

THE PHYCOLOGICAL SOCIETY OF AMERICA

Volume XIV

News Bulletin, November, 1961

Number 3/4

Honouring Professor Ernst G. Pringsheim on his 80th birthday

This issue of the Phycological News Bulletin is respectfully dedicated to Professor Ernst G. Pringsheim on the occasion of his 80th birthday, and it is with great pleasure that we so honour Professor Pringsheim.

E. G. Pringsheim was born 26 October 1881 and studied in Munich and in Leipzig where he worked under Wilhelm Pfeffer becoming Doctor of Philosophy, *summa cum laude*, in 1906. Professor Pringsheim became a Privatdozent at the University of Halle in 1909 and after World War I became Professor Extra-ordinarius at Berlin

University. In 1923 he went to the German University of Prague as Full Professor and Head of the Department of Plant Physiology where he founded the first Culture Collection of Algae. In 1939 Professor and Mrs. Pringsheim and a great number of algal cultures immigrated to England where the Cambridge University Culture Collection was established. While in England he was associated with Cambridge University and later with the Strangeways Research Laboratory in Cambridge. In 1953 Professor Pringsheim returned to Germany as Honorary Professor at Göttingen University where he has established a laboratory of algal research and a Culture Collection. At present he is actively concerned with investigations on the physiology of the algae and flagellates.

Dr. and Mrs. Pringsheim visited laboratories in the United States and Canada in 1956-1957 and in 1959. This included Indiana University, where many duplicates from the Cambridge University Culture Collection are kept. Other laboratories they have visited include Vanderbilt University, Marine Biological Laboratory at Woods Hole, University of California at Berkeley, Hopkins Marine Station of Stanford University, and the Friday Harbor Laboratories of the University of Washington.

The Professors of the Plant Physiology Institute of Göttingen University are planning a Festschrift in honour of Professor Pringsheim's 80th birthday. This is probably to be published in "Planta, Archiv für wissenschaftliche Botanik" in the near future.

(Acknowledgement is made to Mrs. E. G. Pringsheim, and Dr. R. C. Starr for supplying information and the picture.)



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EDITORIAL

This is the last issue of Volume 14 for 1961. It is possibly the last regular number of the PHYCOLOGICAL NEWS BULLETIN. The decision rests with the voting membership. At the recent Purdue meeting of the Phycological Society of America, the Executive Committee proposed an increase in dues. This increase is to cover publication costs of the News Bulletin as well as full membership of the Society in the American Institute of Biological Sciences. Without such an increase, the publication of the News Bulletin in its present form will be impossible. In the past deficits arising from publication costs have been met by using the Savings Account funds accumulated from the early years when publication was irregular. In order to raise the dues it is necessary to amend the By-laws of the Society. Fortunately the proposal need be approved only by a *simple majority of those voting in a mail ballot*. Thus a handful can determine the fate of the Society — and usually do since at the most, only 1/3 respond. With this issue is enclosed a duplicate of the ballot mailed in early October. If you have not voted yet, please do so. Let the future of the Society be decided by the majority of the membership rather than the majority of those voting. Ballots are to be counted on 10 December 1961 — MAIL YOUR VOTE TODAY!

NECROLOGY

The TWA plane crash early 1 September 1961 claimed the life of ROBERT GORDON, 24, one of the young, potentially outstanding phycologists. Mr. Gordon, a graduate student at the University of California, Berkeley, was returning to California following a brief visit in Bloomington, Indiana, after the AIBS meetings at Purdue.

He was born in Winnipeg, Manitoba, later moving to southern California. After receiving his Bachelor of Science degree in 1960 from Humboldt State College (Arcata, California) where he worked with Dr. W. C. Vinyard, he became a graduate student and research assistant with Dr. George F. Papenfuss in Berkeley. His doctoral research was to be concerned with the morphology and taxonomy of various genera of the Dictyotales. Mr. Gordon had spent the summer as a student and student investigator under Dr. Richard C. Starr at the Marine Biological Laboratory, Woods Hole, Massachusetts, and had been invited to be a teaching assistant in the summer, 1962. Although he was not a member of the Phycological Society of America, he expected to join immediately upon return to California.

THE LAFAYETTE MEETINGS

The sixteenth annual meeting of the Phycological Society of America was held in conjunction with the A.I.B.S. convention at Purdue University, West Lafayette, Indiana, 26-31 August 1961. Sunday, 27 August, an algal foray led by Fay Kenoyer Daily and William A. Daily was held at Lake Cicott, Cass County, Indiana. A luncheon with 53 in attendance was held Monday noon. Papers were presented Tuesday morning, Wednesday all day, and at a symposium Tuesday afternoon. The attendance at all of these sessions was excellent and at times nearly one hundred were present.

MINUTES OF THE BUSINESS MEETING

The business meeting of the Phycological Society of America was called to order by the President, Dr. Jack Myers, at 3:45 p.m., 30 August, in Room B26, Home Economics Administration Building with approximately 40 members present.

Minutes of the fifteenth annual meeting (Oklahoma State University) were approved as circulated to members in News Bulletin No. 40.

OLD BUSINESS:

SECRETARY'S REPORT: The following officers were elected by mail ballot from a slate of nominees prepared by the Nominating Committee (Ruth Patrick, Chairman, Harold Bold, G. W. Prescott):

President Luigi Provasoli, Haskins Laboratories
 Vice-President W. A. Daily, Lilly Research Laboratories
 Secretary-Treasurer Walter R. Herndon, Jr., Univ. of Tennessee

During the past year we have gained 27 new members; unfortunately, we lost 24 due to drops (20) and resignations (4). As of 30 August 1961, there are 306 individual members, 13 organizational members, and 7 subscribers. Recently there were 5 re-instatements; therefore, including 4 new, paid up memberships beginning January 1, 1962, the Society has a total of 335 members and subscribers. There are 83 who have not paid their 1961 dues.

TREASURER'S REPORT:

Balance on hand, 20 August, 1960 \$1,198.62

INCOME

Dues

Current \$ 485.50
 Back 74.00
 Future 33.75

\$ 593.25

Sale of Reprints 119.00
 Interest on Savings 18.76
 Profits (Sale of: **Culturing of Algae**) 42.58

\$ 773.59

EXPENDITURES

Printing and mailing: News Bulletin \$ 980.00
 Secretary-Treasurer's expenses 10.39

\$ 990.39

Balance on hand, 5 August, 1961 \$ 981.82*

ASSETS

Checking account, Farmer's Bank, Union Point, Ga. \$ 341.79
 Savings account, Farmer's Bank 640.03

\$ 981.82*

*Since 5 August, 1961, the balance on hand has been reduced by a bill for the News Bulletin, Vol. 14, No. 2, received 19 August, 1961, which totaled \$321.00.

EDITOR'S REPORT: Dr. Janet Stein requested the members to send in all notices of interest for publication in the News Bulletin. She will welcome any ideas concerning the content of future bulletins.

NEW BUSINESS:

Dr. Janet Stein will represent the Society on the Council of the American Association for the Advancement of Science during the Denver meeting.

Dr. Richard C. Starr, representing the Executive Committee proposed that the dues be increased to five dollars per annum in light of steadily increasing costs of publication of the News Bulletin. An increase would also enable the Society to become a full member of the A.I.B.S. It was moved and approved that a ballot be circulated to the membership for voting on the increase in dues, to be effective January 1962.

It was recommended that Dr. George F. Papenfuss write a letter on behalf of the Society, and the Phycological Section of the Botanical Society of America, to ensure the presence of a Phycological Section during the 1964 International Botanical Congress.

The Secretary was instructed to send thanks to our local chairman, Dr. A. T. Guard, for the general success of our entire program during the Purdue meetings.

The seventeenth annual meeting of the Society will be held in conjunction with the A.I.B.S. convention at Oregon State College, Corvallis, Oregon, 26-30 August 1962.

The meeting was adjourned.

Respectfully submitted,
W. A. DAILY, Secretary-Treasurer.

ABSTRACTS OF PAPERS PRESENTED AT PURDUE UNIVERSITY AUGUST 1961

(For previously published abstracts, see Am. J. Botany 48(6:2): 542-544, July 1961)

SEXUAL REPRODUCTION IN CERTAIN RECENTLY-ISOLATED STRAINS OF *GOLENKINIA*, *HAEMATOCOCCUS*, AND *VOLVULINA*

Richard C. Starr

Indiana University, Bloomington

A homothallic strain of *Golenkinia minutissima* was isolated and studied. The process of oogamous sexual reproduction was found to be identical with that described for other species of *Golenkinia* by Korschikoff (Proc. Kharkov A. Gorky State Univ., Bk. 10: 109, 1937).

Material of *Haematococcus capensis* from Dr. Mary A. Pocock of South Africa yielded heterothallic clones which produce large numbers of small biflagellate gametes in liquid culture. Details of the sexual process have been reported by Dr. Pocock (Trans. Roy. Soc. South Africa 36(1), 1960).

A new species of *Volvulina* is described from cultures originating from a natural collection from Enchanted Rock, Texas. The new species differs from *V. steinii*, in having pyrenoids in the vegetative cells, a common outer gelatinous envelope surrounding the colony, gametes with a protoplasmic proboscis near the base of the flagella, and zygospores with the secondary wall ornamented with delicate spines. Heterothallic strains from Texas were shown to be interfertile with heterothallic strains isolated by Miss Jackie Edwards from a locality in Alabama.

SEXUAL STRAINS OF *CHLAMYDOMONAS* FROM THE COLLECTION OF GILBERT M. SMITH

R. W. Hoshaw

University of Arizona, Tucson

The strains of *Chlamydomonas* maintained by Dr. Gilbert M. Smith were sent to the Culture Collection of Algae at Indiana University in 1959. These strains were originally isolated between 1944 and 1949 from soil samples obtained from several localities in the United States, with the exception of one sample from Bluefields, Nicaragua. Pure cultures of the strains were investigated to determine the nature of their sexuality and five species were found to be heterothallic. These species were: *C. minutissima*, *C. frankii*, *C. reinhardtii* and two unidentified species. All strains produced a vigorous growth on either soil extract agar or Sager and Granick's Medium I with 1.5% agar (Ann. N.Y. Acad. Sc. 56: 832, 1953). A comparable sexual response occurred with a harvesting medium of distilled water, or an inorganic salt medium with low nitrogen. The five species exhibited a marked difference in the intensity of their sexual response. Only a limited quantity of zygotes was obtained from *C. minutissima*, *C. frankii* and the unidentified species from Nicaragua. The unidentified species from Iowa gave an excellent sexual reaction under a wide variety of conditions. Two strains of *C. reinhardtii* of unlike mating type, isolated from Massachusetts and California, produced a moderate quantity of zygotes. They also formed zygotes with the two strains of *C. reinhardtii* isolated by Dr. Smith and deposited in the Culture Collection in 1952. These last two strains have been used extensively in cytological and genetic investigations by workers in several laboratories. All of the sexual strains discussed above will be maintained in the Culture Collection.

GENETIC STUDY OF *NETRIUM DIGITUS* VAR. *LAMELLOSUM*

Paul Biebel

Spring Hill College, Mobile, Alabama

A heterothallic strain of *Netrium digitus* var. *lamellosum* (Bréb.) Grönblad was isolated and grown in pure culture. Conjugation was obtained when cells of complementary mating types were mixed in nitrogen-depleted medium. Dried zygospores remained viable for as long as two years, and germination was obtained when the spores were re-moistened in fresh medium and placed in light.

Gones were isolated from germinated zygospores and were back-crossed to the parental clones. Two kinds of zygospores were produced from the back-crosses. The first type, identical to the parental spores, tended to be irregular and had three wall layers, the middle layer of which was thick and wrinkled, giving the spore a rough appearance. The second type had a smooth appearance, tended to be almost perfectly spherical and had a wall composed of only two layers. Additional crosses revealed that the rough zygospores carried a dominant gene for rough wall, while the smooth spores were homozygous for the recessive allele.

Segregation ratios for the two pairs of alleles, for mating type and for zygospore type, were determined by means of test crosses. In the 53 gones tested, both pairs of alleles yielded a ratio which was very close to 1:1. The two pairs assorted independently.

A method for distinguishing between ordered and unordered tetrads by the frequency of vesicles which contained two products with the same genotype was discussed.

THE COMPARATIVE ULTRASTRUCTURE OF THE VOLVOCAEAE

Norma J. Lang

Indiana University, Bloomington

The electron microscope is being used to investigate the fine structure of *Gonium*, *Pandorina*, *Eudorina*, *Volvulina*, *Platydorina*, *Pleodorina*, and *Volvox*. Fixation with either a 2-5% aqueous potassium permanganate solution or a buffered 2% osmic acid solution is employed, followed by embedding in the epoxy resin, Araldite M.

Since the elucidation of the ultrastructure of *Chlamydomonas* by Sager and Palade (J. Biophys. Biochem. Cytol., 3: 463, 1957), comparisons with the colonial forms are being made. In general, the individual cells of this family are "chlamydomonad" not only on the basis of gross morphology but also in ultrastructure. Further, there is as yet no apparent increase in the ultrastructural complexity of a cell as a concomitant to the postulated phylogenetic series in this family.

Higher magnifications show several interesting features which are relatively constant throughout the Volvocaceae. The gelatinous colonial matrix has an outer fibrous-appearing layer and a less dense layer surrounding the cells. The outermost boundary of this matrix appears double. The flagella penetrate the matrix through pores and have the typical $9 + 2$ fibril structure enclosed in a double membrane. The rod-shaped or occasionally branched mitochondria have a 2-layered membrane with cristae formed by invaginations of the inner layer in more or less perpendicular orientation. The Golgi bodies or dictyosomes are stacks of several flattened vesicles or cisternae in the perinuclear region. Arching extensions of the porous, double, nuclear envelope appear to encompass each Golgi body.

The cup-shaped chloroplast contains many elongated, flattened lamellar discs in stacks of varying number embedded in a granular matrix. This double-membraned chloroplast may contain 1 to several pyrenoids and an eyespot. The pyrenoidal matrix is penetrated by contorted extensions of the chloroplast discs and is surrounded by starch grains. The eyespot, or stigma, is formed by several rows of hexagonal, densely packed granules. Each row is associated with a single chloroplast disc.

These preliminary findings will be further examined for any significant differences among the genera and will form the basis for studies of the origin of organelles in asexual reproduction, genetic mutants and physiological variants.

RANDOMNESS IN ZOOSPORE FORMATION AND AGGREGATION
IN *PEDIASTRUM DUPLEX* MEYEN

Robert W. Korn

University of Rhode Island, Kingston

The cells of a colony appear to be reproductively equivalent and independent in the production of zoospores. UV-irradiated colonies gave rise to daughter colonies often having a cluster of cells smaller than normal. The number of these "dwarf" cells in a colony follows a geometric series, suggesting a nuclear origin for the "dwarfness." The average number and frequency distribution of nuclei in cells of a control population was similar to those for the targets for "dwarf" cell production in the treated population. "Dwarf" cells were scattered throughout the colony in no apparent pattern, suggesting that nuclear arrangement in a colony is thoroughly altered from that in the mother cell by zoospore aggregation.

AN ANALYSIS OF SEXUAL COMPATIBILITY IN *EUDORINA*

Melvin Goldstein

Indiana University, Bloomington

In the past three years 44 natural collections of *Eudorina* have yielded the following clonal stocks: 9 homothallic stocks, 24 heterothallic pairs and 8 parthenosporic stocks. Four of the 44 collections yielded only males and one collection yielded a single female strain.

Sexual strains can be characterized by their zygote arrangement: 1) the clumped type, in which the fertilized eggs remain in the maternal matrix forming tight clumps, and 2) the scattered type, in which the maternal matrix breaks down after fertilization and the zygotes are released singly. The zygote arrangement is constant within homothallic, heterothallic and the zygote-like parthenosporic stocks.

The study of sexual compatibility included 22 heterothallic pairs, 3 males and 1 female strain which were mixed in all possible male-female combinations with the presence of zygotes used as an indicator of cross compatibility. There was a total of 104 intercrosses among heterothallic strains of *Eudorina* in comparison to seven intercrosses among 12 heterothallic pairs of *Gonium pectorale* (Stein, Am. J. Botany, 45: 664, 1958) and only 16 intercrosses for 22 heterothallic pairs of *Pandorina morum* (Coleman, J. Protozool. 6: 249, 1959). In general, strains with like zygote arrangements intercrossed more freely with one another, and the greatest degree of sexual isolation occurred between strains with different zygote arrangements. A similar correlation was found in the study by Coleman.

The evident points from the study of sexual reproduction in *Eudorina* are: 1) natural populations of *Eudorina* possess a sexual potential which may not be evident in collections, but may be observed in culture when subjected to the proper environmental conditions; 2) incompatibility is evident between certain strains of *Eudorina*, more noticeably those with different zygote arrangements; and 3) there is a greater degree of compatibility among sexual strains of *Eudorina* than has been found for *Gonium pectorale* and *Pandorina morum*.

ALGAL CLASSIFICATION — AN AID TO IMPROVED
INDUSTRIAL UTILIZATION

Leonard Stoloff

Marine Colloids, Inc., Rockland, Maine

A proposed classification revision of the Florideae (subclass of the Rhodophyceae) at the ordinal level is based on the commercially valuable structural polysaccolloids (polysaccharide hydrocolloids), the agars, carrageenans and gelans. The high degree of correlation of the lower classification levels under the new groupings of Agarales, Carrageenales and Gelales is pointed out together with the few discrepancies. An open end procedure for examination and identification of the polysaccolloids is outlined. The need is acknowledged for expanding and modifying the system as new information is obtained and new techniques are developed.

The possible value to phylogenetic theory from organized information on the structural polysaccolloids is compared to the use of the photosynthetic pigments for similar purposes. The value to commercial exploitation is self-evident.

(Presented at the Symposium: Economic Applications of the Algae.)

STUDIES OF *CARTERIA*

Annette Waters

Indiana University, Bloomington

Carteria olivieri is a quadriflagellate, unicellular green alga with a single cup-shaped chloroplast, a basal pyrenoid, a stigma, and a cellulosic cell wall with a cruciform papilla.

Prior to asexual reproduction, mature vegetative cells lose their flagella. Four or 8 zoospores are formed in each parent cell, become flagellated, and escape from the softened parental cell wall. Occasionally the escape is not effected, the zoospores lose their flagella, grow, and divide to form a palmelloid colony.

Gametogenesis is identical to zoosporogenesis except that 16 or 32 gametes result from division of one parent cell. Initial contact between the flagellated, walled isogametes is achieved via the flagella. A splitting of the cell wall circumscribing the papilla follows, allowing fusion of the contents. The zygote becomes surrounded by a hyaline gelatinous material and a non-rigid zygote wall, then increases greatly in size, accumulates quantities of starch and assumes a red-orange color.

Germination begins with vacuolation and swelling of the zygote, breaking of the zygote wall, and then loss of the vacuoles. Next the protoplasm returns to approximately its original size but the surrounding vesicle remains inflated. Division of the zygote yields 8, 16, or 32 zoospores which escape from the vesicle.

Extraction and separation of the zygote pigments allowed the tentative identification of a- and b-carotene on the basis of their colors and mobility on the chromatographic column. The absorption spectrum of a third carotenoid pigment resembles that of a supplementary xanthophyll found in *Protosiphon* (Strain, Chloroplast pigments and chromatographic analysis. Pennsylvania University, 1958). The most abundant carotenoid in the zygospore was identified as a xanthophyll by its action on the column and its absorption spectrum. As with many algal xanthophylls the absorption spectrum of this pigment has no sharp peaks to aid in identification of the pigment. The wavelengths most absorbed are from 460-465 mu. No chlorophyll could be detected on the chromatographic column or by absorption of appropriate wavelengths of light. Thus, the carotenoid pigments do not "mask" the chlorophyll in the zygote but replace it sometime during the ageing process.

DETERMINATION OF NUMBERS AND SIZE OF ALGAL CELLS
WITH AN ELECTRONIC PARTICLE COUNTER

T. E. Maloney, E. J. Donovan, Jr., and E. L. Robinson

R. A. Taft Sanitary Engineering Center, Cincinnati, Ohio

Studies were conducted to compare an electronic particle counter with conventional methods for quantitatively determining cell numbers and amount of cellular material in algal cultures, and for determination of the size distribution of algal cells growing in different culture media.

The results indicate that the instrument was well suited for the counting of unicellular algae in pure culture and the cell counts obtained compared favorably with those obtained with a haemocytometer. After the initial calibration of the instrument, the method was extremely rapid and much less tedious than the conventional microscopic methods. Also, with a minimum of manipulation, this instrument was able to determine cell volumes and the size distribution of cells rapidly.

HOST-PARASITE RELATIONSHIPS BETWEEN *CLOSTERIUM* and *ANCYLISTES*

Philip W. Cook

Indiana University, Bloomington

Two criteria are being explored as aids to the taxonomy of *Closterium*. These are: 1) the morphology of sexual reproduction and 2) the host specificity shown by certain parasitic phycomycetes. Sexual reproduction of *Closterium* varies considerably and provides a morphological basis for comparing and grouping species. Its use is limited, however, since only about one-half of the species have been observed to produce zygotes. The resistance or susceptibility to attack by parasites provides an alternate means whereby both asexual and sexual strains of *Closterium* may be compared.

Two strains of *Ancylistes*, a member of the Entomophthorales, have been maintained on *Closterium* in culture. Their host ranges may be compared as follows:

HOST	SOURCE	STRAIN I	STRAIN II
<i>Cl. moniliferum</i>	Vermont	—	+
<i>Cl. moniliferum</i>	Indiana	—	+
<i>Cl. ebrenbergii</i>	Indiana	—	+
<i>Cl. ebrenbergii</i>	Madagascar	—	+
<i>Cl. parvulum</i>		—	—
<i>Cl. pritchardianum</i>		+	—
<i>Cl. acerosum</i>	Vermont	+	—
<i>Cl. acerosum</i>	New Jersey	+	—
<i>Cl. acerosum</i>	Indiana	+	—
<i>Cl. acerosum</i>	California	+	—
<i>Cl. pseudolunula</i>		+	—
<i>Cl. lunula</i>		—	—
<i>Cl. striolatum</i>		—	—

Since both strains are confined to groups of morphologically similar species, parasite specificity might indicate natural relationships among the hosts. Kreiger (in Rabenhorst, Kryptogamen-Flora) groups *Cl. pseudolunula* with *Cl. lunula*. The fact that Strain I of *Ancylistes* attacks *Cl. acerosum* but not *Cl. lunula* suggests that *Cl. pseudolunula* is more closely allied to *Cl. acerosum* and its relatives. Neither strain of *Ancylistes* parasitizes *Cl. striolatum* and *Cl. lunula* which are known hosts for this phycomycete (Sparrow, Aquatic Phycomycetes, 1960). Other parasites of *Closterium* are being isolated in the hope that their host ranges may also give clues to the affinities between species within the genus.

GENETIC CONTROL OF FORM IN *COSMARIUM TURPINII* BRÉB.

Robert W. Korn

University of Rhode Island, Kingston

A series of morphological mutations was obtained by UV radiation in *Cosmarium turpinii* Bréb. Many of the mutants proved to be asexual, and those that retained their sexual capacity were analyzed for the patterns of inheritance. In all cases but one, the obtained ratios were significantly deviant from the expected 1:1 ratio. It is considered that the aberrant ratios are a result of nuclear competition since even a recombinant type could come out in greater numbers than expected. It was also found that genes never gave rise to mixed populations. Mutation production is best interpreted on a hit target pattern which further supports the idea that the nucleus is the ultimate dictator in the control of form.

THE EFFECT OF THE DILUTION MEDIA ON THE BOD OF ALGAE

Mary Ann Mennes, G. P. Fitzgerald, and G. A. Rohlich

Laboratories of Hydraulic and Sanitary Engineering, University of Wisconsin, Madison

In studies on the effect of the dilution media on the biochemical oxygen demand (BOD) of algae it was found that using the green alga, *Chlorella* (Wisconsin strain), higher BOD values were obtained when a natural lake water was used as a medium than when the standard dilution water, as prescribed in *Standard Methods* (Am. Public Health Assoc., 1955), was used. Attempts to determine the cause of these higher values resulted in studies on ionic concentrations of the waters, the effect of the addition of minor and supplementary major elements on the standard dilution water, and the effect of sterilizing the lake water used. Results of the experimental work indicated that the BOD of the algae in the lake water was at least twice that in the standard dilution water when measured in units of mg of oxygen used per mg of suspended solids of the algae; the photosynthetic capacity of the algae was about the same in both media; the sterilization, aging, and bacterial seeding of the lake water samples had little effect on the BOD values obtained. Similarly, little effect on the BOD was noted when lake water obtained in the summer and used as media was compared with that obtained in the winter. The concentration of salts and the addition of minor and major elements to standard dilution water had no effect on the results obtained.

GRANT AND FELLOWSHIP DEADLINES

LALOR FOUNDATION: 4400 Lancaster Pike, Wilmington 5, Delaware.

15 January 1962—Research Grants and Awards. Includes project grants for 6 months or longer; Faculty Summer Research Awards; and Senior Lalor Fellowships at the Marine Biological Laboratory, Woods Hole, Massachusetts. Information: Director, Lalor Foundation.

NATIONAL RESEARCH COUNCIL OF CANADA: Sussex Drive, Ottawa 2, Canada.

15 January 1962—Postgraduate Scholarships tenable at Canadian Universities (predoctoral, includes Bursaries and Studentships): Special Scholarships tenable outside Canada (predoctoral beyond Master's Degree): Postdoctorate Fellowships tenable at Canadian Universities: Postdoctorate Overseas Fellowships tenable outside Canada. Information: Awards Officer.

15 January 1962—Research Grant Proposals tenable at Canadian Universities. Information: Awards Officer.

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

8 December 1961—Summer Fellowships for Graduate Teaching Assistants. Application is made directly to the institution involved. Information: Fellowships Section, Division of Scientific Personnel and Education.

15 December 1961—Advanced Science Education, Visiting Scientists. For visits by distinguished scientists to colleges and universities in order to stimulate interest in science. Information: American Institute of Biological Sciences, 2000 P St., N.W., Washington 6, D.C.

18 December 1961—Postdoctoral Fellowship, Spring Awards. Information: Fellowships Office, National Academy of Sciences — National Research Council.

18 December 1961—NATO Postdoctoral Fellowships. In the United States administered by NSF (Information: Fellowships Section, Division of Scientific Personnel and Education): In Canada administered by NRC (Information: Awards Officer, Sussex Drive, Ottawa 2).

1 January 1962—Graduate Fellowships for Graduate Work. Information: Fellowship Office, National Academy of Sciences — National Research Council.

5 January 1962—OEEC Senior Visiting Fellowship. In the United States administered by NSF (Information: Fellowship Office, National Academy of Sciences — National Research Council).

5 January 1962—Secondary School Teacher Summer Fellowships for Advanced Study. Information: Secondary School Fellowships, AAAS, 1515 Massachusetts Ave., N.W., Washington.

15 January 1962—Undergraduate Research Participation and Independent Study. Application is made directly to the institution where study is proposed. Information: Fellowship Section, Division of Scientific Personnel and Education.

TURTOX — GENERAL BIOLOGICAL SUPPLY HOUSE, INC.:

1 February 1962—General Biological Supply House Scholarship and Morris Miller Wells Scholarship, each for \$5000.00. Information: F. A. Brown, Jr., Dept. of Biology; Northwestern University, Evanston, Ill.

XANTHOPHYCOMONAS: A PROPOSED CHANGE

Robert F. Scagel and Janet R. Stein

University of British Columbia, Vancouver

In a recent article (Scagel and Stein, 1961) we have described three new genera of marine nanoplankton from British Columbia waters. However, it has been brought to our attention by D. W. Creelman (Mycologist, Canada Department of Agriculture, Ottawa) that the name *Xanthomonas* Scagel & Stein is pre-empted. This appears to be a later homonym of *Xanthomonas* Dowson, 1939. Dowson's genus is a bacterium pathogenic on plants and comprises over 50 species.

Thus, the name *Xanthophycomonas* Scagel & Stein is proposed for the illegitimate *Xanthomonas* Scagel & Stein. The name is derived from the Greek: *xantho*—yellow; *phyco*—alga; *monas*—single. The single species is also transferred to the new genus and now becomes *Xanthophycomonas thalassoides* (Scagel & Stein) Scagel & Stein. The generic and specific descriptions remain unchanged.

DOWSON, W. J. 1939. On the systematic position and generic names of the gram negative bacterial plant pathogens. *Zentr. Bakteriol.* II 100: 176-193.

SCAGEL, R. F. and STEIN, J. R. 1961. Marine nanoplankton from a British Columbia fjord. *Can. J. Botany* 39: 1205-1213.

BIARRITZ BRIEF

To those who attended the 4th International Seaweed Symposium in Biarritz, France, this meeting was a memorable one. Not only did the picturesque Basque region of southern France and northern Spain provide an interesting environment, but the place selected for the sessions, amongst the bikinis and roulette wheels of the Municipal Casino, was unique!

The meeting was attended by over 200 delegates from some 26 countries. The majority (about 46) of the delegates were from France, but Great Britain (38) was also well represented. There were 8 present from Canada and 10 from the United States.

A general symposium featured Dr. E. Percival (Polysaccharides of green algae) and Dr. L. Provasoli (Bacteria free culture and nutrition of seaweeds). This was followed by several paper sessions in two concurrent sections: Biology-Ecology, and Chemistry-Utilization. The sessions were well attended and a great variety of interesting papers was presented. In the Biology-Ecology Section the organizers were obviously faced with the difficult problem of trying to schedule too many papers (about 40) in the limited time available (5 three-hour sessions). The period allotted to each speaker (10-15 minutes) was inadequate for the amount of material many speakers attempted to present, with the result that there was relatively little discussion of the papers.

A number of field trips to the Basque coast were organized during the meeting, and these were well attended. The excursions provided an opportunity for collecting marine algae in an area of considerable historical interest because of the early investigations in this area by Ed. Bornet and Camille Sauvageau. An interesting sight-seeing tour to San Sebastian, Spain, and an evening of colourful Basque dancing and singing were also part of the program provided to the participants. The hospitality of the hosts was overwhelming!

Following the closing session of the 4th International Seaweed Symposium, the first meeting of the International Phycological Society was held. The meeting was attended by about 60 members. The meeting was chaired by the recently-appointed president, Dr. Jean Feldmann, who announced that the new executive

included Dr. J. Koster, Secretary and Dr. J. Gerloff, Treasurer. The present membership of this Society comprises 377 members from 40 countries.

The 5th International Seaweed Symposium will be held at Halifax, Nova Scotia, Canada, in late August or early September, 1964. It was suggested that the next meeting of the International Phycological Society might be held the same year either at Halifax or in Edinburgh, Scotland, on the occasion of the 10th International Botanical Congress. Robert F. Scagel, University of British Columbia, Vancouver.

NEWS AND NOTES

LAVERNE ALBERT, assistant professor of Biology at Baylor University, is pursuing graduate work in Phycology at the University of Texas during the tenure of an NSF Faculty Fellowship.

MARY M. ALLEN (née MENNES) formerly of the Sanitary Laboratory, University of Wisconsin, is now associated with the Botany Department of the University of Minnesota, Minneapolis.

S. ARASAKI, Tokyo University, was a visitor in the Department of Biology and Botany and the Institute of Oceanography at the University of British Columbia recently.

FRED A. BARKLEY previously with the Warner-Lambert Research Institute is now a member of the Botany Department, College of Agriculture of the University of Baghdad, Iraq.

HAROLD C. BOLD, University of Texas, is the best correspondent for the News and Notes column — can you beat him?

AUSTIN E. BROOKS spent the summer assisting in the Marine Botany Course at the Marine Biological Laboratory, Woods Hole, Massachusetts, and is now a graduate student at Indiana University, Bloomington.

ROY E. CAMERON recently completed his doctorate at the University of Arizona, Tucson, and is now affiliated with the Jet Propulsion Laboratory at the California Institute of Technology, Pasadena.

LLEWELLYA COLINVAUX (née HILLIS) is on the staff of the Botany Department at Duke University, Durham, North Carolina.

LOUIS DRUEHL spent the summer at the Friday Harbor Laboratories of the University of Washington and is now a graduate student at the University of British Columbia, Vancouver.

YALE E. DAWSON was recently confined to the hospital following an operation on his back.

M. A. F. FARIDI, received his doctorate from the University of Kansas and is a member of the Botany Department of Peshawar University, Pakistan.

HERMAN S. FOREST is now on the staff of the Biology Department of the University of Rochester, New York.

PHILLIP J. HALICKI formerly on the staff at Central Michigan University has returned to graduate work at the University of Kansas, Lawrence.

LOUIS A. HANIC, until recently a student at the University of British Columbia is doing pre-doctoral studies at Indiana University, Bloomington.

IMY V. HOLT is presently on the staff of the Department of Biology, Western Michigan University, Kalamazoo.

RAYMOND HOLTON formerly of the University of Michigan in Flint, is continuing his work on thermophilic blue-green algae in the laboratory of the Society's Past President, JACK MYERS, at the University of Texas.

NORMA J. LANG, Indiana University, spent the first part of the summer as an assistant in the Marine Botany course at the Marine Biological Laboratory, Woods Hole, Massachusetts. After the Purdue meetings she elucidated some of the Electron Microscope techniques to JANET STEIN, University of British Columbia.

H. WAYNE NICHOLS, previously at the University of Alabama, was also an assistant in the Marine Botany course at Woods Hole this past summer. At present he is an instructor in the Department of Botany, University of Tennessee, Knoxville.

ERNST G. PRINGSHEIM and MRS. PRINGSHEIM plan to spend the winter in the Canary Islands again this year.

TOSHIO SEGI, Prefectural University of Mie, Tsu, Japan, has been visiting laboratories in the United States and Canada since the Pacific Science Congress. Recently he has been at the University of California, Berkeley and Santa Barbara and at the University of British Columbia, Vancouver.

CHASE VAN BAALLEN has begun work as a staff member of the Institute of Marine Science, University of Texas, Port Aransas, where he is continuing his exploratory studies of marine blue-green algae in pure culture.

EDGAR E. WEBBER has recently moved from Cornell University to Wellesley College, Wellesley, Massachusetts, where he is an instructor in the Botany Department.

DAN L. WILLSON is a member of the staff of the Division of Math-Science, of Central Washington State College, Ellensburg.

KATSUYUKI YOKOYANA is presently affiliated with the Applied Ecology Section of the Aerospace Medical Laboratory of Wright-Patterson Air Force Base in Ohio.