PAAA News **Spring 2004**

Pan-American Aerobiology Association www.paaa.org

The Pan-American Aerobiology Association (PAAA) is an assemblage of individuals with diverse scientific backgrounds and expertise who have a common interest in the sources, dispersal, and deposition of airborne biological particles. The organization was officially constituted in June 1989 during the Second Canadian (and first Pan-American) Symposium on Aerobiology. The PAAA is an associated organization of the International Association of Aerobiology (IAA) and acts as the representative of the IAA in the Americas. You may join the PAAA at www.paaa.org. PLEASE JOIN US!

PAAA Executive Committee - 2004

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Pay Membership Dues: if you want to catch up on paying your dues you can do so by using the link Membership Information at www.paaa.org If you're not already a member, you can use this same form to join PAAA. Full membership is $40. U.S. and includes membership in IAA, the International Aerobiology Association. Student membership is $20.

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Message from the President

Greetings! First, I want to say that I appreciate the confidence in me that the participants of the PAAA annual meeting expressed in the election. I will try to move the PAAA forward and leave the organization in better standing by the time my term ends. Although, I must admit that I've already let nine months slip by with little to show; a rather inauspicious start.

One of the things I really want to happen during my tenure is to hold another meeting in Latin America, possibly Mexico, in 2005. We are still working on this, but with no solid progress as of early April. Paul Comtois has been in communication with an Allergy group in Mexico and they expressed interest in having a joint meeting but communication has been slow and sporadic. We may still have to find an alternative venue for the 2005 meeting, I am sorry to say. As some of you will recall, our colleagues in Mexico City sponsored a meeting in 1993 that was very successful although attendance by U.S. and Canadian members was down. I also was unable to attend, being my first year at Harvard and our funding was very low (which again, is my current status, but that is another story).

A meeting every 5 to 10 years in Latin America seems only appropriate if we are to be a truly Pan-American organization. Along with other PAAA members, I have tried to encourage attendance of Central and South American colleagues at our meetings by offering financial support through the Latin American Fund. I don't think we "Northerners" always appreciate the difficulties others encounter traveling to the U.S. or Canada. As Gabriela Murray recently stated in an Executive Committee communication, it is very expensive for South Americans to travel to the U.S., but also obtaining a visa can be difficult. If the visa is approved, it often is not until the last minute. These seem to be the main reasons participation by Latin Americans at our annual meetings has been so low. We experienced a similar problem recently at Harvard when a post-doc visiting her family in Hong Kong was not immediately permitted to return to the United States due to security concerns. Her travel was delayed for a full month because her work at Harvard involved aerobiology research on viruses and the U.S. government (Homeland Security) decided they needed to do more security checks before allowing her back into the U.S.

While it may be a bit more difficult and expensive for those of us in the U.S. and Canada to travel to Mexico, I hope most of us agree that it is a small price to pay to foster the collaborations and communication with our neighbors to the south. If we cannot organize a Latin American meeting for 2005, we will try again for 2007. I hope you support our efforts in this direction.

On another note; as has been expressed in the past, after PAAA elections, there is often a lack of awareness of the responsibilities of the different officers. For example, the Membership Secretary does not always know when dues notices are to be sent out, or how long to keep non-paying members on the PAAA membership lists, or when to print membership directories. The Vice President generally has no idea what she is supposed to do. The Newsletter editor is aware that Newsletters should be put together, copied, and distributed, but when and how? I think this needs to be remedied. The PAAA needs written Rules and Procedures, including "job descriptions". If some of our "less active" members know what the expectations are, it might even make them more likely to accept a nomination to serve on the Executive Committee. I will be asking all former and current Executive Committee members to submit a list responsibilities and activities related to their office, in addition to ideas on what they think should be done. I invite any members who have not been officers in the association to submit suggestions or ideas as well. This will be the first step toward compiling a PAAA Rules and Procedures document. Everyone's cooperation would be appreciated.

Finally, I hope many of you are planning on attending the annual meeting in San Diego. Based on all the work Janet Gallup has put into organizing the meeting, I'm sure this will be a spectacular event. The campus looks very nice and, in addition to the presentations, a number of workshops before the meeting and Spore Camp after the meeting, will provide ample opportunity for practical education and social interaction. I'll see you there!

– Mike Muilenberg

New Developments in the Pan-American Aerobiology Certification Board

The PAACB has made much progress over the past year. It was incorporated in Massachusetts in November and has begun accepting applications. The first of a two part process is a written, open book qualifying exam, to be taken at one's convenience. It will be mailed to those who register and pay the initial $450 fee. This written exam has elements of mycology, bioaerosols, and air sampling. It deals only with particle sample analysis, not sampling where cultures are involved. For those who pass the qualifying exam, a proctored, practical identification exam, costing $400, will be given in selected regional testing centers. Currently about 50 participants have taken the qualifying exam. The practical identification exam will be ready by early summer. More information on the exams is available on the web site (www.paacb.org); click on "Guidance Documents" and "Summary of topics for Spore Analysts Level 1".

Participation is strictly voluntary and, at this point, is not required by any firm or contractor. As many of you know, other current certification programs are for laboratories, not individuals. They are comparatively expensive and involved, and deal only with live cultures, not spore samples. This leaves out small firms and individual analysts who may be highly competent but unable to afford laboratory certification. Also, certification at the laboratory level does not guarantee the competence of individual analysts within a laboratory. Those who complete the PAACB certification process will soon become widely recognized within the testing industry and among those letting contracts for testing as having achieved a standard level of competency.

We hope the PAAA members will take an active interest in the PAACB, a daughter organization of the PAAA. Anyone interested in contributing to the program by volunteering time, effort, or expertise, please contact one of the Board Members (below); there is still a lot of work to do! The program will be discussed further at the annual meeting in San Diego. The program is currently being run by an independent administrative group. For information on registration, please contact them at administrator@paacb.org. Congratulations and thank you to all who have worked to get this program off the ground.

PAACB Board members
Christine Rogers - crogers@hsph.harvard.edu
Michael Muilenberg - mmuil@hsph.harvard.edu
Harriet Burge - hburge@hsph.harvard.edu
John Haines - jhaines@mail.nysed.gov
Christine Meyer - cmeyer@aerotechlabs.com
Scientific committee chair - Janet Gallup - JMGallup@aol.com

Publications for Aerobiologists

Aerobiologia, an International Journal of Aerobiology which publishes full-length research papers and review articles is a bi-annual publication of the International Aerobiology Association – IAA. *Aerobiologia* also includes an online journal "Physical Aerobiology," and offers a discounted rate for PAAA members. For more information on subscribing or contributing, contact the publisher via www.wkap.nl where a free (online) sample copy offers articles such as "Atmospheric microbiology in the northern Caribbean during African dust events," and "Experimental study of indoor and outdoor bacterial concentrations in Tempe, Arizona, USA".

Inoculum, the newsletter of the Mycological Society of America, a supplement to MSA's elegant full-length journal *Mycologia* – see www.msafungi.org for more information.

Cultural Heritage and Aerobiology, is a new book published by Kluwer Academic Publishers and available via Ms. Betty van Herk – reviewed in this PAAA News issue. *www.wkap.nl or email services@wkap.nl*

New Pollen Key from Mary Jelks "Having counted pollens and spores for Miami, Guatemala and Florida, I have had a number of pollens to identify that are a bit small in number and infrequent. It seemed we needed a manual that would help in identifying these as well as some of the more difficult ones of North America. I like a pollen key format and have developed this with images to show pollens in light microscopy appearance in the key format." *To purchase a copy send a personal check for $10.00 to: Mary L. Jelks, M.D., 1930 Clematis St., Sarasota, FL 34239-3813*

Websites to check out

http://www.apsnet.org/ American Phytopathological Society
http://www.mycology.adelaide.edu.au/ Mycology online – U. Adelaide
http://www.medmicro.wisc.edu/Resources/ImageLib/Mycology/index.html U. Wisconsin-Madison Medical Mycology
http://www.dehs.umn.edu/iaq/fungus/glossary.html U. Minnesota fungal glossary
www.ncbi.nlm.nih.gov U.S. National Library of Medicine – Medline
http://www.ncbi.nlm.nih.gov/Taxonomy/taxonomyhome.html/ NCBI Taxonomy
www.scirus.com -- Scirus, scientific paper reference database
http://nt.ars-grin.gov/sbmlweb/homehtml.cfm USDA Systematic Botany & Mycology
www.vlib.org – the Virtual Library

Conferences, Calls for Papers

Pan-American Aerobiology Association Symposium
June 17-20, 2004 - San Diego, CA
For more information: http://www.paaa.org/
Or contact Janet Gallup JMGallup@aol.com
11746 Alps Way, Escondido CA 92026 fax: 760-749-7386

PAAA spore camp –June 21-22, 2004 – San Diego, after the PAAA meeting. Sign-up information is with the June 2004 Symposium registration information available online.

IPC International Palynological Congress
July 4-9, 2004 - Granada, Spain –
see http://www.11ipc.org/

56th Annual INTER/MICRO Conference
July 12-15, 2004 - Talbott Hotel, Chicago, IL, 60611
Sponsored by the McCrone Research Institute professional meeting dedicated to applied microscopy–
See http://www.mcri.org/IM_info_page.html, for abstract submission, on-line registration, accommodations, & workshops

XNAF 10th Nordic Symposium on Aerobiology
19-20 August, 2004 - Turku, FINLAND –
See http://www.sci.utu.fi/aerobiologia/xnaf/

European Aerosol Conference (EAC)
September 6 - 10 2004, Budapest, Hungary–
See http://www.aeroszol.hu or contact eac2004@aerosol.hu or czi@szfki.hu

Aerobiologia – Journal of Aerobiology, has issued a call for papers -- see http://www.kluweronline.com/issn/0393-5965 for contributing to the upcoming or to a future issue.

Latin American Committee Awards

The Latin American Committee (LA Committee) was formed at the PAAA annual meeting in Perugia (3 Sep 1998) out of a concern that PAAA participation by Latin American aerobiologists was decreasing. The goal of the committee was to make South and Central Americans more aware of the PAAA and encourage their participation in PAAA meetings and activities. Original committee members included Paul Comtois, Ines Hurtado, and William Solomon. In recent years, Dan Friedman and Mike Muilenberg have also been active participants. At the 1999 meeting in Tucson, the PAAA membership approved the use of $2500 by the Latin American Committee for travel grants to Latin American members to attend designated meetings; the first award was given in 2001. Since the inception of the LA Committee, the funding available has fluctuated, and currently (2003/2004), the committee has $500 per year available to fulfill its mandate.

Past LA Committee Awardees:
2003 – no awards given
2002 – Maria Gabriella Murray (Universidad Nacional del Sur, Argentina)
Leticia Tejera (Universidad de la República, Uruguay)
2001 – Monica Sonaglioni (Universidad Nacional del Sur, Argentina)
Carmen Cecilia Cabrales (Universidad Industrial de Santander, Colombia)

The committee has been very pleased with the quality of abstracts presented by the award recipients and the contributions they have made to our symposia. We will be meeting in San Diego to formulate policies and procedures, and to discuss future plans and goals; all interested PAAA members are encouraged to join us.

PAAA members in Mexico, Central and South America interested in applying for an award should contact Mike Muilenberg or Daniel Friedman, using contact information at www.paaa.org. Applicants can send us a short paragraph (in English or Spanish) on their study or symposium attendance plans, whether or not they are presenting an abstract or poster, their school status, and their plans for post-graduate work. This will assist the committee in assessing applicant interest and need, allowing us to make best use of our limited resources. We look forward to hearing from our Latin American colleagues.

Student Development Award
Student travel aid available to attend PAAA symposia!

The Pan-American Aerobiology Association is pleased to announce the continuance of its program to support studies in aerobiology. The Student Development Awards are given annually to students for the purposes of support of fieldwork, travel costs for visiting other laboratories, courses at other institutions, or travel to conferences. The PAAA Student Development Award is available to all students of Aerobiology in all PAAA countries. Students must be PAAA members (student membership is $20. U.S. and includes student membership in the International Aerobiology Association - IAA).

To Apply: interested students should consult the PAAA website www.paaa.org, where application forms and instructions are available (click on "Student Development Awards"). Two forms are typically required, one is filled out by the student describing their background, program of study, and reason for requesting the award, the other is completed by the student's supervisor. Up to two $500 awards are granted annually.

Anne Benninghoff Contributes Aerobiology Documents

On behalf of the attendees of the PAAA Annual Meeting held in Chicago last June, I'd like to thank Anne Benninghoff for contributing, and personally delivering, a set of International Biological Programme (IBP) Aerobiology Newsletters from the early 1970s, the bound proceedings from the Ecological Systems Approaches to Aerobiology workshop held in Kansas 1972, among other documents. Of significant interest, the IBP Newsletters contain descriptions of the formation and first meeting of the International Association for Aerobiology. These documents, collected by Anne and her late husband, William Benninghoff, one of the founders of the IAA, contain a wealth of historical and scientific information. Many thanks to Anne for this donation. – Mike Muilenberg

The PAAA Cookbook
Glycerin Jelly

Thank you to Dr. Mary Jelks for her recipe for her "Glycerin Jelly" *[printed here with a few editorial elaborations]*. Dr. Jelks has used this recipe for decades for making long-lasting slides of pollen grains. *I use it regularly to make semi-permanent mounts of fungal spores and other particles. It is probably nowhere as durable as meltmount, but meltmount is $35.[U.S.]/oz whereas this stuff is about a $.05 [U.S.] for nearly 100cc's. Unlike Meltmount this recipe can be liquefied at much lower temperatures which makes preserving temperature-sensitive items like tape samples a snap.*

1. Put one envelope of Knox™ gelatin in 48cc of cool water and let it soften for 2.5 hours. *I use a 44 cc's. Less water makes the gelatin a little more firm, and it makes it easier to clean my slides with no risk of moving the cover slip. Firmer gelatin also permits addition of a drop of propanol to the top of a heavy sample or a sample containing hydrophobic spores. Alcohol, applied before adding a drop of Jelks' gelatin recipe, reduces air-bubbles. Other gelatin brands work as well provided they are clear-unflavored. Lime Jell-O is a bad idea, though on a field trip it has certain emergency uses. I speed the heating step in the microwave [at low power] as Jelks used to do before her microwave broke. Watch out - too-hot water fogs gelatin.*

2. Add 44cc glycerin and 0.4cc Calberla's staining solution

3. Warm this in slow microwave for 1-2 minutes. *Use low power. Do not boil it or it'll froth over and make a ruined mess.* It should become homogeneous *and clear*.

4. If your mix is too light *[for the "stainers" among us]* you can add a drop of fuchsin stain at a time until it is dark enough to suit you. Jelks points out that if the mountant is too dark it is more difficult to see some of the identifying characteristics of the pollen.

The solution should be refrigerated like the Gelvatol and should look like raspberry Jell-O. *For fungal spore and general use my version is virtually clear.*

In application in the lab with my more viscous version, I use a hot plate to warm the jelly to spread it under the cover slip, being careful to avoid overheating and bubbles. You'll see the effect is only a little staining and a bit less hydrating than with less viscous mountants. When the slide has cooled with cover in place I use a razor blade to clean off any extra jelly that oozed out from under the cover slip. For slides I intend to keep for a while I seal those edges with the nail polish.

Calberla's Solution (as used in the Jelks' recipe above)
10cc glycerin,
20cc of 95% ethyl alcohol

30cc water, to which you add
0.1gm basic fuchsin. Too dark a stain is far worse than too light.
If you don't have any basic fuchsin powder, a small bottle from Fisher Scientific is 100 lifetimes' supply!

Dr. Mary Jelks' Allergy Plants that cause sneezing and wheezing*, ISBN 0-911977-04-X can be obtained from World-Wide Printing, PO Box 24339, Tampa, FL 33623, or possibly directly from Dr. Jelks 1930 Clematis St., Sarasota FL 34239-3813. Her new Pollen Key manual is listed under Publications in this newsletter.*

KOH vs. Fuchsin Stains for spores and skin cells

After soaking my samples to a magenta hue with acid or basic fuchsin as a beginner aerobiologist, and suffering the annual beratement of my generous mentors Janet Gallup, Connie Jenks, Harriet Burge, John Shane, John Haines, Chris Rogers, Mike Muilenberg, and Ginette LeClaire, I've learned how right they are. For fungal spores for some years now I have learned to use no stain. Stains can obscure details. Spore colors are part of their ID. And it's rewarding to be able to make use of sometimes-subtle color differences among particles. For rapid looks at messy indoor dust with a lot of skin cells, if I'm looking for animal dander (mouse, cat, dog, bird) I might still use acid fuchsin on part of my field sample, as does my friend Jeff May in Cambridge.

Some "stainers" also use lactophenol cotton blue (but not often) – it is used to bring out Ascospore ornamentation. I use it on occasion for pretty photographs. My blue (and therefore inaccurate) *Aspergillus* conidiophores made it onto the cover of a national magazine and doubtless did a something for the public's appreciation of the beauty seen every day by aerobiologists.

Trained by some "old timers" who like a hydrating mountant, I often use 0.5N KOH for quick looks at tape samples that are to be tossed. John Shane has expressed a dim view of use of this chemical as "… a useless hold-over from the old guys." In a McCrone R.I. class we used water, alcohol, and a goo of triacetin-dissolved MCE filters as mountants. However KOH was (and may still be) particularly used to "stain basidiomycetes and other fungi with compact and difficult-to-spread tissues." (Malloch labs.) Hyphae pick up a pink color and are more easily seen than in water; I draw out as much liquid as possible from under the cover, as recommended by *botany/utoronto.ca.* It's cleaner and quicker than lactic acid and seems to hydrate better than plain water, though a simple alternative I learned from James Scott is alcohol followed by water which permitted some great *Aspergillus* photos.

There are many other mountants that people like for particular characteristics of particular spores or cells. Email comments to the newsletter ed.—DJF.

Book Review

Cultural Heritage and Aerobiology, Methods and Measurement Techniques for Biodeterioration Monitoring, Paolo Mandrioli, Guilia Caneva, and Cristina Sabbioni, Eds., Kluwer Academic Publishers, 2003 ISBN 1-4020-1622-0

Betty van Herk was kind enough to send along a review copy of this interesting new work which arrived as I was investigating fungal problems for a library which includes old books and magazines as well as oil paintings. I learned, for example, that the cracks you see in an oil painting could be caused by unfavorable microclimatic conditions at the back of the canvas, promoting the development of microfungi that penetrate the canvas can push off the paint. What causes erosion, spots, or opacification on glass and what different organisms cause patinas? What molds do the most damage to plastic? *[Answers are below.]*

This work should be in the hands of aerobiologists who may be called upon to investigate and diagnose various sources of biodeterioration which plague a wide variety of cultural artifacts and materials, as well as to address related human health concerns. Actually this application of aerobiology will be of particular interest to all aerobiologists as well as other investigators. The book's 243 pages present a compendium of museum, library, and cultural artifact materials which can be damaged by biodeterioration. The text goes on to describe tools and methods used to evaluate, monitor, and avoid biodeterioration of valued artifacts that form our cultural heritage.

The scope of materials affected by biodeterioration is broad, including among organics: paper, wood, textiles, parchment, leather, paintings (both ground layers and surface pigments), and plastics. The inorganic materials addressed include stone, glass, and metals, stored both indoors and outside.

After introducing the materials of concern, the editors provide an inventory of the basic environmental measurements such as temperature, air movement, and light, followed by a chapter on the chemical characteristics of common biodeteriogens, along with a look at gaseous and chemical pollutants.

About half of the main text addresses methods and measurement techniques for the monitoring of biological aerosols, defining the parameters an aerobiologist would consider: deposition, settling velocity, impact, etc. followed by sampling principles. A review of sampling equipment and techniques is followed by a description of sample analysis.

The remaining text offers specific advice to libraries, museums, archives, churches and people maintaining outdoor artifacts. Custodians charged with preserving the cultural heritage in their charge will find guidance on aerobiological monitoring of these artifacts and contents.

The book was fascinating and for me as a non-expert, as it offers a useful survey of the family of chemistry, transport mechanisms, monitoring devices and approaches, and biological deterioration effects of a wider range of living stuff than my more familiar mold spores: bacteria, actinomycetes, cyanobacteria, algae, lichens, and even higher plants and mosses as well as a wide range of other agents are discussed.

The strength of the book is its discussion of aerobiological principles of transport, chemistry, and biodeterioration, and it's emphasis on matching monitoring and analytical methods to the chemical or biological agent being watched. It offers specific details needed to get from theory to practice.

The text is not comprehensive in advice on selection of monitoring and sampling equipment. As a compendium which collects contributions from a variety of authors, there is often unevenness in depth across topics. Sections on monitoring equipment focus on sampling tools familiar to the authors and fitting certain analysis procedures (Anderson™ cascade sampler, Rotorod sampler, liquid impingers), while some current, convenient equipment are not discussed (Burkard™ personal air sampler, Air-O-Cell™-type cassettes, Gil-Air™ type portable, variable-flow-rate vacuum pumps). The reader should be able to translate the methodological advice to the world of alternative tools. Finally, the book's index is spartan and does not do justice to its contents. I found myself adding my own index entries as I read through the text.

Whether you're charged with monitoring and preserving artifacts or are specializing in another field of aerobiology, this is interesting and useful reading.

Answers:
Q1: *Erosion, spots, opacification on glass: Deuteromycetes, autotrophic bacteria, or lichens. Algae causes patinas.*
Q2: *Aspergillus niger, A. flavus, Penicillium luteum, P. funiculosum, P. pullularia, Chaetomium and Trichoderma attack plastics.*

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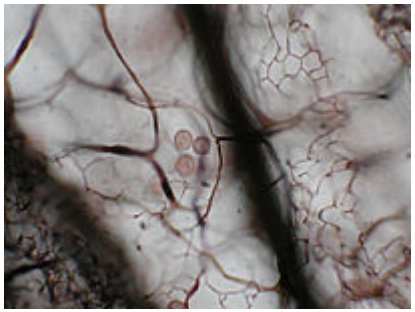

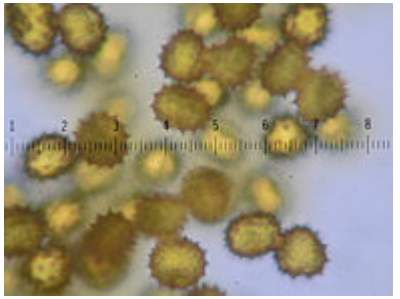

Questions or comments about these photos?
Email the newsletter editor, dfriedman@inspect-ny.com