# THE PHYCOLOGICAL SOCIETY OF AMERICA

**Volume XIV** **News Bulletin, July, 1961** **Number 2**


## PURDUE MEETINGS

The 1961 meeting of the Phycological Society of America will again be held in conjunction with the American Institute of Biological Sciences at Purdue University, Indiana. Although the Society is not directly affiliated with the AIBS, the annual meetings are usually in conjunction with this group.

REGISTRATION: Preregistration of $5 ($3 for graduate students) before 1 August 1961 is requested for all those planning to attend. Enclosed is a mimeographed form that may be used for this purpose. Any cancellations before 26 August will be refunded. Preregistrants requesting University Housing will be able to report directly to their assigned housing upon arrival, thus by-passing the usual registration line to be located in the East Foyer of the Memorial Center.

HOUSING: University Housing is primarily double rooms at $2.75/person/night ($3.75 if single occupancy). Residence halls may be occupied from 9 a.m. Saturday 26 August to 5 p.m. Thursday 31 August. Also available is 'hotel type' accommodation at the Union Club of Purdue Memorial Union. These facilities have private baths and are air-conditioned. Rates, in general, are: Single $5-$6/person/night; double $7-$9 per night. Other accommodations are available at hotels and motels and should be made directly, not through the AIBS Housing Committee. A list is appended on page 5. Camping and trailer facilities are not available in the local community. Further information regarding housing may be secured from: AIBS Registration, room 110, Memorial Center, Purdue University, West Lafayette, Indiana.

TRANSPORTATION: State highway 52 connects with U.S. highway 40 at Indianapolis to the south and with the Indiana toll road (turnpike) to the north. The New York Central, the Wabash, and the Monon Railroads stop at Lafayette where taxis are available. West Lafayette is served by Lake Central Airlines which make connections at Indianapolis and Chicago. Bus service is operated by Greyhound and Continental Trailways.

MEALS AND REFRESHMENTS: Those assigned to housing in the Men's Residence Halls, H-1, H-2, H-3 are expected to eat in these halls. All others with University Housing will eat at the Purdue Memorial Union cafeterias which are open to all. Also available in the Union are the Sweet Shop and Snack Bar. Beer only is available in West Lafayette at at least one place near campus (The Chocolate Shop). Other beverages may be obtained in Lafayette. Indiana state laws require that no liquor be available on Sundays.

## GENERAL PROGRAM — 1961 MEETING

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| Sunday, | 27 August | 9:00—Field Trip |
| Monday, | 28 August | 12:00—Luncheon |
| | | 2:00—Symposium—"Modern Species Concepts" |
| Tuesday, | 29 August | 9:00—Contributed Papers |
| | | 2:00—Symposium—"Economic Applications of the Algae" |
| Wednesday, | 30 August | 9:00—Contributed Papers |
| | | 2:00—Contributed Papers |
| | | 3:45—Annual Business Meetings |

(Detailed program on page 4)

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 about editorial matters should be addressed to J. R. Stein, Editor, Department of Biology and Botany, University of British Columbia, Vancouver. Changes of address should be sent promptly to the Secretary-Treasurer, Mr. W. A. Daily, Box 155, Butler University, Indianapolis, Indiana. Subscription orders from libraries and other institutions should also be sent to Mr. Daily. Claims for missing issues of the News Bulletin should be made within two months to the Editor. Printing and typography by Mitchell Press, Vancouver.



## EDITORIAL

The constitution of the Phycological Society states that, "Members who fail to respond to two successive annual dues notices shall be dropped for non-payment three months after the date of the second dues notice." This means that members wishing to resign will receive the News Bulletin and other society notices for at least one full year after the last dues payment. For the year 1960, some 23 people and 1 organization were carried on the mailing list at the expense of the other members. The $2 per year dues are quite modest and are practically the only source of income. So far this year (1961) 81 people plus 3 organizations and 3 subscribing members have not paid. How many of these are 'slow-payers' and how many intend to resign remains to be seen. As it now stands, though, it is almost ¼ of the membership that is supported by the rest of the Society. This is not a healthy situation. This year the dues notices were sent earlier than usual so that by now there is little excuse for not having sent the $2 to Mr. Daily, the Secretary-Treasurer. If you plan to resign from the Society—and we sincerely hope you don't—please notify the Secretary-Treasurer promptly; otherwise please pay your dues promptly!

## MEETINGS OF INTEREST TO PHYCOLOGISTS

21 AUGUST - 6 SEPTEMBER—10th Pacific Science Congress, Honolulu, Hawaii. Harold J. Coolidge, Bishop Museum, Honolulu 17.

22 - 30 AUGUST—1st International Conference on Protozoology, Prague, Czechoslovakia. William Trager, Rockefeller Institute, 66th Street and York, New York City 21.

27 - 31 AUGUST — Annual Meeting PHYCOLOGICAL SOCIETY OF AMERICA, Purdue University, Lafayette, Indiana (with AIBS). AIBS Registration, Room 110 Memorial Center, Purdue University.

11 - 15 SEPTEMBER—Symposium on Radioecology, Colorado State University, Fort Collins; sponsored by AEC. Miss Ann Barker, AIBS, 2000 P Street N. W., Washington 6, D.C.

18 - 25 SEPTEMBER—4th International Seaweed Symposium, Biarritz, France. Monsieur Barriety, Directeur du Centre d'Etudes et de Recherches Scientifiques, B. P. 28, Biarritz (B.-P.), France.

23 SEPTEMBER—Symposium on Micropaleobotany with special reference to calcareous algae and diatoms, Paleontological Society of Japan, Kanazawa University, Japan. Dr. Keniji Konishi, Geological Institute, Faculty of Science, Kanazawa University, Kanazawa, Japan.

16 - 27 OCTOBER — Plankton Identification and Control, Robert A. Taft Sanitary Engineering Center, 4676 Columbia Parkway, Cincinnati 26, Ohio.

20 - 21 OCTOBER — Shallow Water and Coastal Research Conference, Chesapeake Bay Institute, Johns Hopkins University, Baltimore, Maryland. Donn S. Gorsline, Oceanographic Institute, Florida State University, Tallahassee.

24 - 25 OCTOBER — Shallow Water and Coastal Research Conference. Oceanographic Institute, Florida State University, Tallahassee. Donn S. Gorsline, Oceanographic Institute, Florida State University, Tallahassee.

27 - 28 OCTOBER — Shallow Water and Coastal Research Conference. Allan Hancock Foundation, University of

Southern California, Los Angeles. Donn S. Gorsline, Oceanographic Institute, Florida State University, Tallahassee.

26 - 31 DECEMBER—128th Meeting American Association for the Advancement of Science, Denver, Colorado.

20 - 25 AUGUST, 1962—15th International Congress of Limnology, University of Wisconsin, Madison. Dr. John C. Wright, Birge Hall, University of Michigan.

1962—International Congress of Microbiologists, Montreal, Canada.

## SPECIAL ACTIVITIES AT PURDUE MEETINGS

FORAY: The foray under the able leadership of Mr. and Mrs. W. A. Daily is scheduled for Sunday, 27 August. The participants are to assemble at the Purdue Memorial Union Building at 9 a.m. Box lunches will be available at a cost of $.90 each and must be ordered early. (Those desiring lunches should immediately send a check to cover the cost to Mr. Daily, Box 155, Butler University, Indianapolis.) Personal cars will be used for transportation and those having cars available should park them in the Union Building Parking Lot. The total mileage is about 85 miles. The trip includes a stop at a limestone quarry and at Lake Cicott, which is the southernmost natural glacial lake in Indiana. The Dailys are planning to supply the necessary collecting equipment as well as hot water, coffee, ice water, sugar, cream, and cups. Available at the lake area will also be swimming (free), rental boats, soft drinks, candy, ice cream, sandwiches, and picnic facilities. Upon return from the foray (about 4 p.m.) laboratory space and microscopes will be available in room G-417, Lilly Life Science Building. Those interested in the foray who have not signed up should write Mr. Daily as soon as possible.

LUNCHEON: A past practice of a Society Luncheon or Breakfast is being revived this year with the scheduling of a luncheon for Monday, 28 August at 12:00 noon in 230 Purdue Union Building. The luncheon will be buffet style and will cost $1.75 per person. Tickets will be available at the registration desk. It is hoped that all members of the Society and those interested in joining will plan to attend. (Application blanks for new members will be available there.)

ANNUAL MEETING: The annual meeting of the Society is Wednesday, 30 August in 217 Home Economics Building at 3:45 p.m. This will follow the last session of contributed papers. At this time the new officers will be announced and the affairs of the Society discussed. All members of the Society are urged to attend; and again, prospective members may join at this time.

## MARINE RESEARCH PROGRAMS

UNIVERSITY OF MIAMI MARINE LABORATORY: The Heart Institute, National Institutes of Health, sponsors postdoctoral fellowships in Experimental Marine Biology on Virginia Key, Florida. It is the only biological station in the continental U.S. where tropical marine biology may be studied (latitude 27°N). For further information: Dr. C. E. Lane, Director NIH Program, Marine Laboratory, No. 1 Rickenbacker Causeway, Miami 49, Florida.

VIRGINIA FISHERIES LABORATORY: The National Science Foundation is sponsoring two research participation programs. The one for undergraduate biology majors supplies research experience. The other for college biology teachers is designed to provide research experience for those from colleges (and junior colleges) with limited facilities. The Laboratory is affiliated with The College of William and Mary, located 13 miles away in Williamsburg. For further information: Robert S. Bailey, Director NSF Program, Virginia Fisheries Laboratory, Gloucester Point, Virginia.

# DETAILED PROGRAM — 1961

PURDUE UNIVERSITY

SUNDAY MORNING, AUGUST 27

9:00 Field trip in Lafayette area. Assemble at southwest corner of the Purdue Memorial Union. Trip by private cars. Box lunches will be available (cost is ($.90). Room No. G-417, Lilly Life Science Building, will be available for examination of the algal collections.

MONDAY NOON, AUGUST 28

12:00 Luncheon, 230 Purdue Union Building.

MONDAY AFTERNOON, AUGUST 28

Joint Meeting with the American Bryological Society. Room 172, Chemistry Building. (See ABS program.) A. J. Sharp presiding.

2:00 *Symposium*: *Modern Species Concepts.* Participants: John W. Thompson, University of Wisconsin: Lichens. Margaret Fulford, University of Cincinnati: Liverworts. Lewis E. Anderson, Duke University: Mosses. Charles B. Heiser, Jr., Indiana University: Vascular Plants.

TUESDAY MORNING, AUGUST 29

Contributed Papers. Joint meeting with the Phycological Section of the Botanical Society of America. Room 217, Home Economics Building. Janet R. Stein, presiding.

9:00 HOSHAW, Robert W., University of Arizona, Tucson. Sexual strains of *Chlamydomonas* from the collection of Gilbert M. Smith.

9:15 TRAINOR, F. R., University of Connecticut, Storrs. The effect of a temperature shift on mating in *Chlamydomonas chlamydogama.*

9:30 TRAINOR, F. R. and F. ROSKOSKY, University of Connecticut, Storrs. The role of temperature in pair formation in *Chlamydomonas eugametos.*

9:35 KORN, Robert, University of Rhode Island, Kingston. Genetic control of form in *Cosmarium turpinii* Breb.

9:50 GOLDSTEIN, Melvin, Indiana University, Bloomington. An analysis of sexual compatibility in *Eudorina.*

10:05 Recess.

10:15 BIEBEL, Paul, Spring Hill College, Mobile, Alabama. Genetic study of *Netrium digitus* var. *lamellosum.*

10:25 STARR, Richard C., Indiana University, Bloomington. Sexual reproduction in certain recently-isolated strains of *Golenkinia, Haematococcus* and *Volvulina.*

10:40 COLEMAN, Annette W., The Johns Hopkins University, Baltimore, Maryland. The application of immunologic techniques to the study of *Pandorina morum* flagella.

10:55 WATERS, Annette J., Indiana University, Bloomington. Studies of *Carteria.*

TUESDAY AFTERNOON, AUGUST 29

Joint Meeting with the Phycological Section of the Botanical Society of America and the Bryological Society of America. Room 217, Home Economics Building. JACK MYERS presiding.

*Symposium: Economic Applications of the Algae.*

2:00 STOLOFF, Leonard, Seaplant Chemical Corporation, New Bedford, Conn. Algal classification—an aid to improved industrial utilization.

2:30 KRAUSS, R. W., University of Maryland, College Park. Mass culture of algae for food and organics.

3:00 OSWALD, W. J., University of California, Berkeley. Algae in waste disposal and reclamation.

3:30 BENOIT, Richard, General Dynamics Corp., Groton, Conn. The photosynthetic gas exchanger.

WEDNESDAY MORNING, AUGUST 30

*Contributed Papers.* Joint Meeting with the Phycological Section of the Botanical Society of America. Room 217, Home Economics Building. W. A. Daily presiding.

9:00 FARIDI, M. A. F., Kansas University, Lawrence. Life history of *Basicladia.*

9:15 CLAUS-SUBA, Eva, New York University, New York. Teratological observations on Oscillatoriaceae.

9:30 CLAUS, George, National Institute for Water Research, Pretoria, Union of South Africa. *Wolskyella,* a new genus of blue-green algae and its phylogenetic significance.

9:45 GRIFFIN, D. G. and V. W. PROCTOR, Texas Technological College, Lubbock. A microgeographic study of the charophyte, *Chara zeylanica* Willd., primarily in Texas and Oklahoma.

10:00 KORN, Robert, University of Rhode Island, Kingston. Randomness in zoospore production and aggregation in *Pediastrum duplex* Meyen.

10:15 DEASON, Temd, University of Delaware, Newark. Cell wall studies in the unicellular Chlorococcales.

10:30 LANG, Norma J., Indiana University, Bloomington. The comparative ultrastructure of the Volvocaceae.

10:45 COOK, Philip W., Indiana University, Bloomington. Host-parasite relationships between *Closterium* and *Ancylistes.*

11:00 SCHLICHTING, Harold E., Jr., North Texas State College, Denton. Viable species of algae and protozoa in the atmosphere.

11:15 MALONEY, T. E., E. J. DONOVAN, Jr., and E. L. ROBINSON, R. A. Taft Sanitary Engineering Center, Cincinnati, Ohio. Determination of numbers and size of algal cells by an electronic particle counter.

11:30 KINGSBURY, John M., Cornell University, Ithaca, New York. Effect of waves on the composition of a population of attached marine algae.

WEDNESDAY AFTERNOON, AUGUST 30

*Contributed Papers.* Joint Meeting with the Phycological Section of the Botanical Society of America. Room 217, Home Economics Building. Jack Myers presiding.

2:00 NICHOLS, H. Wayne, University of Alabama, Tuscaloosa. Cultural studies of two freshwater red algae.

2:15 BISCHOFF, Harry W., University of Texas, Austin. Some observations of *Thorea* in culture.

2:30 NICHOLS, H. Wayne and H. C. BOLD, University of Alabama, Tuscaloosa, and University of Texas, Austin. Observations on two Ulotrichalean algae in culture.

2:45 DAVIS, Joseph, Southern Illinois University, East St. Louis. The influence of bicarbonate ion concentration on *Pediastrum*.

3:00 EPPLEY, R. W. and F. M. MACIASR, Norair Division, Northrop Corporation, Hawthorne, California. Growth of sewage lagoon *Chlamydomonas* with acetate.

3:15 MENNES, Mary Ann, George P. FITZGERALD and Gerald A. ROHLICH, University of Wisconsin, Madison. Effect of dilution media on B.O.D. of algae.

3:30 DAVIDSON, Floyd F., Baylor University, Waco, Texas. Antibacterial activity of *Oscillatoria formosa* Bory.

3:45 *Annual Business Meeting.*

### HOTELS AND MOTELS
PURDUE AREA

Cedar Crest Hotel, Bypass 52, North
Colonial Motel, State Road 52, South
Combs Motor Court, 1510 Schuyler Avenue
Devon Plaza Motel, Bypass 52
Esquire Motel, Bypass 52, North
Green Acres Motel, State Road 52, North
Howard Johnson's Motor Lodge, Bypass 52
Maracks Motel, State Road 52, North
Morris Bryant Hotel, Bypass 52, North
Van Orman-Fowler Hotel, 223 North 4th St.
Windmere Motel, State Road 52, North

## RAILROAD TRANSPORTATION

The Missouri Pacific Lines offers transportation information and assistance to members of the Society from Missouri, Arkansas, Louisiana and Texas planning to attend the Purdue meetings. Information regarding the service and travel bargains may be secured by writing: D. H. Eaton, District Passenger Agent, 605 Merchants Bank Building, Indianapolis 4, Indiana or by consulting the local passenger agent.

## FOSSIL ALGAE SYMPOSIUM

The Paleontological Society of Japan is planning a Symposium of Micropaleobotany at Kanazawa University, Japan, on September 23, 1961. Special reference will be made to the calcareous algae and the diatoms. Dr. K. Konishi, lecturer of Geology and Paleontology at Kanazawa University, is organizing the section on the calcareous algae. He will also be one of the speakers on the Paleozoic Dasycladaceae, Codiaceae, and Chaetangiaceae. Further information may be secured from Dr. Konishi, Geological Institute, Faculty of Science.

## FOURTH INTERNATIONAL SEAWEED SYMPOSIUM

Biarritz, France, will be the location for the 4th International Seaweed Symposium. The meetings are open to all those interested in Biology, Chemistry and Seaweed Utilization. Registration should have been completed by 15 June 1961. The papers will be presented in French, English or German and are limited to 10 minutes. The papers presented will be published in book form at a later time. A field trip to San Sebastian, Spain, is planned for those interested. For further information: Monsieur Louis Barriety, Directeur du Centre d'Etudes et de Recherches Scientifiques, B. P. 28, Biarritz (B.-P.), France.

## CYANIDIUM CALDARIUM — a Cryptococcalean?

Ralph A. Lewin

Scripps Institute of Oceanography, La Jolla, California

The common hot-spring alga *Cyanidium caldarium* Geitler is a bluish-green, *Chlorella*-like organism which at various times has been assigned to the Cyanophyta (e.g. as *Pluto caldarius*, Copeland, 1936; Geitler, 1936; Negoro, 1944), to the Chlorophyta (e.g. Hirose, 1950; Allen, 1959) or to the Rhodophyta (e.g. Geitler, 1958; Hirose, 1958). The purpose of the present note is to propose that, in the light of recent evidence, more consideration might be given to its allocation among the Cryptophyceae, as suggested by Fogg (1956); see also Goodwin (1960).

The presence of a clearly defined nucleus, a plastid and a cellulose wall, and the absence of diaminopimelic acid, are characters which exclude it from the Cyanophyta. In the structure of the wall, the mode of reproduction by endospores, and the presence of starch-like material as a storage product, *Cyanidium* exhibits affinities with such an alga as *Chlorella*. However, its inclusion among the Chlorophyta would seem to be precluded by the nature of its plastid pigments, notably the absence of chlorophyll *b* and the presence of a phycocyanin of the C-type (Allen, 1959). Furthermore, unlike the most heterotrophic green algae, *Cyanidium* does not synthesize chlorophyll in darkness (Allen, 1959).

Though Hirose (1958) and Geitler (1958), perhaps reluctantly, agreed to consider *Cyanidium* as a Rhodophyte, its biochemical characters are barely sufficient to outweigh anatomical and cytological features which differentiate it from such a unicellular red alga as *Porphyridium*.

The only remaining algae which are known to contain phycobilin pigments are the Cryptophyceae. In the few which have been examined, a phycocyanin and/or a phycoerythrin have been reported, both with unusual spectral characteristics (Allen *et al.*, 1959; Haxo and Fork, 1959; O'hEocha and Raftery, 1959). In these algae chlorophyll *b* is absent (Hirose, 1950; Allen, 1959), its place being taken by chlorophyll *c* (Haxo and Fork, 1959); the carbohydrate reserves stain with iodine like starch. In the rare genus *Tetragonidium* (Cryptococcales) we find cellulose walls and a mode of cell division essentially similar to those of *Cyanidium*. Though *Tetragonidium* has a pyrenoid, which is not present in *Cyanidium*, this difference does not constitute a serious barrier to their association in the Cryptococcales. Incidentally, both appear to show a marked preference for acidic waters.

*Tetragonidium verrucatum*, originally described from moorland pools in Czechoslovakia by Pascher (1914), has been reported in Maryland by R. H. Thompson (Smith, 1950). It would be of great interest if this alga could be rediscovered and isolated in culture, in order to establish in it the presence and the nature of phycobilin pigments; whether it possesses chlorophyll *c*, as do *Cryptomonas*, *Hemiselmis* and *Rhodomonas* (Haxo and Fork, 1959) but not *Cyanidium* (Allen, 1959); and whether the predominant carotene is *alpha*-carotene, as in those crytomonads so far examined (Haxo and Fork, 1959) or *beta*-carotene, as in *Cyanidium* (Allen *et al.*, 1960) and most other algae.

ALLEN, M. B. 1959. Studies with *Cyanidium caldarium*, an anomalously pigmented chlorophyte. Arch. Mikrobiol. 32: 270-277.

ALLEN, M. B., DOUGHERTY, E. C. and MCLAUGHLIN, J. 1959. Chromoprotein pigments of some cryptomonad flagellates. Nature 184: 1047-1049.

ALLEN, M. B., GOODWIN, T. W. and PHAGPOLNGARM, S. 1960. Carotenoid distribution in certain naturally occurring algae and in some artificially induced mutants of *Chlorella pyrenoidosa*. Jour. Gen. Microbiol. 23: 93-103.

COPELAND, J. E. 1936. Yellowstone thermal Myxophyceae. Ann. N.Y. Acad. Sci. 36: 1-229.

FOGG, G. E. 1956. The comparative physiology and biochemistry of the blue-green algae. Bact. Rev. 20: 148-165.
GEITLER, L. 1958. Die Gattung *Cyanidium*. Oesterr. bot. Z. 106: 172-173.
GOODWIN, T. W. 1960. Algal carotenoids. *In* "Comparative biochemistry of photoreactive systems", ed. M. B. Allen. Academic Press, N.Y.
HAXO, F. T. and FORK, D. C. 1959. Photosynthetically active accessory pigments of cryptomonads. Nature 184: 1051-1052.
HIROSE, H. 1950. Studies on a thermal alga, *Cyanidium caldarium*. Bot. Mag. (Tokyo) 63: 107-111.
HIROSE, H. 1958. Rearrangement of the systematic position of a thermal alga, *Cyanidium caldarium*. Bot. Mag. (Tokyo) 71: 347-352.
NEGORO, K. 1944. Untersuchungen über die Vegetation der mineralogenazidotrophen Gewässer Japans. Sci. Repts. Tokyo-Bunrika Daigaku B. 6: 231-374. (pp. 299-306).
O'HEOCHA, C. and RAFTERY, M. 1959. Phycoerythrins and phycocyanins of cryptomonads. Nature 184: 1049-1051.
PASCHER, A. 1914. Ueber Flagellaten und Algen. Ber. deut. botan. Ges. 32: 136-160.
SMITH, G. M. 1950. Fresh-water algae of the United States. 2nd Edition. McGraw-Hill, N.Y.

## PUBLICATIONS OF INTEREST

BURTON, MAURICE. 1960. Under the Sea. Franklin Watts, Inc.
CARRINGTON, R. 1961. A Biography of the Sea. Basic Books.
CHAPMAN, V. J. 1960. Salt Marshes and Salt Deserts of the World. Hill: Interscience.
GEITLER, L. 1960. Handbuch der Pflanzenanatomie. Vol. 6, pt. 1, Schizophyzeen. Gebrüder Borntraeger, Berlin.
HYNES, H. B. N. 1960. The Biology of Polluted Waters. Liverpool Univ. Press.
JOHNSON, J. H. 1960. Paleozoic Solenoporaceae and Related Red Algae. Quarterly of the Colorado School of Mines. Vol. 55, no. 3, Colo. School of Mines, Golden.
MCELROY, W. D. AND B. GLASS, editors. 1961. Light and Life. Johns Hopkins Press.
PHYCOLOGIA. 1961. P. C. Silva, editor. Vol. 1, no. 1, March. Journal of the International Phycological Society.
REID, G. K. 1960. Ecology of Inland Waters and Estuaries. Reinhold Publ. Corp.
SAGER, RUTH AND FRANCIS RYAN. 1961. Cell Heredity. John Wiley & Son, Inc.
(*Editor's note*: This is not complete and is not intended to be so. The listings are brought to the attention of interested members.)

## AQUATIC BIOLOGY FOR ENGINEERS

A training course in "Aquatic Biology for Engineers" was presented by the Robert A. Taft Sanitary Engineering Center at Cincinnati, Ohio from 19-30 June. The course emphasized the application of biology to water pollution problems and included an evaluation of toxic waste by fish bioassays. Further information regarding the program was not available at press time.

A two-week training course, "Plankton Identification and Control," will be conducted 16-27 October in Cincinnati. The course is for professional personnel in the fields of water supply and limnology. It provides laboratory practice in the identification, counting and enumeration of algae and other organisms; and gives consideration to the interpretation of observations and applicable corrective measures. Emphasis will be placed on the importance of a systematic plankton sampling program. Inquiries should be addressed to the Chief, Training Program, Robert A. Taft Sanitary Engineering Center, 4676 Columbia Parkway, Cincinnati 26, Ohio, or to a Public Health Service Regional Office.

# A NOTE ON PHYCOLOGICAL ACTIVITIES IN ARGENTINA

MICHAEL NEUSHUL
University of Washington, Seattle

Recent increased phycological activity in Argentina was evident at the Quintas Jornadas Argentinas de Botanica, November 27 - December 4, 1960, where eight papers dealing with algae were read. The center of this activity is the Department of Botany of the University of Buenos Aires, where as early as 1958 a culture collection of unialgal Cyanophyta was begun by D. R. de Halperin. This collection was extended to other groups in 1960 by E. N. Lacoste de Diaz, and at present unialgal stocks of Cyanophyta, Chlorophyta, Chrysophyta, and Euglenophyta are being maintained.

Marine algae are also receiving attention; the Patagonian Marine Biological Station (Figure 1), under the sponsorship of the Instituto Nacional de Technologia Industrial, having recently completed its first summer courses. In 1962, courses will again be offered, and will provide a rare opportunity for phycologists to become familiar with the diverse and luxuriant flora of southern South America. The first publication of the Biological Station will be a catalog of Argentine Rhodophyta by Srta. Carmen Pujals. Several other workers are presently studying various aspects of Argentine phycology; an algal herbarium is being built up and exchange material is available.

Commercial interest in marine algal resources is presently focused on the use of *Macrocystis* as supplementary fodder for sheep; experiments in Puerto Deseado being conducted by the Argentine Instituto Nacional de Technologia Agropecuaria. The rich growth of this plant along the southern Argentine coast contrasts with the sparse vegetation of the wind-swept Patagonian Desert.

This recent increase in Argentine phycological activity is due in large measure to the dynamic enthusiasm of Dr. O. Kühneman of the University of Buenos Aires. As Director of the Station at Puerto Deseado, he organized the summer classes and has stimulated a number of students to continue work in phycology. (*Editor's note*: For further information regarding the facilities of the Marine Station at Puerto Deseado, see Science 113: 370, 10 February 1961.)

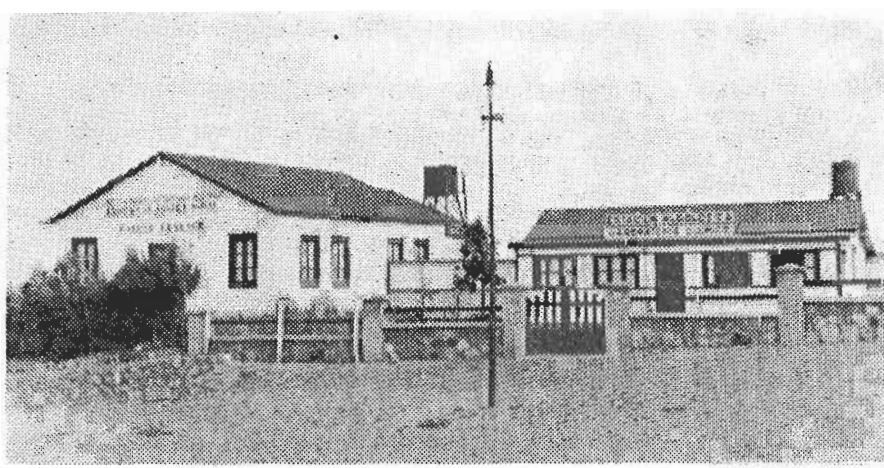

Fig. 1. Marine Biological Station, Puerto Deseado, Argentina.

# ABSTRACTS OF PHYCOLOGICAL PAPERS RECENTLY PRESENTED

## NORTH CAROLINA ACADEMY OF SCIENCES, RALEIGH — MAY, 1961

### A STUDY OF POPULATION GROWTH IN CARTERIA SP. CULTURES AS INFLUENCED BY NITZSCHIA CLOSTERIUM

James R. Wheatley, Jr.
East Carolina College, Greenville, North Carolina

Two species of marine algae, *Carteria* sp. and *Nitzschia closterium*, were cultured under sterile conditions in seawater culture medium; the cultures were kept under constant light and temperature control. Population growth of the unialgal cultures was compared with the growth rates and population levels of mixed cultures containing both species.

*Carteria* sp. cultures had a growth lag period of 2-3 days after innoculation into fresh medium. The length of this lag time was not affected by the number of cells inoculated into the medium. *Nitzschia closterium* populations had no lag time, but seemed to begin cell division almost immediately after inoculation.

Mixed cultures (bialgal) containing both species reached a higher rate of population growth and after 14 days had a population level 21.1% higher than similar unialgal control cultures.

The effect of *Nitzschia*-conditioned-medium upon *Carteria* population growth was studied by culturing *Carteria* in medium which had supported a *Nitzschia closterium* population for 9 days before being separated by centrifuging. *Carteria* cultured in this medium reached higher population levels than did similar inoculations in standard seawater culture medium.

### INFLUENCES OF GIBBERELLIC ACID ON SEVERAL SPECIES OF ALGAE

Won K. Kim and Victor A. Greulach
University of North Carolina, Chapel Hill

Gibberellic acid (GA) promoted the growth of *Anabaena* more at 25 ppm than 50 ppm, while 1, 10 and 100 ppm had no significant effect. In *Chlorella pyrenoidosa* 5, 10 and 20 ppm promoted growth in increasing order, but 50 ppm had no effect while 1 ppm increased the number of cells but not optical density or dry weight. The filament length of *Oedogonium cardiacium* was increased by 5, 10, and 20 ppm in order, while 1 and 50 ppm had no effect. Only 10 ppm was used on *Vaucheria sessilis*, and it increased filament length. GA and IAA had an additive effect on the growth of both *Chlorella* and *Oedogonium*, promoting both cell division and cell elongation in the latter. GA and kinetin also had an additive effect on *Chlorella* growth. This combination was not used on *Oedogonium*. In *Chlorella* GA partially overcame the growth inhibition induced by MH (maleic hydrazide), 2,4-D or 5-Fluorouracil. GA interacted similarly with 2,4-D in *Oedogonium*, and it also overcame MH inhibition of cell division, but not MH inhibition of cell elongation. The GA and 5-fluorouracil combination was not used on *Oedogonium*.

GA at 10 ppm had no influence on respiration of *Chlorella*, but it did cause an increase in the amino acid content of *Chlorella* and *Oedogonium* and the DNA content of *Oedogonium*. The slight increases in the DNA content of *Chlorella* and the amino acid content of *Anabaena* were not significant. The evidence suggests that GA may promote growth by increasing DNA and amino acids and possibly proteins, rather than by increasing respiration.

All differences, unless otherwise noted, were highly significant statistically as indicated by standard deviations and $t$ values.

### THE MECHANISM OF UPTAKE OF RADIOACTIVE ZINC IN ULVA LACTUCA

John Gutknecht
University of North Carolina, Chapel Hill
and
Marine Biological Laboratory, Woods Hole, Mass.

The effects of metabolism, pH, carrier ions, and temperature upon the uptake and accumulation of $Zn^{65}$ by *Ulva lactuca* from sea water in light and dark were investigated. The pattern of uptake in relation to light and temperature in unbuffered sea water was what would be expected assuming zinc absorption to be a biological accumulation process proportional to rate of phytosynthesis as has been previously reported. However, uptake rate and the level of accumulation were found to be strongly pH dependent and to be affected by the concentration of zinc in the medium. Freshly killed *Ulva* absorbed more tracer than live material. These findings suggest that the physical processes of absorption and ionic exchange are primarily responsible for $Zn^{65}$ uptake. The relationship between photosynthesis and zinc absorption is a secondary effect related to surface/volume ratio and pH.

## PACIFIC SECTION, AAAS AND BOTANICAL SOCIETY OF AMERICA, DAVIS, CALIFORNIA — JUNE, 1961

### SEXUAL REPRODUCTION IN SOME BROWN ALGAE

Kathleen Cole
University of British Columbia, Vancouver

In conjunction with a comparative study of gametophytic development and sexual reproduction in some of the brown marine algae of the Pacific Coast, a project is being conducted to record the living processes of gametophytic growth, maturation of reproductive structures, fertilization, and sporophytic growth using a phase contrast miscroscope and 16mm. cine camera. A preliminary film is presented at this time which will include some of the general aspects of sexual reproduction in the Laminariaceae. The work continues to obtain a more complete comparative record of sexual reproduction in the living organisms.

### INTERTIDAL MARINE VEGETATION OF EL SALVADOR

E. Yale Dawson
Beaudette Foundation, Solvang, California

No abstract is presented here as the full paper has been published in the July, 1961, issue of "Pacific Naturalist" available from the Beaudette Foundation (RFD No. 1, Box 228, Solvang).

### MASS CULTURE OF THE RED ALGA, PORPHYRIDIUM CRUENTUM

C. G. Golueke
University of California, Berkeley

A study was made of the effect of various nutrient sources, temperature, detention period, and light intensity on the growth and overall efficiency of a continuous culture of *Porphyridium cruentum*. Results obtained showed that the temperature range for demonstrable growth was between 13 and 31°C. Detention period had little, if any, effect on conversion efficiency within the range 4 to 10 days. The minimum detention period at which the culture could sustain itself was 3 days. Light saturation was reached when the absorption rate of the culture exceeded 20 Cal/liter/min. (In a high temperature strain of *Chlorella pyrenoidosa*, saturation is reached when the absorption rate exceeds 30 Cal/liter/min.)

## THE GROWTH AND NUTRITION OF THE FILAMENTOUS GREEN ALGA, OEDOGONIUM

Leonard Machlis
University of California, Berkeley

*Oedogonium cardiacum* and *Oedogonium geniculatum*, as well as several other species of *Oedogonium*, have been isolated into pure culture and can be grown in tubes through which gas mixtures are passed to provide mechanical mixing and supplementary $CO_2$. The two species named above are unable to use cobalt, require vitamin $B_{12}$, and, in addition, a second unknown growth factor. This factor can be obtained by autoclaving certain soils, although it can not be extracted by simple shaking of soil with water at room temperature. A partial purification has been obtained by fractionation on 'Sephadex'.

## EVIDENCE FOR THE HORMONAL INTERGRATION OF SEXUAL REPRODUCTION IN A HETEROTHALLIC, NANNANDROUS SPECIES OF OEDOGONIUM

Erika Rawitscher-Kunkel and Leonard Machlis
University of California, Berkeley

Evidence will be presented showing that: (a) the oogonial mother cells secrete a substance which attracts the androspores to them; (b) the attachment of the androspores and their development into dwarf males triggers the division of the oogonial mother cell into the suffultory cell and the oogonium and the development of a massive gelatinous sheath around the oogonium; (c) the dwarf males grow in strictly specified directions presumably in response to some directive influence; (d) the gel around the oogonium serves to trap the sperm; and (e) the sperm migrate to the pore leading into the oogonium probably in response to a chemotactic agent.

## MARINE NANNOPLANKTON FROM A BRITISH COLUMBIA FJORD

Robert F. Scagel and Janet R. Stein
University of British Columbia

The qualitative aspects of the nannoplankton in Indian Arm, British Columbia, have been heretofore unknown, although the relative quantitative significance of this difficult group of unicellular organisms is apparent from recent primary production studies using the carbon-fourteen method. This qualitative study of samples collected in the Spring of 1960 in Indian Arm has added a number of new records of distribution for the area, and has led to the discovery of several new species and genera. The study is being continued to determine qualitatively the seasonal and three-dimensional distribution of these and other nannoplankton in the fjord in relation to the physical-chemical aspects of the environment.

## PERSISTENCE OF A DIURNAL RHYTHM IN PHOTOSYNTHESIS IN ENUCLEATED ACETABULARIA

Beatrice M. Sweeney and Francis T. Haxo
University of California, La Jolla

The unicellular alga *Acetabularia* was found to show a diurnal rhythm in photosynthesis. This rhythm was observed to continue for at least three cycles in constant light and temperature, and hence can be considered endogenous. Plants from which the nucleus had been removed by severing the basal rhizoids showed no modification in the photosynthetic rhythm over a number of cycles. The nucleus is, therefore, not essential for the maintenance of rhythmicity in *Acetabularia*. Conversely, a mechanism for sustaining time-keeping must exist in the cytoplasm.

## SODIUM AND POTASSIUM METABOLISM IN THE MARINE RED ALGA PORPHYRA PERFORATA

Richard W. Eppley*
Norair Division, Northrop Corporation, Hawthorne, California

*Porphyra* cells accumulate potassium and exclude sodium, the latter against an electrochemical gradient, much as do animal cells, *Ulva* cells, and the cytoplasm of *Nitellopsis*. Presence of potassium, or rubidium, in the surrounding sea water is required for active sodium extrusion.

During a transient stimulation of respiration, on adding potassium or rubidium to low potassium cells, sodium is extruded while potassium or rubidium is accumulated. Time course and inhibitor studies suggest the following: 1) Oxidative phosphorylation is usually rate limiting for respiration; 2) Potassium stimulates respiration by allowing a transient increase in phosphate acceptors allowing an increase in the rate of oxidative phosphorylation, and thus respiration; 3) Potassium acts in this way by allowing osmotic work — a net extrusion of sodium ions, resulting in an increased supply of phosphate acceptors. If the above are correct Na extrusion probably occurs by a K-Na linked pump mechanism driven by high energy phosphate, as suggested for erythrocytes.

*Porphyra* cells are capable of maintaining high potassium and low sodium levels of a broad range of salinity. Survival during sudden osmotic stress is facilitated by the lack of vacuoles (no plasmolysis occurs) and by differential skrinking and swelling of the protoplasts and polysaccharide cell wall and mucilage materials. The survival value of such flexible polysaccharides as wall materials in cells of intertidal algae will be discussed. Cell death during rain is attributable to removal of calcium, since external calcium is necessary for maintenance of cell ion composition. Concentration of sea water does not appear to be very detrimental to survival.

*This work was supported by a grant from the National Science Foundation to the University of Southern California (G-5674). Presented at a symposium, "Organization in Relation to Function in the Plant Cell".

## MARINE FUNGI FROM BRITISH COLUMBIA

Gilbert C. Hughes*
University of British Columbia

Studies of the marine wood-inhabiting Ascomycetes and Fungi Imperfecti from various habitats in British Columbia have revealed 26 species in 15 genera. *Ceriosporopsis cambrensis* Wilson, *Lindra inflata* Wilson, and *Metasphaeria australiensis* Cribb & Cribb are reported as new records for the Pacific Coast of North America and the northward range of several previously reported species is extended. The presence of Ascomycetes on the stipes of *Laminaria setchellii* Silva and *Pterygophora californica* Ruprecht is reported and discussed.

*National Research Council of Canada, Postdoctoral Fellow.

## REQUEST FOR RESEARCH MATERIAL

### CHRYSOPHYCEAN FLAGELLATES

Living collections or cultures of *Paraphysomonas vestita* (Stokes) de Saedeleer and any other Chrysophycean flagellates which have the structure referred to as the "mouthband" ("Mundleiste", "bandelette buccale") in the literature.

These collections or cultures should be sent air mail to:

Dr. Gordon F. Leedale
Department of Botany, The University,
Leeds, 2, England.

Postage will be refunded, if so required.

## HIGH SCHOOL STUDENT STUDIES ALGAE

In the fall of 1959, the Vancouver, British Columbia, School Board inaugurated the Joe Berg Science Seminars for high school students outstanding in science and mathematics. One of the participants is studying some of the cytomorphology of the marine green, *Codium fragile* using ultra-violet light and fluorescent stains. The work is considered sufficiently advanced to be of the caliber of that required for a Master's Degree.

During the school year, 11th grader WENDY GIBBS (who started the project a year ago at the age of 16) works in the Genetics Laboratory at the University of British Columbia one weekday afternoon and on Saturday. She plans to study every stage in the life-cycle of *C. fragile* comparing cell structures seen in white light, utlra-violet light due to primary fluorescence, and in ultra-violet light due to secondary fluorescence after staining with fluorochromes. Wendy has found the best fluorochromes are Acridine Orange, Auramine, Acriflavine, Calcofluor White, and Calcozine Red. The project is directed by DR. KATHLEEN M. COLE, Assistant Professor of Botany and Biology at the University.

The Berg Science Seminars are aimed at encouraging bright students to embark on careers in science and mathematics. The participants attend weekly seminars and listen to current topics presented by experts in all the various science fields. The research project is usually under the sponsorship of one of the seminar lecturers. All of the lecturers are employed as "dollar-a-year-men", receiving a check through the Vancouver School Board from the Joe Berg Foundation.

## PHYCOLOGIA

The first issue of the quarterly journal of the International Phycological Society, PHYCOLOGIA, has been issued as of 29 March 1961. It is published in Denmark by Andelsbogtrykkeriet, who publish Botanisk Tidsskrift, Oikos, and Journal du Conseil. The acting editor, Paul C. Silva, University of California, has done an excellent job with the journal which has an attractive 2-tone blue cover. This first issue contains a brief discussion of the various national phycological societies and 3 research articles. The date of acceptance for these reports varies from 19 September 1960 to 18 February 1961 and it is hoped that such prompt publication can be maintained in further issues.

The primary purpose of PHYCOLOGIA as stated by the editor is, " . . . to serve as a clearinghouse for phycological information." It will contain review articles and brief reports of original research. It will also contain newsworthy items such as announcements of meetings and excursions, requests for research and teaching materials, and reports of activities in laboratories and institutions. At present, the cost of papers over 8 printed pages will be borne in part by the author. Contributions may be written in English, French, German, Russian, or Spanish.

The next issue will contain the first part of the 1959 phycological literature. This bibliography will also be available as reprints at the cost of approximately $1.00 each. The reprints will be printed on only one side of the page, in order to facilitate affixing the entry to an index card. Anyone interested in buying the reprint of the phycological bibliography should consult the acting editor, Dr. Silva, Department of Botany, University of California, Berkeley 4.

The first meeting of the International Phycological Society will be held with the fourth International Seaweed Symposium at Biarritz, France, during September 18 to 25, 1961.

## GRANT AND FELLOWSHIP DEADLINES

NATIONAL SCIENCE FOUNDATION: 2101 Constitution Avenue N.W., Washington 25, D.C.

1 September 1961—Graduate Laboratory Development Program—This requires 50% participation by the University with funds from a non-federal source. The grant is to aid in modernizing, renovating, or expanding graduate-level basic research laboratories. Only departments with current programs are eligible. Write: Office of Institutional Progress.

5 September 1961—Postdoctoral Fellowship—For this a Ph.D., or equivalent, is required. Write: Fellowship Office, National Academy of Sciences—National Research Council.

15 September 1961—Basic Research Proposals, Life Sciences—No application form necessary. Write: Biological and Medical Sciences Division.

1 October 1961—Senior Postdoctoral Fellowships—For those who are at least 5 years beyond the doctoral degree. Write: Fellowships Section, Division of Scientific Personnel and Education.

1 October 1961—Science Faculty Fellowships—For college teachers with only nominal post-baccalaureate training as well as those who have had scant opportunity for "refresher training". Write: Fellowships Section, Division of Scientific Personnel and Education.

1 November 1961—Cooperative Graduate Fellowships—For graduate work, however, application is made directly to the institution where study is proposed. Inquiries to Fellowships Section, Division of Scientific Personnel and Education.

1 December 1961—Summer Fellowships for Graduate Teaching Assistants—For continuation of academic studies by graduate teaching assistants. Application is made directly to the institution involved. For information write Fellowships Section, Division of Scientific Personnel and Education.

15 December 1961—Postdoctoral Fellowships—For this a Ph.D., or equivalent, is required. Write: Fellowship Office, National Academy of Sciences—National Research Council.

19 December 1961—NATO Postdoctoral Fellowships—The NSF is administering this program for Americans (NRC for Canadians). In most instances the recipient is expected to study in a member country; however, consideration will be given for those planning study elsewhere. Write: Fellowships Section, Division of Scientific Personnel and Education.

1 January 1962—Summer Fellowships for Secondary School Teachers — For further studies at advanced levels. Write: Secondary School Fellowships, American Association for the Advancement of Science, 1515 Massachusetts Avenue N.W., Washington 5, D.C.

NATIONAL INSTITUTES OF HEALTH: Bethesda 14, Maryland.

15 November 1961—Research Grant Request—Specific application form available.

## SECRETARY-TREASURER'S NOTE

Mr. W. A. Daily, our Secretary-Treasurer since 1958 comments that he has enjoyed the short notes included with the dues notices. It has been impossible to acknowledge most of these but they are appreciated. It might be added that oftentimes these serve as sources of news of members for the Bulletin.

## NEWS AND NOTES

W. H. ADEY, University of Michigan, is continuing his research on the biology of New England Coralline Algae this summer and fall. He will be working around Jonesport, Maine, and would welcome the visit of any phycologists in the area. His full address is obtainable through the Botany Department at the University of Michigan.

K. M. SULTANUL AZIZ, Duke University, is spending the summer doing research at the Duke University Marine Laboratory, Beaufort, North Carolina.

HAROLD C. BOLD was a lecturer at the NSF Institute at Stephen F. Austin State College at Nacogdoches, Texas, for high school teachers.

VIVIENNE CASSIE, New Zealand, and husband have spent several months at the Italian Institute of Hydrobiology at Pallanza. They arrived in the United States early last July and have visited several biological stations. She was the recipient of a 1960-61 AAUW Postdoctoral Fellowship for study in the U.S.

ROBERT W. CASTENHOLTZ, University of Oregon, is Director of the Institute of Marine Science sponsored by NSF at Coos Bay, Oregon.

J. TOWNE CONOVER, University of Rhode Island, and HAROLD HUMM, Duke University, are continuing the study, begun in 1960, of Alacran Atoll. This bio-geological study is sponsored by Duke University and the NSF. Last year's studies of the living reef plant communities show that the role of calcareous algae is more important than any other group in the reef genesis at Alacran Atoll.

PHILIP W. COOK, Indiana University, is the recipient of an NSF Cooperative Graduate Fellowship for 1961-62.

TEMD R. DEASON, University of Delaware, Newark, will be an Assistant Professor in the Biology Department, University of Alabama, Tuscaloosa as of September. He is replacing Walter Herndon.

WALTER HERNDON and CHARLES O'KELLEY, University of Alabama, recently received a grant from the National Institute of Arthritis and Metabolic Diseases for continuation of the study of the replacement of calcium by strontium in living organisms. In September Dr. Herndon will become Professor and Head of the Department of Botany, University of Tennessee, Knoxville.

LLEWELLYA HILLIS, formerly at Victoria College, British Columbia, became Mrs. Paul Colinvaux in early June. The Colinvaux spent the summer at Duke University.

LARRY R. HOFFMAN, University of Texas, will receive his Ph.D. in August and will spend 1961-62 on an NSF Postdoctoral Fellowship in the laboratory of Professor Irene Manton, Leeds, England.

RAYMOND W. HOLTON, Flint College of the University of Michigan, has recently received a University of Michigan faculty research grant for the study of "Effect of Growth Temperature on Fatty Acid Composition of a Thermophilic Blue-green Alga." This work is in cooperation with chemist H. H. BLECKER, also at Flint College.

MAX H. HOMMERSAND, University of North Carolina, will be one of the evening lecturers at the Third Botany Conference sponsored by NSF at the University of North Carolina. He will discuss recent developments in phycology for the group that is composed of college teachers of general botany and biology.

RITA HORNER, University of Washington, will be on the faculty at Yakima Junior College, Yakima, Washington, starting in September.

GILBERT C. HUGHES, University of British Columbia, will join the teaching staff at Kansas State Teachers College, Emporia, in September. This past year he has been an NRC Postdoctoral Fellow with the Department of Biology and Botany and the Institute of Oceanography at the University of British Columbia.

S. H. HUTNER, Haskins Laboratories, New York, presented a paper at the 11th annual symposium of the Society for General Microbiology in London in April. In August he plans to attend the 1st International Congress of Protozoology in Prague, Czechoslovakia.

KENIJI KONISHI, Kanazawa University, Japan, received his Doctor of Science degree last year from the University of Tokyo for his study of the Paleozoic Codiaceae. Dr. Konishi is presently Visiting Professor of Geology, at the University of the Ryukyus, Okinawa, and is spending his spare time collecting Recent and Tertiary algal specimens. Professor Y. YAMADA and Dr. M. CHIHARA are also in the Ryukyu Islands collecting tropical and sub-tropical algae.

DERRY D. KOOB, Wellesley College, is attending the Radiation Biology Institute at Syracuse University, New York. Later in the summer he will attend the Plant Biochemistry Conference at the Institute of Paper Chemistry in Appleton, Wisconsin.

GEORGE F. PAPENFUSS, University of California, Berkeley, will be the Lecturer in Phycology at the NSF Institute for College Teachers of Botany at Washington State College, Pullman.

BRUCE C. PARKER, on an NSF Postdoctoral Fellowship with G. E. Fogg in London, has been appointed Assistant Professor of Botany at the University of California, Los Angeles, starting in September.

E. G. PRINGSHEIM, Göttingen, Germany, is recuperating from a broken leg received early this year. He and Mrs. Pringsheim were in Bahamar, Canary Islands, enjoying the sunshine when he was knocked down by a car. They returned to Göttingen for treatment and he was in a plaster cast for approximately a month.

LUIGI PROVASOLI, Haskins Laboratories, New York City, plans to attend the 1st International Conference on Protozoology in Prague, Czechoslovakia in late August. In September he will be at the International Seaweed Symposium at Biarritz, France.

ROBERT F. SCAGEL, University of British Columbia, will be a participant in the 4th International Seaweed Symposium at Biarritz, France. He will show the film prepared by KATHLEEN M. COLE, also University of British Columbia, on sexual reproduction in some of the brown algae.

HAROLD E. SCHLICHTING, JR., North Texas State University, Denton, is continuing his study of viable algae and protozoa in the atmosphere. This research is sponsored by the National Institutes of Health. With the cooperation of the U.S. Air Force he plans to sample at high altitudes, including the jet streams. Dr. Schlichting is also involved in screening of potential algicides. In conjunction with ROBERT SLAUGHTER, Paleontologist at Southern Methodist University, he is studying the recent and fossil Characeae of North Texas. The first course in Phycology at North Texas State University will be offered by Dr. Schlichting in the spring of 1962.

TOSHIO SEGI, Prefectural University of Mie, Tsu, Japan, plans to attend the Pacific Science Congress in Honolulu. From Hawaii he hopes to travel to Woods Hole, Massachusetts, and spend the first of October at the University of California, Berkeley.

AARON J. SHARP, University of Tennessee, is spending the summer at the University of Michigan Biological Station at Douglas Lake teaching the Bryophyte course. He will also lecture on Bryophytes at the NSF College Botany Teachers Institute at Washington State College, Pullman.

PAUL C. SILVA, University of Illinois, will become Senior Herbarium Botanist at the University of California, Berkeley, in September. He has spent this past year as Visiting Professor of Botany at Berkeley. Dr. Silva is also the Chairman of the Organizing Committee of the International Phycological Society as well as the Acting Editor of the journal, *Phycologia*. It is in this capacity that he will attend the 4th International Seaweed Symposium at Biarritz, France, this September.

SHIRLEY R. SPARLING, University of California, Santa Barbara, is one of the instructors at the NSF Institute of Marine Science for college teachers at Coos Bay, Oregon.

RICHARD C. STARR, Indiana University, plans to attend the 4th International Seaweed Symposium.

WILLIAM C. STEERE, New York Botanical Garden, has been elected president of the Torrey Botanical Club.

ANNETTE J. WATERS, Indiana University, received an NSF Cooperative Graduate Fellowship for 1961-62.

JACQUES S. ZANEVELD, Norfolk Division, College of William and Mary, is a member of the summer faculty at the Virginia Fisheries Laboratory, Gloucester Point.

RICHARD E. NORRIS, University of Minnesota, Minneapolis; MAXWELL S. DOTY, and A. J. BERNATOWICZ, University of Hawaii, are some of the participants at the 10th Pacific Science Congress in Honolulu.

## BRITISH PHYCOLOGICAL SOCIETY

The next meeting will be based at Wymondham College, Norfolk, England, 9-16 September 1961. This will be the annual Field Meeting and will be primarily concerned with the freshwater algae. The current officers of the Society are:

President: Professor G. E. Fogg
Vice-Presidents: Dr. R. W. Butcher, Mr. R. Ross
Hon. Secretary: Mr. H. T. Powell (Marine Station, Millport, Isle of Cumbrae, Scotland, U.K.)
Hon. Treasurer: Dr. M. T. Martin
Hon. Editor (British Phycological Bulletin): Dr. E. Conway

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