ANNUAL MEETING — CORVALLIS

The 17th Annual Meeting of the Phyiological Society of America will be in conjunction with the AIBS at Oregon State University, Corvallis, 26 August - 31 August, located in the Willamette Valley, south of Portland.

Originally designated the Land Grant Institution of Oregon, it first held classes in 1868, granting the first degree in 1870. Advanced degrees were awarded 5 years later and by 1935, the PhD was conferred. Known as Oregon State College for many years, in 1961 it was officially designated as Oregon State University. The present enrollment is approximately 9,000 students with a faculty of 1,100.

Physiological research began in 1932 under the tutelage of Dr. Ethel I. Sanborn. Although her botanical interests were diverse, in 1944 she and Max S. Doty (then a Master's candidate) published, "The Marine Algae of the Coos Bay - Cape Arago Region of Oregon." In 1947, Dr. Harry K. Phinney joined the staff as plant morphologist and phycologist, and is presently an Associate Professor of Botany. Jack L. McLachlan, plant physiologist at the Atlantic Regional Research Laboratory of the National Research Council of Canada (Halifax) received his PhD under Dr. Phinney's supervision. In 1962, 3 students (2 PhD candidates) will complete the requirements for advanced degrees based on theses in Phycology.

Present phycological research centers around the study of the metabolism of algal communities in flowing fresh-water (potamology). Extensive facilities are available for such study in cooperation with the Departments of Fish and Game Management, Sanitary Engineering, Entomology, the U.S. Public Health Service unit on the campus, as well as the Department of Botany. The facilities consist of the artificial stream at the Pacific Cooperative Water Pollution Laboratory at Oak Creek, and the Berry Creek Controlled Flow Stream. Both will be in operation during the meetings and those interested are invited to visit.

The local representative for the Phycological Society is Dr. Phinney. So far he has scheduled a field trip to the Oregon Coast for Sunday, 26 August, and a luncheon the next day, 27 August. Further details concerning the meetings will appear in the July issue of the NEWS BULLETIN. Pre-registration applications will appear in the June issue of the AIBS Bulletin.

ALGAE AND SCIENCE FAIRS

Several projects incorporating research on the algae were exhibited at the National Science Fair held 2-5 May at the World's Fair in Seattle, Washington. British Columbia was represented by WENDY GIBBS (grade 12) of Vancouver who has been studying the cyto-morphology of Codium fragile using ultra-violet light and fluorescent stains (see NEWS BULLETIN, 14 (2): 13, July, 1961). The effect of radiation on mitosis of Chlamydomonas reinhardtii was demonstrated by grade 11 student MICHAEL HARALSON of Abilene, Texas. The exhibition by AVA B. LEAVELL, grade 12 student in Tyler, Texas, showed the effect of an electromagnetic and permanent field on Euglena. ELIZABETH SMITH, a grade 10 student from Indianapolis, Indiana, displayed "Antibiotics from Algae" showing how she collected the algae and extracted the antibiotics on homemade chromatographic equipment. JOSEPH TOULOSE, grade 11 of Santa Fe, New Mexico, established a working closed ecological environment between a mouse and algae. A similar project was displayed by ANNE TOLAR, grade 10 student in Latta, South Carolina. Miss Tolar's exhibit titled, "Chlorella—The Key to Life" showed that Chlorella provides food and oxygen while growing on human wastes.
MEETINGS OF INTEREST TO PHYCOLOGISTS

22 JULY-11 August—NATO Advanced Study Institute, "Algae and Man," Potomological Institute, University of Louilville, 3005 Upper River Road, Louisville, Kentucky (Dr. Daniel F. Jackson).


20-23 August—13th International Congress of Limnology, University of Wisconsin, Madison (Dr. I. C. Wright, Birge Hall, University of Wisconsin).

19-24 August—8th International Congress for Microbiology, Montreal, Canada (Secretary, 3574 University St., Montreal).

26-31 August—17th Annual Meeting PHYCOLOGICAL SOCIETY OF AMERICA, Oregon State University, Corvallis (with the AIBS, 2000 P St., NW, Washington 25, D.C.).

1-12 October—Plankton Identification and Control, Robert A. Taft Sanitary Engineering Center, 4676 Columbia Pkwy, Cincinnati 26, Ohio.


LETTER TO THE EDITOR

"Since the dues have gone up, the Society must henceforth regard itself as a more august organization than hitherto. I should therefore like to suggest that new members be asked to sign an oath forewarning:

"a. the use of 'bacterized,' 'fungizado,' 'algizado' and other epithets of that ilk, when usually the word 'contaminated' is meant. Otherwise we shall soon have the language infected with such words as 'tararacized' (applied to lawns), 'lebacterized' (applied to milk), etc.

"b. the use of the Fahrenheit scale, hundredweight per acre, pounds per square inch, and foot candles, in place of units in the customarily accepted decimal system.

"c. the use of 'algology' (the study of algae and plants) in place of 'phyology' (the noble art of studying algae). Happily our colleagues the mycologists have buried 'fungology' some years ago.

signed/ Ralph A. Lewin"

NATO ADVANCED STUDY INSTITUTE — "ALGAE AND MAN" — will be held 22 July through 13 August at the Potomological Institute of the University of Louisville, Kentucky. Participation is open to anyone currently teaching or doing research in Phycology. The attendance is limited to 60, with preference given to those staying the 3 weeks. Stipends will be awarded only to the Faculty and applicants from other countries. The registration fee of $50 includes transportation on field trips; those not attending the trips or not present the entire period, Canada $30.

The Institute will consider the algae from 2 points of view. The first involves such classic fields of study as taxonomy, cytology-genetics, physiology-biochemistry, ecology: the other view considers the impact of algae on human activities, including medicinal uses, effect of water supplies, as a food source, in space exploration. Further information may be secured from Dr. Daniel F. Jackson, of the Potomological Institute. Deadline for applications is 1 June.

A SAMPLING OF SOIL ALGAL COMMUNITIES NEAR MOUNTAIN LAKE BIOLOGICAL STATION, VIRGINIA

Herman S. Forest
Department of Biology
University of Rochester, Rochester 3, New York

This investigation was the first directed at the soil algal community of this area with the exception of Smith (1944), who reported Chlorococcum humicola (Nag.) Rab. and Stichococcus subtilis (Kütz.) Klerk. from the Muskingum loam in the vicinity of the Station, and Strickland (1940) who included some soil species in his study of Virginia Oscillatoriaceae. The moist soil plate method of developing samples has previously been used in Oklahoma (Willson and Forest, 1957) and in Tennessee (Forest, in publication). Information sought was an approximation of the species composition of the communities at various sites, as an approximation for more intensive future studies.

Ten small samples of soil, none of which showed visible algae, were taken from each site over an area of approximately 50 yards square. The samples were collected from the 0-1.9 cm. layer of the consolidated topsoil. Petri dishes were filled with sterile distilled water, placed under continuous fluorescent light at about 200 candle power with temperature at 20-23°C. After 2 weeks the lighting was reduced to 8 hours a day, and the growth of the algae was slower than previously observed by the investigator, 3 to 4 weeks being required for adequate development.

The 7 sites selected ranged in elevation from 4000 ft. to 2000 ft., and transected three principal underlying Paleozoic rock formations. The Clinton formation at the highest altitudes is represented by the Clinch sandstone, beneath it is the Martinsburg shale, which has some highly calcareous phases, and the valley floor is mostly Stones River limestone.

Location and description of the sites:

Site #1—Biological Stations grounds. Altitude 4000 ft.; a thin, stony, sandy loam covered by a moderately short lawn interspersed with Poa spp. prominent, but other grasses and Trifolium repens L. present, partly shaded by large oaks. The samples were taken from relatively bare spots, since the turf was quite dense in most places.

Site #2—Woods just south of the Biological Station parking lot. Altitude 4000 ft.; a thin, stony, sandy loam covered with leaf litter; Quercus rubra L. the most prominent tree, also Q. alba L., Carpinus caroliniana, Sassafras, Verrucaria, Desmodium, and Galax. Shade was quite intense since very few of the thickly-grown trees were over 3 inches in diameter.

Site #3—Woods among huge sandstone boulders at north end of Mountain Lake. Altitude 4000 ft.; organic, peaty soil under Rhododendron spp. and large Tongue constricta (L.) Carr.; shade intense.

Site #4—Pasture in use, 2.1 miles below Mt. Lake Hotel on state highway 700, at abandoned house. Altitude 3600 ft.; moderate southwest slope with shale limestone soil (over Martinsburg shale); mixed grasses, some Trifolium repens L., a few Verbascum and Cirsiurn.

Site #5—Unused, somewhat eroded pasture 3.7 miles below Mt. Lake Hotel on state highway 700, at George Farley mailbox. Altitude 3200 ft.; steep western slope of shale limestone; Andropogon and other grasses, Trifolium pratense var. sativum (Mill) Schreb., Monarda, Daucus, Fragaria, Echinus, and a few Juncus.

Site #6—Barnyard, used very little, 5.3 miles below Mt. Lake Hotel at Christian Church. Altitude 2200 ft.; moderate eastern slope; well-developed soil on limestone; fairly close turf of mixed grasses with some Andropogon and Setaria, also Dactylo, and Cicurium.

Site #7—Occasionally used pasture beside state highway 460 at entrance to Farrar's farm, east of Nottoway, Va. Altitude 2000 ft.; west facing slope and drawn on limestone soil; mixed grasses including Phleum and Setaria, many herbs including Artemisia, Cirius, Acreplus and some

1Gratitude is due to Dr. L. C. Bird and Phipps and Bird, Inc. for sponsoring, and to the Association of Southeastern Biologists for awarding the fellowship under which this work was chiefly completed. Drs. Francis Drozet and Charles Reimer were most accommodating in their identifications of blue-green algae and diatoms, respectively.
The distribution of algal species among the 7 sites near Mountain Lake, Virginia, is as follows:

(n=new report for Giles County)

**BLUE-GREEN ALGAE**

- *n Glaucoxytis nostochinearum (Ita.) Rab. 6*  
- *n Microcystis paludosa var. acuminatus Garin. 1 4 5 6 7*  
- *Lynbya aestuarii (Mert.) Lieb. 5 6*  
- *n Oscillatoria amphibia Agardh 1 5 7*  
- *n Oscillatoria limosa Kütz. 4 6 7*  
- *n Nostoc ellipsoiform (DonNeal.) Rab. 5 6 7*  
- *Nostoc muscorum Kütz. 1 7*  
- *n Pleurosigma purpureum Gem. 1 5 6 7*  
- *Schizothrix freeyi Agardh. Gem. 1 5 7*  
- *Scytonema Hofmannii Agardh 5 6*  

**RED ALGAE**

- *n Euglena sp. resembling *E. mutabilis* Schm. 6*  
- *n Euglena sp. (new?) 7*  

Even in this limited study, some obvious differences are present in the series of sites. The Rhododendron-Hemlock soil (#3) was absolutely sterile, and the soil of the oak thicket (#2) was almost so, showing 3 diatoms. The open lown which had the same soil type as the thicket had a more varied community. The sites at the lowest elevations (#5, 7) were plainly the richest from the viewpoint of species composition, but further studies will be necessary to evaluate them more accurately both as to composition and as to association with ecological conditions. It was surprising to find some of the algae as soil inhabitants. The *Enastraum* (#6) may be a meaningless instance, but there are 2 other reports of desmids from soil (Willson, 1918; Durrell, 1959). The finding of *Oscillatoria limosa* (#4, 5, 6) may be a meaningless instance, but there are 2 other reports of desmids from soil (Willson, 1918; Durrell, 1959). The finding of *Oscillatoria limosa* (#4, 5, 6) may be a meaningless instance, but there are 2 other reports of desmids from soil (Willson, 1918; Durrell, 1959).

**GREEN ALGAE**

- *Chlamydomonas spp. 1 4*  
- *Enastraum binale (Turp.) Ehr. (near) 6*  
- *Ulothrix flaccida Kütz. 1 4 6 7*  
- *Ulothrix cucullata (Nag.) Forr. 1*  

**DIATOMS**

- *n Hantzschia amphiophysis (Ehr.) Grun. 1 2 3 4 5 6 7*  
- *Navicula contenta 1c. biceps Arn. 4 6*  
- *Navicula fluviatilis Hux. 6*  
- *Pinnularia sp. 6*  
- *Pinnularia oblongula (Krause) (near) 4 6*  
- *Pinnularia oblongula (Krause) (near) 4 6*  
- *Pinnularia molieri Grun. (near) 1 2*  
- *Pinnularia molieri Grun. (near) 1 2*  
- *Stauroneis anceps Ehr. 6*  

**RUGOSA**

- *Cymbella elisabethae Carey (new) 7*  

**EXPLORATION FOR A CELLULAR FATTY ACID TRANSPORT SYSTEM**

**Donald L. Wise**

Department of Biology, The College of Wooster, Wooster, Ohio

Work to date indicates minimum pH values at which acetate, propionate, butyrate, and valerate are used for growth by *Polytonella caeca* (lecycophytoflagellate). Higher pH levels will be tested by aseptically adding filter-sterilized NHCl to autoclaved medium to avoid removing NH4 at higher alkalinity when complete medium is autoclaved. The maximum concentrations of fatty acid used in the pH range analysed has been determined for acetate, propionate, and butyrate. The maximum concentration of these acids in an extended alkaline range plus the same criteria for valerate and succinate will be assayed to find if an optimum pH exists for the utilization of each acid.

Pilot studies will be performed to see if the iso-compounds of the fatty acids inhibit their straight isomers by the Thunberg method.

Present data indicate preferential use of longer fatty acids in media with higher pH; each acid has a minimum pH at which it is used; and each acid may have an optimum pH for availability. If the pH of the medium exerts this influence, then the hypothesis for superficial enzymatic fatty acid transport is strengthened. Iso-acids as specific inhibitors might be valuable in analysing this system.

**CELL DEVELOPMENT IN Cosmarium turpini BREG.**

**Robert W. Korn**

Botany Department, University of Rhode Island, Kingston

The mechanism controlling form will be studied from: 1) types of shape mutants produced; 2) behavior of multiple mutant stocks; 3) nuclear competition; and 4) the nature of unstable mutant lines.
VIZABLE SPECIES OF ALGAE AND PROTOZOA IN THE ATMOSPHERE
Harold E. Schlichting, Jr.
Department of Biology, North Texas State University, Denton
Prior to 1870 Pasteur, Pouchet, Darwin, and Maddox had all observed that numerous microorganisms existed in the air. However, it was not until the 1930's that algae in the atmosphere were studied by F. C. Meir, C. A. Lindberg, and M. A. Van Overeem.

An attempt was made in this study to discover under what specific environmental conditions algae and protozoa may be dispersed by air currents. From September, 1949 through May, 1960, in Port Sanilac, Michigan, 15,524 ft. of air were sampled by means of modified impingers and membrane filter samplers. The exposure of the sterile soil-wool extract or membrane filter was then cultured in soil-water medium and examined microscopically over a three-month period. Chlorella vulgaris, C. ellipsoidea, C. sp., Chlorococcum sp., Navicula sp., Peranema sp., and one unclassified zooflagellate as well as bacteria, moss, fern, and fungal spores were collected from the atmosphere under known environmental conditions.

FURTHER STUDIES ON THE DESMIDS OF ALASKA
Hannah T. Coadsdale
Department of Zoology, Dartmouth College, Hanover, New Hampshire
It is proposed to continue studies on the desmids of Alaska, based on extensive collections made by the investigator in 1951 and by other scientists now collecting in various parts of the state. Identifications will be made from these collections and published with illustrations and brief descriptions of each taxon, together with some basic ecological features of each locality (north latitude, altitude, acidity of the water and type of habitat). This will continue a series already well started by the investigator and will lead up to a Desmid Flora of Alaska, which it is hoped will serve as a basis for further studies on problems of ecology, distribution, etc. Collections from other regions in the far north of America will be studied for comparison.

CHEMOSTAT CULTURING OF MARINE PHYTOPLANKTON
W. Rowland Taylor and Thomas J. Murphy
Department of Oceanography, Johns Hopkins University, Baltimore, Maryland
Investigations are being carried out to determine the quantitative requirements of inorganic nutrients by marine phytoplankton organisms. Dunaliella eucublora and Isochrysis galbana are being cultured in a continuous growth device in which one constituent of the medium is provided in limiting concentrations. In such an apparatus the rate of growth of the culture is a function of the concentration of the limiting factor and can be determined by measuring the rate at which fresh medium is pumped into the growth chamber. Among the limiting factors being investigated are nitrate, phosphate and trace metals such as iron and zinc.

THE EFFECT OF SMALL ORGANISMS ON THE PROPAGATION OF ULTRASONIC WAVES
Robert Meister
School of Engineering, Catholic University of America, Washington, D.C.
The project is to study the concentration and frequency dependence of attenuation in aqueous suspensions of specific species of plankton. In particular, a study will be made of the effects of diatoms suspended in water, as well as other algae. Since earlier measurements have shown that the green alga, Scenedesmus causes an excess attenuation of sound which is believed to be viscoelastic in origin, it will be possible to determine whether the sound attenuation caused by other microscopic plants can be described by the same mechanism.

ALGAE SINCE DETONI: A catalog entitled "New taxa of benthic green, brown and red algae published since De Toni 1889, 1895, 1926, respectively, as compiled from the Dawson algal library" is available at cost. It contains nearly 4000 indexed names and about 6000 bibliographic entries. The cost is $2 postpaid, and orders sent directly to: Beaudette Foundation for Biological Research, 1597 Califas Road, Santa Ynez, California.

EXPLORATORY STUDIES ON THE GENETICS OF BLUE-GREEN ALGAE
C. Shields Gowans
Department of Botany, University of Missouri, Columbia, Missouri
Because of their taxonomic position between the bacteria and the higher algae, the blue-greens may form a unifying link between genetically primitive organisms (bacteria and phage) and higher organisms. Thus, they are, further, the last large group of organisms in which no mode of genetic exchange has been demonstrated. The demonstration of the presence or absence of some type of genetic exchange in the blue-green algae will be attempted, using recent developments in culture techniques and selective genetic techniques.

STATIGRAPHIC DISTRIBUTION OF DIATOM FLORAS IN THE TYPE MONTEREY FORMATION AND IN THE "SIQUOC" FORMATION OF THE SANTA MARIA DISTRICT, CALIFORNIA
W. W. Worndadt II and G. D. Hanna
California Academy of Sciences, San Francisco
The upper member of the typical Monterey formation near Del Monte and Monterey, California, bears a distinctive diatom flora of at least 218 species. Most of these diatoms are bottom-dwelling forms, some of which are sessile. This flora from the upper Monterey formation is of Delmontian (late Miocene) age.

The "Siquoc" formation along Harris Grade near Lompoc, Santa Maria District, California, 3 diatom floras may be distinguished. All 3 (of these floras in the "Siquoc" formation) are younger than the Delmontian flora of the typical Monterey, but only about 150 species occur in these three floras as a whole. Pelagic forms are most numerous in the older and middle of these "Siquoc" floras whereas bottom-dwellers, both free and attached, increase upward through the Harris Grade sequence and are the most numerous in the youngest floras.

All 4 of these distinctive diatom floras have been found over an extensive area in the California Coast Ranges. They occur from Monterey in the north to Bakersfield in South-central California, and to Santa Barbara in the southwest part of the state.

INVESTIGATION OF TEXAS SOIL ALGAE
Harold C. Bold
Department of Botany, University of Texas, Austin
Exploratory studies of the soil alga flora of Texas are continuing. Intensive studies of the flora of such diverse regions as the northern and western "gy" soils, undisturbed prairie, coastal sands, eastern pine belt, Carrizo sands, etc., have been undertaken or are projected. Organisms new to science which are isolated are being described and cumulative, monographic summaries of such soil algal genera as Chlorococcum, Spongiosobius, Neochloris, Bracteococcus, Botrydiopsis, Spongiosococcus, Chlororaphidium and others are in preparation. These are being based on both morphological and physiological attributes. Types cultures of newly described taxa have been deposited in the Culture Collection of Algae, Indiana University.

COMPARATIVE AUTECELDOLOGICAL STUDY OF CHARA
Vernon W. Proctor
Department of Biology, Texas Technological College, Lubbock
Unialgal cultural requirements for 15-20 of the more common North and South American species of Chara are being studied. A few species of Nitella are maintained for comparative purposes. Clones have been established in soil and water. More emphasis is being placed upon the establishment of isolation procedures, light and temperature optima, oospore viability and dormancy requirements, and dispersal mechanisms than upon studies of mineral nutrition.

It is expected that these studies will provide a basis for future ecological and taxonomic field studies.
METABOLISM OF A PLANT SULFOLIPID
George M. Cheniae
Bio-science Group, RIAS, Baltimore 12, Maryland

A study of the metabolism of the sulfolipid, suggested to be 1-0-(β-6' deoxyhexopyranosyl 6'-sulfonic acid)-3-0 oleoyl glycerol, will be investigated. A major part of the study will be devoted to the enzymatic formation and degradation of the 6 deoxyaldohexopyranosyl 6'-sulfonic acid moiety of the sulfolipid.

Radiochemical experiments with algal suspensions will be used in attempts to determine immediate precursors of the 6 deoxyaldohexopyranosyl 6'-sulfonic acid moiety as well as the contribution of each C' labeled substrate to the other moieties of the sulfolipid. Degradation of the sulfonic acid substituted methylpentose is planned.

Cell-free extracts of a suitable alga will be used to study methylpentose synthesis with emphasis on the interconversion of nucleotide-linked hexoses to their nucleotide-linked deoxyhexoses via a glycoseen intermediate. Sulfate transfer from "active sulfate" to the postulated glycoseen intermediate will be explored as one possible mechanism of formation of the sulfonic acid derivative of the methylpentose.

FACTORS DETERMINING GROWTH IN MARINE PLANKTONIC ORGANISMS
Luigi Provasoli, M. Iwasaki, and A. D'Agostino
Haskins Laboratories, Inc., 305 East 43rd Street, New York 17, New York

The scope of the research is to determine in axenic culture the chemical and physical factors needed for the growth of various marine organisms. After having identified the nutritional requirement of several marine littoral flagellates and unicellular algae we are now trying to bring in bacteria-free culture the nanoplankton flagellates which apparently constitute a large part of the phytoplankton. The nanoplankton, for its extremely small size (2-6μ), is considered to be the usual food of the early larvae forms of the marine invertebrates.

We are now extending our nutritional studies to the seaweeds which, because of the complexity of their unicellular thallus may offer the possibility to study also morphogenetic factors.

ALGAL MUTATION
Russel O. Bowman and J. B. Middlebrook
Vought Research Center, Life Sciences, Dallas, Texas

This project is to study the changes in Chlorella pyrenoidosa after treatment with ultraviolet light, particularly for developing a thermophilic rapidly-growing strain. Plants are resistant to ionizing or hard radiation, but relatively susceptible to ultra-violet radiation. One possible explanation for thermophilic algae, is the development of a mutation capable of life at higher temperatures. There is a possibility that U.V. lighting can be the agent to create thermophilic strains from standard strains.

REPRINT LIBRARY PROPOSAL: HERMAN S. FOREST, Department of Biology, University of Rochester, New York, has proposed to the Phycological Society of America and the International Phycological Society that a reprint library be established as a cooperative venture in the international and national societies. He has proposed that there be a centralized library for the reprints which will then be indexed and made available to users on a rental basis. In order to start such a service, it will be necessary to have some expenditure for a secretary and filing. Dr. Forest is anxious for comments on this proposal. Either write him directly or to the Editor.

Sorry, no space for NEWS AND NOTES.