

# THE PHYCOLOGICAL SOCIETY OF AMERICA

Volume XV

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Number 3

## CORVALLIS MEETINGS 26-31 August

As in the past the Phycological Society of America will meet during the AIBS meetings, to be held at Oregon State University, Corvallis. The local representative for the Society is Harry K. Phinney, Associate Professor of Botany. REGISTRATION is \$5 (\$3 for graduate students) if completed before 1 August (\$6 after 1 August). Registration forms were enclosed with the May issue of the News Bulletin. Those preregistering may report directly to their Housing unit upon arrival.

HOUSING in University residence halls is available at \$2.75 per night, per person, for double occupancy (\$3.75 for single). Residences will be open from 9 a.m. Saturday 25 August to 5 p.m. Friday 31 August. Other accommodations cannot be processed by the AIBS but must be made separately.

MEALS for those in University Housing will be at the Residence Halls on a cash basis with a fixed price meal ticket. The service will be cafeteria style with a limited choice menu. For those not living in University Housing, the Memorial Union Commons will be operating a cafeteria. Several good restaurants are in the Corvallis area and information concerning them may be secured from the "Information Committee" on arrival.

REFRESHMENTS of an alcoholic nature are available at various places in Corvallis, Albany (10 miles away) and Salem (40 miles). Corvallis is not a 'dry' town although places just across from the campus are. Bottle liquor is available in state-controlled-'green-front grocery stores' but usually a dollar liquor license is necessary before making any purchases.

### GENERAL PROGRAM

SUNDAY, 26 AUGUST—9:00 a.m. Field Trip

MONDAY, 27 AUGUST—9:00 a.m. Contributed papers I

12:00 noon Luncheon

2:00 p.m. Contributed papers II

TUESDAY, 28 AUGUST 9:00 a.m. Symposium: Space Biology-Ecological Aspects

2:00 p.m. Symposium, continued

8:00 p.m. AIBS General Meeting; Speaker—Melvin Calvin

WEDNESDAY, 29 AUGUST 9:00 a.m. Contributed Papers III

11:00 a.m. Annual Business Meeting

### AIBS

The Phycological Society of America officially became a full member in the American Institute of Biological Sciences on 1 July 1962. The entire membership of the Society is entitled to privileges of membership in the AIBS. The most tangible benefit is receipt of the *AIBS Bulletin* and the Newsletter (*In Brief . . . In Biology*). The August issue of the *Bulletin* contains the program of the Meeting.

Each member Society is entitled to one representative on the Governing Board. Harold C. Bold, University of Texas, will represent the Society at the Corvallis meetings. A permanent 4-year representative is to be elected.

The PHYCOLOGICAL NEWS BULLETIN is the official publication of the Phycological Society of America and is published in Vancouver, B.C., Canada. Letters, news items, other contributions and communications concerning editorial matters should be addressed to the Editor. Changes of address should be sent promptly to the Secretary-Treasurer. Subscription orders from libraries and other institutions, and membership requests should also be sent to the Secretary-Treasurer. Past volumes of the NEWS BULLETIN are available from the Editor at \$2 each. Claims for missing issues should be made to the Editor.

#### OFFICERS AND EXECUTIVE COMMITTEE

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#### LETTER TO THE EDITOR

Dear Sir (excuse me, Madam):

I should like to take up the cudgels (in a friendly way, of course) with my old friend Dr. Ralph A. Lewin, in defence of the term "Algology". (Phyc. News Bull. 15(2):22, May, 1962.)

"Algology" may not be too correct pedantic-entomologically, but to me at least, as a fellow Londoner, it is preferable to "Phycology", the Greek version of "Fykeology" (studies in connection with the used furniture trade).

"Phycology" gives me aches and pains in the neck.

(Signed) I. Mackenzie Lamb

NEW PRODUCT: Transparent closure caps for culture tubes are now being marketed by Bio-Tech, Inc., of Cambridge, Massachusetts, under the name of RES-CAP. These caps, which may be autoclaved and used repeatedly, permit gas exchange and at the same time prevent loss of moisture from the tube. The plastic material is inert, thus eliminating volatile growth inhibitors that might otherwise be present.

#### DEADLINES OF INTEREST

NATIONAL SCIENCE FOUNDATION: 1201 Constitution Ave., Washington 25, D.C.  
4 SEPTEMBER—Applications due for Fall Award of Postdoctoral Fellowships.  
1 OCTOBER—Proposals due for Summer Conferences for College Teachers for 1963.  
8 OCTOBER—Applications due for Senior Postdoctoral Fellowships.  
—Applications due for Science Faculty Fellowships.

#### SPECIAL ACTIVITIES AT CORVALLIS MEETINGS

FORAY: Sunday, 26 August, those interested will assemble at Cordley Hall, room 314. Members should plan to supply glass containers; however, newspapers and large plastic bags, primarily for marine collecting, will be furnished. (Room 314

#### MEETINGS OF INTEREST TO PHYCOLOGISTS

- 22 JULY-11 AUGUST—NATO Advanced Study Institute, "Algae and Man", Potamological Institute, University of Louisville, 3005 Upper River Road, Louisville, Kentucky (Dr. Daniel F. Jackson).
- 13-16 AUGUST—3rd Symposium on Biological Problems in Water Pollution, Robert A. Taft Sanitary Engineering Center, 4676 Columbia Pkwy., Cincinnati 26, Ohio (C. H. Tarzwell, Chief, Aquatic Biology).
- 20-25 AUGUST—15th International Congress of Limnology, University of Wisconsin, Madison (Dr. J. C. Wright, Birge Hall, University of Wisconsin).
- 19-24 AUGUST—8th International Congress for Microbiology, Montreal, Canada (Secretariat, 3574 University St., Montreal).
- 26-31 AUGUST—17th Annual Meeting, PHYCOLOGICAL SOCIETY OF AMERICA, Oregon State University, Corvallis (with the AIBS, 2000 P St. N.W., Washington 25, D.C.).
- 1-12 OCTOBER—Plankton Identification and Control, Robert A. Taft Sanitary Engineering Center, 4676 Columbia Pkwy., Cincinnati 26, Ohio.
- 15-26 OCTOBER—Bio-Oxidation of Industrial Wastes, Robert A. Taft Sanitary Engineering Center, 4676 Columbia Pkwy., Cincinnati 26, Ohio.
- 26-31 DECEMBER—129th Meeting, AAAS, Philadelphia, Pennsylvania.

will be available later for examination of collections. Blotters and paper will be available for those wishing to prepare herbarium specimens.) The caravan will proceed west from Corvallis by Highway 20. From Philomath by Highway 34, stopping to collect at: Yew Creek, a typical stream of the coast range; and at Fall Creek Hatchery, for collecting in Fall Creek and the hatchery tanks. Lunch will be at the Iron Kettle in Waldport where anything from hamburgers to steaks or seafood will be available. From Waldport, the caravan will go south on Highway 101 to Neptune Park, where the collecting area is a short distance south of the main camp area. There will be ample time for exploration of the upper intertidal as the low tide (+2.2 feet) is about 4:30. The party will leave at 4:30, driving directly to Corvallis by the same route, returning between 6:30 and 7:00.

LUNCHEON: Monday, 27 August, at noon in the Terrace Room of the Memorial Union. The cost is approximately \$1.50 and tickets should be purchased by 9:00 p.m., on Sunday, 26 August, at the registration desk. This luncheon is scheduled during the first day of papers.

SYMPOSIUM: Tuesday, 28 August entitled "Space Biology: Ecological Aspects" has been arranged by Dr. Frieda B. Taub, University of Washington, by the Ecological Society of America. The symposium will be cosponsored by the American Society of Zoologists, the Botanical Society of America, the Society for Industrial Microbiology, and the American Fisheries Society, as well as the Phycological Society of America. Ten half-hour talks are scheduled for the day-long symposium. Time has been allotted in both the morning and afternoon sessions for general discussion. Jack Myers, Past President of the Phycological Society, will preside at the morning session.

ANNUAL MEETING: Wednesday, 29 August, at 11:00 following the third paper session. The meeting will be presided over by the President, Luigi Provasoli, and the results of the election of officers will be announced.

#### ROLF GRONBLAD — 1895 - 1962

This is a brief notice of the death from uraemia, of the eminent desmidiologist and my dear friend, DR. ROLF GRONBLAD, of Karis, Finland, on 20 April 1962. For some years his health was poor, and last year he suffered an almost fatal heart attack.

He practiced the profession of dentistry, with his dental office in his home, equipped with an X-ray machine that he operated himself, and a very modern air-turbine drill; unusual equipment, I thought, for such a small place as Karis.

With no formal training in botany he was no doubt attracted to the Desmidiaceae, as I and many others have been, by their sheer beauty, symmetry, and intricate form. He must have started, as an amateur, some years before 1919, the date of his first paper. Since then he has published about 40 others, with 2 or 3 more now in press that will appear posthumously. By constant study for about 45 years of this one subject he attained world-wide fame and reached the top rank among desmid specialists. I think that all other desmid experts will agree that his papers are models of clarity, exactness, and attention to detail. Notwithstanding this high reputation, he was one of the most unassuming and finest and kindest men I have ever known. In 1950 the University of Turku awarded him the honorary degree of Fil.Dr.h.c., in recognition of his outstanding achievements.

A biography of Dr. Grönblad will appear in the Yearbook of the Societas Scientiarum Fennica, probably written by Prof. Hans Luther, one of his close personal friends.—Arthur M. Scott, New Orleans.

### THE ART OF PRESENTING A PAPER

After one of the paper sessions of the 1961 meeting, it was suggested that the *Physiological Bulletin* should carry an article on "How to Give a Paper". Thus, a few suggestions are as follows.

- 1) *Stay within the time limit* assigned. It is better to end early leaving time for a brief discussion than to hurry near the end or actually be stopped. (It is somewhat embarrassing and annoying for the person presiding to call the time limit.)
- 2) *Organize the paper* beforehand to INTRODUCE the audience to the subject; REVIEW briefly pertinent earlier work; OUTLINE briefly techniques employed; REPORT briefly results obtained; DISCUSS the significance of these results; and finally, CONCLUDE what this research has shown.
- 3) *Talk to the audience* at all times. If necessary (and available) use the blackboard to illustrate a point that may be unclear. However, remember that the animate audience is interested in the explanation, not the inanimate blackboard or projection screen.
- 4) *Speak loudly enough* so that the person standing in the back by the door may hear. When showing slides RAISE your voice somewhat, as silent projectors are non-existent. If someone is eagerly sitting forward, it is most probable that he is trying to hear the paper. (For those listening let the speaker know you can not hear by cupping your hand behind your ear. It is frustrating to be told afterwards that a paper couldn't be heard beyond the fifth row.)
- 5) *Label Kodachrome or lantern slides* numerically in the upper left-hand corner. Thus when the operator puts a slide in the machine the illustration will be projected correctly on the screen. Have the slides in the correct order, in a box with your name, title of the paper, and the time (or order) of presentation.
- 6) *Mount all slides between glass* so that once a slide is in focus, it will stay in focus. In mounting slides in glass, though, be careful to have the glass tight and to have the mounting tape smooth, so as not to jam in the machine.
- 7) *Use only slides that have good contrast*. Often the room can not be completely darkened and over exposed slides do not project well.
- 8) *Know the order of your slides*, and ask for each one in a clear voice. Try to give the projectionist time to change slides calmly.
- 9) *Be prepared for anything to go wrong*. This may mean finishing your talk without slides or having a slight delay. Ad libbing is essential. It is more embarrassing for the projectionist than for you.

Probably the most important point is to know the material well. Generally, the younger members do better than the older, more experienced because the former take the time to practise the talk. If the material is worth presenting, it is worth presenting well.

### ASOCIACION LATINAMERICANA DE FICOLOGIA (ALAF)

In February, 1962, at Puerto Deseado, Argentina, was founded the Latin American Phycological Society. Representatives from Brasil, Chile, Perú, Uruguay, and Argentina attended the meeting and helped form the Society. A working committee consisting of A. B. Joly of Brasil, Oscar Kühnemann of Argentina, and H. Etcheverry of Chile was designated to establish the Society and come in contact with other Phycological groups as well as other Latin Americans studying the algae. At the time of founding there were 33 members from the 5 countries. Information regarding the Society may be secured by contacting Dr. O. Kühnemann at Centro de Biología Marina, Buenos Aires, Argentina.

### CURRENT RESEARCH REPORTS

Information is primarily from the Bio-Sciences Information Exchange of the Smithsonian Institution, Washington 25, D.C. No report will be published without the specific permission of the Principal Investigator (the first-named person). Inquiries concerning any of the reports should be made directly to those involved. Workers not ordinarily supplying an abstract to the Bio-Sciences Information Exchange are invited to send such research reports directly to the Editor.

#### ISOLATION, GROWTH, AND NUTRITION OF MARINE BLUE-GREEN ALGAE

Chase Van Baalen

Institute of Marine Science, University of Texas, Port Aransas

The Myxophyceae are an important element in inshore marine vegetation but there has been little attempt to isolate in pure culture and to study any of the more common types.

The present isolation program will be enlarged and further evaluation of other methods will be carried out in an effort to eliminate the use of any possible mutagenic agent in the isolation method.

The mineral nutritional requirements will be examined, together with the possible need for organic compounds, particularly vitamins. The high percentage of vitamin B<sub>12</sub> requiring forms already seen will be further checked with new isolates from different localities.

Limited biochemical investigations will be carried out on problems already partially developed in the blue-green algae, e.g., the occurrence of 6-substituted pteridines and their possible function, and on other problems which have arisen during the nutritional studies of the organisms already in culture.

#### TOXIC PROPERTIES OF THE BLUE-GREEN ALGAE

Floyd F. Davidson

Biology Department, Baylor University, Waco, Texas

The antibacterial activity of extracts of certain forms of Chlorophyta, Phaeophyta, and Rhodophyta has been reported from several laboratories, but little is known about the antibacterial action of the Cyanophyta. It has been well established in this laboratory that extracts from certain species of Cyanophyta exhibit an antagonistic action against certain Enterobacteriaceae and against some intestinal protozoan parasites. Although the exact chemical nature of the active principle is yet unknown, several of its biological and physical characteristics have been observed.

In the proposed project a survey of the various cyanophycean species for antibacterial activities will be continued, and will be extended to include the effects on *Leptospiras* and *Vibrios*, in addition to the Enterobacteriaceae. By means of electrophoretic and chromatographic separation of the extract components, an attempt will be made to correlate the antibacterial activity with known materials in the blue-green algae. The study of the antiparasitic activity exhibited by the extracts against certain protozoa will be extended to include the cestodes, trematodes, and nematodes. An additional project will be initiated to determine the effects of blue-green algae extracts on vertebrate blood, and the possible production of antibodies for the antigen.

#### NUTRITIONAL QUALITY AND POPULATION DEVELOPMENT

Alexander M. Dollar and Frieda B. Taub

College of Fisheries, University of Washington, Seattle 5

The study proposes to determine how nutritional quality and quantity of food may affect rates of individual development and fecundity, and how these factors ultimately may influence population structure over successive generations.

An algal (*Chlorella*)-invertebrate (*Daphnia*) system has been chosen because the characteristics of these organisms are ideal for this type of study. Starting from known simple chemical media, two physiological states of *Chlorella pyrenoidosa* (nitrogen-rich and nitrogen-poor) will be produced, analyzed and fed at four levels to individuals and populations of *Daphnia*. Feeding levels will be adjusted so as to range from food limited to non-limited quantities. The quality of these food sources will be calculated (on the basis of biomass, dry weight, nitrogen and calorie transfer) as efficiency of utilization in terms of: 1) allowed food (standing crop); 2) consumed food; and possibly 3) assimilated food. In addition to the nutritional aspects, the role of possible exocrine substances will be considered.

#### THE EFFECTS OF GIBBERELLINS ON *CHLORELLA*

Nicolin J. Plank Gray

Department of Biology, Whitworth College, Spokane, Washington

This project is being carried out to investigate 1) the effect of gibberellins on the growth curve of *Chlorella* in batch culture; and 2) the effect of gibberellins on the lipid and nitrogen contents of *Chlorella* cells. An urea-EDTA type nutrient medium will be used for greenhouse culture of *C. pyrenoidosa* (Emerson strain) in 5% CO<sub>2</sub>-aerated carboys. There will be a control group and others with gibberellin concentrations varying from 1.25 to 5.00 parts per million.

Cell counts, cell diameters, and packed volumes of cells will be used to plot the growth curves. The cultures harvested at the peak of the growth curve will be analyzed for dry weight, lipid, and nitrogen content.

#### GROWTH AND PHYSIOLOGY OF ALGAE

Osmund Holm-Hansen

Botany Department, University of Wisconsin, Madison 6, Wisconsin

1. Study of vitamin B<sub>12</sub> and its importance in algal nutrition. This will include a study of possible requirements for exogenous B<sub>12</sub> by both littoral and planktonic forms and also the ability of these plants to synthesize this vitamin.
2. Assimilatory routes of C<sup>14</sup>-labelled bicarbonate and organic substrates will be investigated with both Cyanophyta and Chlorophyta.
3. Nutritional experiments to demonstrate micro-element requirements in algae are in progress; these studies will be coupled to the C<sup>14</sup> isotope studies in an effort to discern the effects of micro-element deficiencies in the metabolic pathways of the cell.
4. Studies on the effects of freezing and lyophilization will receive more attention.
5. Studies on Ornithine Cycle enzymes in Cyanophyta and Chlorophyta will be continued, using cell-free preparations.
6. The carbon nutrition of isolated lichen fungi and algae will be continued. Two questions to be examined are the excretion of organic compounds by the algal cells and the possibility of adaptive enzyme formation in the fungus as elicited by the polysaccharide material of the algal cells.

#### STUDIES ON LAMINARIA IN BRITISH COLUMBIA, CANADA

Louis D. Druehl

Department of Biology & Botany, University of British Columbia, Vancouver 8

Seasonal studies on local species of *Laminaria* are being conducted to determine rate and mode of growth, thallus "erosion," and time of sporulation. These field observations are being made along the exposed southwest coast of Vancouver Island and in the protected waters of Burrard Inlet. Parallel studies are being carried out under controlled light and temperature conditions in aquaria with a closed circulation system. Data from these studies will be used to distin-

guish between environmental and genetic variations in order to determine the taxonomic validity of the morphological characteristics. Hydrographic data will be collected concurrently to see if these can be correlated with morphological plasticity. Comparison of gametophytic phases grown *in situ* and *in vitro*, coupled with interfertility studies in the genus *Laminaria* are also being made.

#### GENETICS AND SEXUAL REPRODUCTION IN THE DESMIDS

Richard C. Starr

Department of Botany, Indiana University, Bloomington

In this laboratory the following problems are currently under investigation: 1) sexual reproduction in the genus *Closterium*; 2) host-parasite relationships in *Closterium* and parasitic fungi; 3) electron microscope studies of the pyrenoid and other organelles in desmids and other algae; 4) isolation of sexual strains of desmids. The investigations will be continued this next year and others involving the genetics of a newly isolated desmid will be attempted.

#### LATE CRETACEOUS AND TERTIARY CHAROPHYTA

OF NORTH AMERICA

Raymond E. Peck and Jerry Eyer

University of Missouri, Columbia

The Late Cretaceous and Tertiary Charophyta (consisting mostly of gyrogonites) will be collected, studied systematically, described, and illustrated. Especial attention will be given to ecologic observations and stratigraphic distribution. North American species will be compared with described species from central Europe and France.

#### MITOSIS AND MEIOSIS

C. C. Bowen, S. Pankratz, G. Peyton, T. Jensen, L. LaCroix

Department of Botany and Plant Pathology, Iowa State University, Ames

An electron microscopic study of protoplasmic changes in the course of cell multiplication with emphasis on organization of the genetic material and mechanisms of its distribution. Techniques include a comparison of structure as demonstrated by the electron microscope with that seen in the light microscope in the same cell, and reconstruction of three dimensional fine structure by a study of very thin serial ultra-sections. Two approaches to this problem are used: 1) a study of cytoplasmic and nuclear structure and its changes in the course of mitosis and meiosis in higher plants (sporocytes of *Psilotum*) with emphasis on chromosome structure and behavior; 2) a study of cytoplasmic and centropoplasmic structure and its changes in the course of fission in a "primitive" and presumably ancestral blue-green alga (cells of *Nostoc*).

#### THE EFFECTS OF FLUORIDES ON BASIC PLANT PROCESSES

Irving B. McNulty

Department of Botany, University of Utah, Salt Lake City 12

Research on this project during the past 3 years has indicated that fluorides in low concentration stimulate oxygen consumption by plant tissues. Data accumulated to date indicate that this is probably due to an upset in the balance of phosphorylated nucleotides in the alga *Chlorella*. However, in higher plant tissues, e.g., the leaves of plants, there is a strong indication that fluorides stimulate the hexose monophosphate pathway of respiration. A portion of this proposal is to investigate leaf tissue further and determine if the phosphorylated nucleotides are affected by fluoride. Subsequently, the effect of fluoride on the EMP and HMP pathways will be explored by utilizing C<sub>1</sub><sup>14</sup> and C<sub>6</sub><sup>14</sup> labelled glucose.

## INTERMEDIARY METABOLISM OF SULFUR IN TWO PLANTS

Richard J. Block and Thomas H. Haines

Boyce Thompson Institute for Plant Research, Inc., Yonkers, New York

At least four  $S^{35}$  chloroform-soluble compounds have been obtained from *Ochromonas danica* and *O. malbamensis* grown in the presence of  $Na_2S^{35}O_4$ . These four compounds appear to be chemically and metabolically interrelated. Although the organism is able to incorporate them into its structure, it is unable to utilize the sulfur for the synthesis of methionine, cystine, etc. Thus the sulfate in these chloroform-soluble compounds appears to be metabolically inert. Evidence obtained to date indicates that one of these  $S^{35}$  compounds may be a sulfated saponin. Attempts are being made to isolate and to characterize these unidentified S-containing compounds.

## NEWS AND NOTES

PHIL COOK, recent Ph.D. recipient, is teaching the Phycology course at Indiana University this summer.

BILL DARDEN and MIKE WYNNE are two of the assistants in the Marine Botany course offered at the Marine Biological Laboratories, Woods Hole, Massachusetts.

CLINTON J. DAWES is presently located in Germany with the U.S. Infantry. His phycological work is restricted to literature.

RITA HORNER is the holder of an NSF Fellowship at the University of Minnesota Biological Station.

GILBERT C. HUGHES, Kansas State Teachers College, is spending the summer between Seattle and Friday Harbor, Washington, continuing his study of the marine fungi of the Pacific Northwest.

HAROLD J. HUMM, Duke University, is teaching Marine Botany course being offered at the Virginia Fisheries Laboratory, Gloucester Pt.

DANIEL F. JACKSON, Potamological Institute, University of Louisville, Kentucky, is in charge of an NSF Institute on Recent Advances in Limnology as well as the NATO Advanced Study Institute entitled Algae and Man.

NORMA J. LANG, recent recipient of the Ph.D. from Indiana University is now a post-doctoral Fellow at the University of Texas continuing her electron microscope studies.

RICHARD E. NORRIS spent the first part of the summer teaching fresh-water algae at University of Minnesota Biological Station at Lake Itasca. He will spend the fall doing research on the marine algae at Hopkins Marine Station, Pacific Grove, California.

GEORGE F. PAPPENFUSS was a U.S. participant in the Israeli Southern Red Sea Expedition during March and April. He managed to visit his South African relatives for the first time in over 20 years.

LUIGI PROVASOLI is a special lecturer in the Marine Botany Course at Woods Hole, Massachusetts.

ROBERT RASMUSSEN, University of Minnesota, has received an NSF grant for PhD study in Christchurch, New Zealand.

ROBERT F. SCAGEL and GEORGE F. PAPPENFUSS are U.S. participants in the Indian Ocean Expedition to collect benthic marine algae on the east coast of Africa. They will be collecting from September through December.

RICHARD B. SEARLES has had his graduate work interrupted by the draft and presently he is stationed with the Biological Laboratories at Ft. Detrick, Fredrick, Maryland.

LOUIS G. WILLIAMS is with the National Water Quality Network of the U.S. Public Health Service in Cincinnati Ohio.

Contrary to the membership listing, RICHARD B. WILLIAMS is still a graduate student at Harvard University. He is not an Assistant Professor at the University of Georgia.

H. B. S. WOMERSLEY of Adelaide, Australia, has spent the spring at the University of Minnesota and is at the Friday Harbor Labs of the University of Washington for the summer. He will be a Visiting Professor at the University of British Columbia from August to October.

JACQUES S. ZANEVELD of the Norfolk Branch of College of William and Mary, is the instructor in the Marine Algae course at the Duke Marine Laboratory, Beaufort, North Carolina.

## PHYCOLOGICAL FACILITIES II

## NORTHROP SPACE LABORATORIES —HAWTHORNE, CALIFORNIA

Northrop Corporation, as an aerospace contractor, is concerned with various aspects of space flight, including manned space flight. (For example, the recovery system of project Mercury is a product of Northrop's VENTURA Division.) Because of problems maintaining and protecting man in space, the Corporation has employed several professional biologists to serve as 'in-house consultants' on

biological problems encountered by the engineers and also to carry out experimental programs of an applied nature or on basic research. The amount of time spent as an 'in-house consultant' is minor and probably equivalent to a light teaching load. This leaves approximately two-thirds of the time free for basic research of the biologist's interest.

In the Bioastronautics Laboratory of the Life Sciences Section, basic research on algal physiology is oriented toward the practical uses of the algae in life support systems of space vehicles. This is under the direction of RICHARD EPPLEY, assisted by FRANK MACIASR. Dr. Eppley, who received his Ph.D. from Stanford University under the direction of L. R. Blinks, was on the faculty of the Biology Department of the University of Southern California until 1960 when he joined the Bioastronautics Laboratory. He is an adjunct staff member of the University and offers a graduate seminar in algal physiology. Mr. MaciasR received his Master of Science degree in Microbiology from the University of Southern California and has previously been associated with Nutrilite Products, Inc., a vitamin house.

Three areas are at present under active study by Dr. Eppley and Mr. MaciasR. The first is an investigation of the photometabolism of acetate by algae isolated from sewage lagoons. This is just one aspect of the larger problem of utilization of organic matter by algae and involves such related facets as photosynthesis, physiological ecology and intermediary biochemistry. The second area of interest is a continuation of Dr. Eppley's doctoral research on ion transport and the biochemical mechanisms thereof. The last is involved in actively finding an alga that may be the source of food and oxygen for man in a closed microcosm, or ecological system. At present the investigations are concerned with a survey of the growth rate and optimal growth condition of some Polyblepharidaceae (Volvocales), mainly *Pyramimonas*, *Stephanoptera*, and *Dunaliella*, which contain little cellulose.

The research laboratories occupy approximately 2000 square feet. Equipment immediately available includes a custom built plant growth chamber with shaking shelves, high intensity light source for bleaching studies, cold rooms, recording spectrophotometer, radioisotope counting equipment, continuous flow centrifuge, Coulter cell counter, and chemostat culture unit. Also at the disposal of the algal physiologists are gas chromatograph, spectrograph, and infrared spectrophotometer.

The opportunities for basic research in industry and the affiliation with nearby Universities make the laboratories at Northrop quite desirable.

PLANKTON IDENTIFICATION AND CONTROL: To be offered by the Division of Water Supply and Pollution Control of the Public Health Service, will be conducted 1-12 October at Cincinnati, Ohio. It is for professional personnel in the fields of water supply and limnology. The course provides laboratory practice in the identification of algae and other organisms and group practice in counting and enumeration. It gives consideration to the interpretation of observations and applicable corrective measures, with emphasis on the importance and organization of a systematic plankton sampling program. Further information: Robert A. Taft Sanitary Engineering Centre, 4676 Columbia Parkway, Cincinnati.

"THE ALGAE" BY V. J. CHAPMAN. 1962. MacMillan & Co. Ltd. viii + 475 pp., 229 figs., 26 tables, frontisp.

Professor Chapman's new book is modelled after his earlier work (1941). However, as the author states, "It cannot be considered a second edition." There has been considerable rearrangement in the new book and a new system of classification has been introduced. Almost all of the illustrations from the earlier book have been used again without change; many being poor quality reproduc-

tions of second-hand sources, such as Oltmanns (1904) and Tilden (1935). The aim of the book is "to provide a general survey of all aspects of the algae such as may be required by a University undergraduate."

It is quite apparent that Professor Chapman is familiar with much of the recent literature, especially in the ecological and physiological aspects. However, it is unfortunate that he did not revise the illustrations and draw to a greater extent from the more recent literature for both illustrations and cited references in his new book. One of the chief drawbacks in using this book as an undergraduate text is that many of the statements are not documented. In a course in the algae, even at the undergraduate level, one expects to introduce the student to recent, original literature in order to stimulate his interest; and there is a paucity of this in the reference lists provided at the end of each chapter. The author has, of course, stated that it is not meant to be comprehensive in this respect. To supplement the references cited he suggests that the student should refer to other books, such as Fritsch's "Structure and Reproduction of the Algae" (1935 and 1945) and Smith's "Manual of Phycology" (1951). Both of these are excellent reviews of the older literature, but are already from 10 to nearly 30 years out of date.

Although 10 of the 18 chapters in the book relate specifically to a survey of the various divisions of algae, in terms of the number of pages almost one-third of the book deals with ecological aspects. There are 103 pages on green algae; 93 on brown algae; 42 on red algae and 16 on blue-green algae. But there are only 21 pages and 14 figures on all other groups. This is unfortunate, especially because of the increasing awareness of marine and freshwater phycologists of the unicellular algae (Xanthophyceae, Chrysophyceae, Bacillariophyceae, Cryptophyceae and Dinophyceae) and their relative importance in the nanoplankton. There is also a disproportionate amount of emphasis on ecology, distribution and utilization of *benthonic algae* and too little relating to *phytoplankton*. Only three pages deal with the ecology of phytoplankton.

As a phycological reference, because of the unique system of classification (4 divisions) presented and some of the phylogenetic and evolutionary considerations, the book will undoubtedly prove controversial. Professor Chapman emphasizes that his classification is based in part upon new knowledge of the pigment complexes and biochemical differences in algae. However, it is not apparent from the evidence presented that a departure from the more conventional system *now* generally accepted is justified. His reasons for inclusion of the Chlorophyceae, Phaeophyceae and Rhodophyceae in the division "Euphycophyta" will be opposed by many phycologists. One can, with as much (or more) justification, include the Bacillariophyceae in his "Euphycophyta", since they have fucoxanthin and chlorophyll pigments similar to those in the Phaeophyceae. However, the book should provide a source of stimulating, supplementary reading to the student already possessing some *specialized background in the algae*; without this background it will not be read with the same interest and appreciation.

There is certainly a universal need for a text providing a balanced, up to date, general survey of all aspect of the algae at the undergraduate level. However, in this reviewer's opinion, this book has fallen short of the objective and it will not find wide acceptance at the undergraduate level in North American universities.—Robert F. Scagel.

#### NEW MEMBERS—1 JANUARY - 1 JUNE 1962

BLASCO, MR. RICHARD J., Applied Biologist, R.F.D. No. 5, Norwich, Connecticut. FW-M, XC (biochem, cult, phys) Detection of algae with growth characteristics superior to *Chlorella*. 71105.

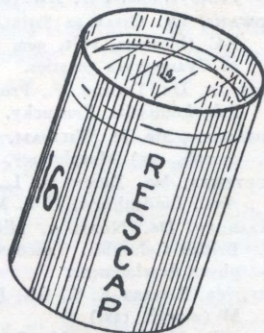
- BUELL, DR. HELEN, Res. Assoc., Botany Dept., Rutgers Univ., New Brunswick, New Jersey. FW.  
 CAIN, BROTHER JOSEPH, GR, St. Edward's Univ., Austin 4, Texas. FW, XR (morph, tax) Algae of Texas gypsum soils.  
 CEDERCREUTZ, DR. CARL, Docent, Bergmansg. 7B, Helsingfors, Finland. XR.  
 CORRELL, DR. DAVID, Res. Assoc., Division of Radiation & Organisms, Smithsonian Inst., Washington 25, D.C. FW-M (biochem, cult, cyt, ecol, phys) Algal RNA & polyphosphate.  
 DARDEN, WILLIAM, GR, Botany Dept., Indiana Univ., Bloomington. FW (cult, gen) Morphology, life history of Chrysochyta.  
 DAWES, LT. CLINTON J., 2nd. Lt., US Army, 0550409, C Brty 1st How B 22Arty, APO 696, New York, N.Y. FW-M (ecol, morph, phys) Structure, development of cell walls.  
 DOYLE, DR. WILLIAM, Asst. Prof., Biol. Sci. Dept., Northwestern Univ., Evanston, Illinois. FW-M (biochem. cyt, phys).  
 DUCKER, MRS. SOPHIE, Lecturer, Botany Dept, Univ. of Melbourne, Parkville No. 2, Victoria, Australia. FW-M (cult) Culture of Chordariales, Ceramiales, Cladophorales.  
 ENGLISH, MISS SANDRA M., GR, Biological Sciences Dept., Univ. of Pittsburgh, Pittsburgh 13, Pennsylvania. FW, XR (ecol, limnol) Vertical stratification of algae in lakes.  
 GOWANS, DR. CHARLES SHIELDS, Asst. Prof., Botany Dept., Univ. of Missouri, Columbia. FW, XC (biochem, cult, gen, phys) Genetics of *Chlamydomonas eugametos*: Exploratory studies of Cyanophyta genetics.  
 JACKSON, DR. DANIEL F., Prof., Potamological Institute, Univ. of Louisville, 3005 Upper River Rd., Louisville, Kentucky. FW (ecol, limnol) Ecology of phytoplankton blooms.  
 JOHANSEN, MR. H. WILLIAM, GR, Botany Dept., Univ. of California, Berkeley 4. M (cult, ecol, morph, tax) Morphology, taxonomy of Corallinaceae.  
 KOETZNER, MR. KENNETH L., GR (Botany Dept., Univ. of Rhode Island), 447 S. Wellwood Ave., Lindenhurst, N.Y. M (ecol. ocean) Algal survey of Great South Bay.  
 LAZAROFF, DR. NORMAN, Microbiologist, Applied Biology Dept., Research Council, Univ. of British Columbia, Vancouver 8, Canada. FW (biochem, cult, phys) Photocontrol of Cyanophyta development.  
 LEE, MR. ROBERT K. S., GR, Biology and Botany Dept., Univ. of British Columbia, Vancouver 8. M (morph, tax).  
 MACIASR, MR. FRANK M., Res. Assoc., (Bioastronautics Lab., Norair Division, Northrop Corp., Hawthorne, California) 9120 Rex Rd., Pico Rivera, Calif. FW-M, XCR (biochem, cult, econ, phys) Nutrition of sewage lagoon *Chlamydomonas*: Microbial vitamin K.  
 MARKHAM, MR. JAMES, GR, Botany Dept., Univ. of Washington, Seattle 5. M (ecol, morph, ocean) Spore release in Rhodophyta.  
 MATHIESON, MR. ARTHUR, GR, Biology and Botany Dept., Univ. of British Columbia, Vancouver 8. M XCR (cult, cyt, ecol, EM, morph, ocean, tax) Life history of Phaeophyta (Dictyotales, Dictyosiphonales, Chordariales).  
 PARKER, MRS. BRUCE C., Botany Dept., Univ. of California, 405 Hilgard Ave., Los Angeles 24. Nature of 'callose' in *Macrocyctis pyrifera*.  
 PITNER, MISS IRMA J., Res. Assoc., Haskins Lab. 305 E. 43rd St., New York 17, FW-M (cult, phys) Nutrition of Chryssomonads, nanoplankton, *Synura*.  
 RASMUSSEN, MR. ROBERT, GR, Botany Dept., Univ. of Minnesota, Minneapolis 14. M, XR (ecol. ocean) Anatomy & ontogeny of *Sarcodia monagneana*.  
 WIDDOWSON, MR. THOMAS, GR, Institute of Oceanography, Univ. of British Columbia, Vancouver 8. M (ecol, morph, tax).  
 WYNNE, MR. MICHAEL, UG, (Botany Dept., Washington Univ., St. Louis, Missouri), 3627 Utah Pl., St. Louis 26, FW-M, XHR.

Approximately two-thirds of the membership has paid the 1962 dues. This entitles them to further issues of the NEWS BULLETIN as well as full membership in the American Institute of Biological Sciences (AIBS) as of 1 July. For the remaining one-third, this is the last issue of the NEWS BULLETIN. Those who receive a dues notice at this time will not receive any AIBS benefits through the Phycological Society of America. We regret losing any members; however, the amended-by-law reads: "Members who fail to respond to two successive dues notices shall be dropped for non-payment three months after the date of the second dues notice." This is the *third* notice and 1 September will be the 3-month deadline! If we have made a mistake, please let the Secretary-Treasurer, Walter Herndon, know immediately. *Phycology needs you!*

Past volumes of the NEWS BULLETIN are still available at \$2 per volume. Volumes 8 (1955) through 14 (1961) are presently available. The annual survey of Phycological Literature compiled by Dr. Paul C. Silva of the University of California begins in volume 9 (1956) and continues to volume 13 (1960) when it became part of the International Phycological Journal, PHYCOLOGIA. Orders may be placed with either the Secretary-Treasurer, or the Editor. Volumes 1 through 7 are being reprinted and will be available soon to those interested (including those who have already noted their interest).

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