Miss, Ponsantuel, Mawgam, Helston, Cornwall.

PEDERSON, P.M., Inst for Sporeplanter, Farimagsgade 2D, SK1353 Copenhagen, Denmark.

PERRY, A.R., Botany Dept, National Museum of Wales, Cardiff CF1 2NP

POSTEK, Michael T., Box 1891, College Station, Texas 77840. U.S.A.

PRANCE, N.B., Botany Dept, Univ Coll, P.O.Box 78 Cardiff CF1 1XL.

RAMON, E. Dr., Botany Dept, The Hebrew University, Jerusalem, Israel.

REX, B., Marinbotaniska Institutionen, Carl Skottsbergs Gata 22, S 413 10 Gothenberg, Sweden.

ROBERTS, M., 4 Heoldon, Whitchurch, Cardiff.

SAKSHAUG, E., Forsteamanuensis cand. real, Univ Oslo, Inst Marine Biochemistry, N 7034 Trondheim Nth, Norway.

SANTORE, U.J., Imperial College Dept of Botany, Prince Consort Road London. Sw7 2BB.

SATTERTHWAIT, D., Biology Dept., Univ California, Los Angeles, California 90024. U.SA.

SIMONSEN, R. Dr., Institut fur Meeresforachung, D-285 Bremerhaven, Am Handelschafen 12, Fed.Re. German.

SINCLAIR, C.Miss, Botany Dept, Univ Durham, Science Labs, South Rd,Durham.

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TAI, Y.C.,Miss, Botany Dept, Univ College, P.O.Box 78, Cardiff CF1 1XL.

TAYLOR, G.E., Miss, Dept of Plant Sciences, The University, Leeds LS2 9JT

VELDE van de H.H. drs, Dept of Botany, Free Univ, De Boelelaan 1087, Amsterdam. The Netherlands.

VILLALARD-BOHNSACK, M. Dr., Biology Dept, Roger Williams College, Bristol, Rhode Island 02809, U.S.A.

WANTABE, M., Botany Dept, National Science Museum, Hyakunincho 3-23-1, Shinjuku, Tokyo. Japan.

WATERS, R.J.Miss, 78 Unthank Rd, Norwich. Norfolk.

WEBSTER, A., Dept Botany, Univ College, Galway Ireland.

WHEELER, J.H., Dept Botany & Bacteriology, Univ Arkansas, College of Arts and Sciences, Fayetteville, Arkansas 72701 U.S.A.

WILLIAMSON, F.B. Dr., Biochemistry Dept, Mariscal College, Univ Aberdeen, Aberdeen AB9 1AS.

WOOD, G., 278 Grace Way, Stevenage, Herts.

WYER, D.W.Dr., Coastal Ecology Research Station, Colney Lane, Norwich, NOR 70F.

ADDRESS CHANGES

AKATSUKA, I., c/o Mr. Tetsumoto, 11-7, Naka-meguro-4, Meguro, Tokyo, Japan.
DREBES,G, Dr., Biologische Anstalt Helgoland, Litoralstation, 2282 List/Sylt, Hafenstrasse 3.
EDELSTEIN, T., National Research Council of Canada, Atlantic Regional Laboratory, 1411, Oxford Street, Halifax N.S. Canada.
PROWSE, G.A. Dr., c/o Department of Botany, University of Hawaii, Plant Science Building Room 101, 3190 Maile Way, Honolulu, Hawaii 96822

PORTSMOUTH POLYTECHNIC : Department of Biological Sciences.

N.E.R.C. Research Assistant in Algology.

Research assistant required to work on Sargassum muticum for 3 - 4 months (June /July to October 1973). Applications from 2nd and 3rd year biology students will be considered. Salary £12.00 per week.
Applications should be made as soon as possible, giving name, address, age and qualifications, to :

W.F. Farnham or Dr E.B. Gareth Jones
Portsmouth Polytechnic
Dept of Biological Sciences
King Henry I Street
Portsmouth
Hants

NEXT ISSUE

It is hoped that the next issue of the Newsletter will be published at the end of November 1973. Contributions should reach the editoe not later than November 1st.

Newsletter No. 5 issued by the British Phycological Society, C/O Department of Botany British Museum(Natural History), Cromwell Road, London S W 7 5 B D.
Edited by Ian Tittley and duplicated at the British Museum (Natural History).

VIIIth International Seaweed Symposium

The International Advisory Committee has accepted an invitation from the University College of North Wales to hold the Eighth International Seaweed Symposium at Bangor, North Wales, U.K. from August 17th to 24th, 1974. The Symposium is open to all those who are interested in the various aspects of seaweeds, ranging from the purely scientific to industrial utilisation.

Programme: The programme will include lectures by invited speakers, papers, collecting trips and excursions; a provisional outline is shown below.

Saturday, 17th August	-	Arrival and registration
Sunday, 18th August	-	Excursions to the Isle of Anglesey
Monday, 19th August	-	Papers
Tuesday, 20th August	-	A.M. : Papers. P.M.: Excursions
Wednesday, 21st August	-	Papers
Thursday, 22nd August	-	Papers
Friday, 23rd August	-	A.M. : Papers. P.M. : Excursions
Saturday, 24th August	-	Depart

Excursions will be arranged to places of algal interest in North Wales and provision will be made for the examination of collected specimens. Tours will also be arranged through the mountains of the Snowdonia National Park, with visits to places of archaeological and historical importance, including Caernarvon and other castles.

Accommodation: Participants and their guests may choose accommodation either in University Halls of Residence, or in hotels in Bangor or on Anglesey.

Estimated Costs:

Conference Fee (to include local excursions)	£15
Accommodation in Halls of Residence (to include meals)	£28

Post-Symposium Excursion: A post-symposium excursion to the Isle of Man will be arranged for 24th - 28th August. This will be centred at the Department of Marine Biology (University of Liverpool), Port Erin. It will be in two parallel sections, one for divers and one for shore collectors, each including seminars on field techniques.

The estimated cost, to include transport from Bangor to the Isle of Man, will be £35.

If you wish to receive further circulars and information, please complete and return the enclosed card as soon as possible and not later than July 31st, 1973 to:

The Secretariat,
VIIIth International Seaweed Symposium,
c/o Marine Science Laboratories,
Menai Bridge,
Anglesey, U.K.