



THE AMERICAN SOCIETY OF PHARMACOGNOSY

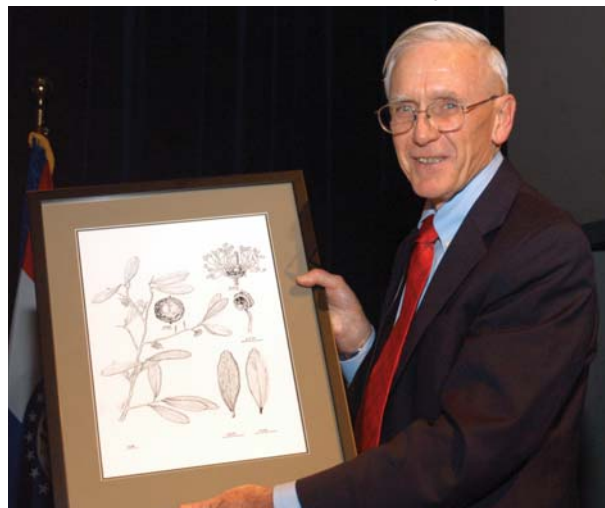
THE ASP NEWSLETTER VOLUME 42 ISSUE 4

Gordon Cragg Honored at Missouri Botanical Garden

by Tom McCloud

Dr. Gordon Cragg, the recently retired chief of the Natural Products Branch of the National Cancer Institute (NCI) Developmental Therapeutics Program (DTP) was honored with a special lifetime achievement symposium at the Missouri Botanical Garden. Entitled, "Realizing Nature's Potential: The Once and Future King of Drug Discovery", the event was hosted by the William L. Brown Center for Plant Genetics Resources of the Missouri Botanical Garden. A series of 20 renowned researchers in natural products presented seminars on the 10th and 11th of November, highlighting their own research as well as honoring the contributions of Dr. Cragg.

Opening the first session in the Schoenberg Auditorium of the Ridgeway Center was Dr. James Miller of



MISSOURI BOTANICAL GARDEN

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Dr. Gordon Cragg receiving an illustration of *Ludia craggiana*, the plant named in his honor.

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Journal of Natural Products: A Decade of ACS and ASP Collaboration

by Dr. Edward Kennelly

A decade ago, regular readers of the *Journal of Natural Products* first got a sense that dramatic changes were underway with the scientific organ of the American Society of Pharmacognosy when they viewed Volume 59(1).

Rather than the familiar compact-sized monthly with a white matt cover, readers found an 8.5" by 11" glossy buff-colored journal, with a stunning color cover photograph of *Camptotheca acuminata* overlaid with the structure of the anticancer drug camptothecin. Above the photograph appeared the familiar name "*Journal of Natural Products*" in kelly green, and below, heralding the enormous change underway, read "Published by the American Chemical Society and the American Society of Pharmacognosy".

This new copublishing arrangement with the American Chemical Society (ACS) was one of many incarnations that the *Journal* has experienced since it was first published in 1938 under the title *Lloydia*. The original quarterly journal, published by the Lloyd Library of Natural History in Cincinnati, Ohio, dealt mainly with issues of plant and fungal morphology. In 1961, *Lloydia* became the official scientific organ of the American Society of Pharmacognosy (ASP), and the content became more chemically

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The contribution deadlines are:

| | | |
|--------------|------|----|
| Spring Issue | Feb. | 15 |
| Summer Issue | May. | 18 |
| Fall Issue | Aug. | 18 |
| Winter Issue | Nov. | 17 |

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Editor's Corner

This issue of the *Newsletter* celebrates a number of auspicious events in the life of the ASP and its members. Dr. Gordon Cragg, ASP member and the recently retired chief of the Natural Products Branch of the NCI Developmental Therapeutics Program, was honored at a symposium held last month at the Missouri Botanical Garden. Tom McCloud, in his first feature contribution to the *Newsletter*, wrote a detailed account of the two-day conference in St. Louis.



The *Newsletter* also highlights the achievements of the *Journal of Natural Products* in the past decade that it has been copublishing with ACS. Although I tried to pass this assignment to *Journal of Natural Products*' Editor-in-Chief, Douglas Kinghorn, he politely declined, citing other responsibilities and the time that would be needed to write a comprehensive review. However, he did kindly offer to help edit my draft.

As I began writing this article over a month ago, I soon realized that Editor Kinghorn was right about the time it would take, but it became a labor of love for me. I worked as a postdoctoral associate with him at the University of Illinois at Chicago in 1994 when he began editing the *Journal*. I was there in 1996 to witness the new publishing agreement with ACS and saw first-hand how hard those involved in the *Journal* worked. I am pleased to be able to share some of this history with members.

The brief history of the *Journal* took me to an interesting array of places, and I interviewed many people involved with the *Journal*. From the Notre Dame archives I retrieved a surprisingly youthful photo of the *Lloydia's* founding editor, Dr. Theodor Just, and at the New York Botanical Garden's Mertz Library, I was able to look through every issue of the *Journal*.

I appreciate the time many members took to write to me about the *Journal*. I am impressed with the dedication of many ASP members to the production of this official organ of our society. I especially thank Editor-in-Chief Kinghorn, Former Associate Editor David Kingston, Associate Editor Powell, and many others for providing the information for this retrospective.

In addition to our lead articles, we continue with our now regular columns, including "Behind the Scenes in Pharmacognosy", which focuses on Drs. Guido Pauli and Norman Farnsworth's new work on *Angelica*. We meet a new member, Dr. Jason Clement, and learn of his interest in pharmacognosy, as well as a 1959 classic Charlton Heston film. Also, making its second appearance in the *Newsletter* is "From the Archives", featuring photographs from the 1969 Annual Meeting.

Gordon Cragg Honored at Missouri Botanical Garden

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the Missouri Botanical Garden, who greeted attendees with a warm welcome and served as moderator. A common thread in the first day's session was the necessity of persistence over many years during discovery and development. A number of the invited speakers had worked directly with Dr. Cragg at some point in their careers, including in the development of paclitaxel (Taxol™) as a drug. Presenters spoke with great praise of Dr. Cragg, based on their long association with him.



Dr. Gordon Cragg (left) receives the William L. Brown Award from Dr. Peter Raven at the Missouri Botanical Garden.

an overview of 30 years of discovery of the alkaloids of poison frogs. Persistence in this case involved waiting for years before new analytical instrumentation and techniques were developed to permit structure determination. Dr. William Gerwick of Scripps Institute spoke on natural products drug discovery from marine organisms, and Dr. David Newman, newly named Natural Products Branch Chief at NCI, gave an overview entitled, "Marine Derived Compounds: New Frontiers in Production". Drug discovery from the microbial world was touched upon by Dr. Gary Strobel of Montana State University, who has investigated plant endophytic fungi as producers of paclitaxel and other novel biologically active compounds.

Two people presented on bringing natural products drug discovery into the molecular world through use of newly developed technologies. First off was Dr. Jerry Kukor of Rutgers University, who has used genomic fingerprinting to demonstrate the existence of geographic diversity in *Actinomyces*. Secondly, Dr. Jon Clardy of Harvard University, who has utilized a DNA-based approach to finding new molecules by obtaining random DNA segments from soil, cloning them into heterologous organisms, and identifying new molecules.

A Friday evening dinner was held in the atrium of the center, decorated by a display of elaborate and colorful Chihuly glass sculptures, and punctuated by a thunderstorm which provided an exciting light show!

Presentation of the William L. Brown Award for Excellence in Genetic Resource Conservation was made by Dr. Peter Raven, Director of the Missouri Botanical Garden with members of the Brown and

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Gordon Cragg Honored at Missouri Botanical Garden

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Sehgal families, who have endowed the award. This was the fourth occasion in which the award has been given. Named for William L. Brown, former chief executive officer of Pioneer HiBred International, Inc., the award to Dr. Cragg stated, in part, "Throughout his career, Cragg has championed the preservation and study of plants, since they are the source of chemical compounds that form the basis of many therapeutic drugs. Dr. Cragg's conception of nature as a repository of invaluable genetic material is thus very much in line with Dr. Brown's views. Thanks to Dr. Cragg, the importance of conservation came to be recognized throughout the National Institutes of Health."

Dr. Cragg presented an overview of DTP drug discovery efforts over many years, pre-dating his tenure there, and punctuated by a great many historical photographs of researchers and collaborators of the time.

Crowning the ceremony was the announcement and presentation by Dr. Miller of a plaque showing a new species of *Ludia* from Madagascar which has been named *Ludia craggiana* in Dr. Cragg's honor (*Novon* 16: 409, 2006). Dr. Miller mentioned, "I've worked with Gordon for 15 years and he gets the big picture, not just his own discipline, and I cannot imagine a more committed, kinder, more compassionate colleague."

A number of talks on Saturday focused on the non-laboratory aspects of natural products work. Among these were Mr. Michael Gollin, of Venable LLP on access and benefit sharing agreements and Dr. Lohi Matainaho of the University of Papua New Guinea on community interaction in natural products drug discovery. Dr. Josh Rosenthal of the Fogarty International Center at NIH spoke about transdisciplinary team science and the International Cooperative Biodiversity Groups. As Dr. Rosenthal says, "Gordon knows everybody. Go anywhere in the world where you find a natural products chemist and mention you are from NIH, and the first thing you hear is 'I know Gordon Cragg', accompanied by a big smile and a story about how he helped them establish an assay or receive training or simply made a connection that had a huge impact on their careers."

Dr. Cragg was cited repeatedly for his efforts in bringing about an understanding within the NIH and with collaborating scientists of the importance of achieving a fair and equitable return of a specimen to the country of origin, and of including the intellectual property of traditional healers for commercializable products subsequently discovered. The development of a "Letter of Collection", an agreement between the NIH and a country providing specimens for testing and of the intent of the United States government to follow compensation guidelines, was credited as being one of Dr. Cragg's major accomplishments during his tenure as Natural Products Branch Chief.

It may be considered unusual to conduct a Festschrift for a scientist who has not trained dozens of Ph.D. students, but the large and enthusiastic turnout clearly showed that Dr. Cragg has influenced many botanists, chemists, pharmacologists, and pharmacognosists throughout the course of his career at NCI. For instance, Dr. Gerwick noted, "In my years working with Gordon he has been an effective, collegial facilitator and a gentleman." Also, Dr. Kingston said that Dr. Cragg was "always willing to help a colleague; he is modest, knowledgeable, and dedicated". The Missouri Botanical Garden is to be commended for recognizing his importance and for hosting a very successful and enjoyable event.

Dr. Cragg, when asked his reaction to the symposia, responded, "For me, it was an overwhelming and humbling experience, and a great honor, to receive the William L. Brown Award, and to share the occasion with so many good friends and colleagues. Listening to the presentations on the cutting edge of research in natural products drug discovery, and in the development of more effective ways for sharing the benefits of this research with the source countries and their communities, made me appreciate what a privilege it has been to participate in a very small way in these exciting developments."

Pharmacognosy Recognized at the Science Fair

by Dr. Roy Okuda

At the Intel International Science and Engineering Fair (ISEF), the ASP Foundation awarded \$500 each to Ms. Vanesa Elizabeth Racigh and Mr. Kels Gordon Phelps for their outstanding projects involving pharmacognosy. The fair was held from May 7-13, 2006, at the Indianapolis Convention Center, Indianapolis, Indiana. Judges Drs. Rosie Bonjouklian and Gary Marconi, both retired from Eli Lilly and Company in Indianapolis, and ASP President Roy Okuda selected the two winners.

Ms. Racigh is from Colegio Provincial de Educacion Polimodal No.1, Piedra Buena, Santa Cruz, Argentina. She obtained the idea for her project from an herbal medicine used by grandparents. Her project is entitled, "*Satureja darwinii*: Determination of biologically active compounds in its essential oil". When asked about being a winner, she mentioned that everyone involved with her research was very happy, including her community and teacher. Ms. Racigh continued, "Native people from here, who helped me with the traditional use of *Satureja darwinii*, were proud that a forgotten part of their beliefs could be known so far from their home. That's the most important prize."

Mr. Phelps attends Butte High School in Butte, Montana, and worked under the direction of ASP members Drs. Andrea and Don Stierle. His project is entitled, "A novel medicinal metabolite from extremophilic *Trichoderma virens* found in the Silver Bow Creek System".

A total of 1,470 high school students from 47 countries competed for over \$3 million in cash, prizes and scholarships. The students presenting at the fair had already received the top award from their regional or national science fairs, thus representing the "best of the best" in the world. From 1,179 projects, over 60 involved pharmacognosy-related topics.

Intel ISEF 2007 will be held in Albuquerque, New Mexico, from May 13-19, 2007. Judges are needed to help with the ASP Awards. Please contact Dr. Okuda at okuda@sjsu.edu if you are interested. On behalf of ASP, President Okuda wishes to thank the ASP Foundation for their continued support of this important outreach activity.

Amy Keller contributed to this article.

ALICIA CANEPA



Prize winner Ms. Vanesa Racigh.

Dr. William Fenical in *Nature*

by Amy Keller

In our June issue of the *Newsletter*, we reported on former ASP President Dr. William Fenical's profile by the *Los Angeles Times*. Dr. Fenical was once again recently honored in another publication, *Nature*, volume 443, October 26, 2006, in an article entitled, "Drugs from the deep" by Emma Marris. Ms. Marris reviewed Dr. Fenical's ongoing work on isolating potentially bioactive compounds from marine organisms. The story features highlights of Dr. Fenical's discoveries and even includes a sidebar showing particularly intriguing marine creatures and the compounds they produce.

To view the article, visit www.nature.com/nature/journal/v443/n7114/index.html and look for Dr. Fenical in the "News Features" section.



NANCY BOOTH

Dr. William Fenical

Countercurrent Chromatography Culture

by Drs. Guido Pauli and Lucas Chadwick

At the 4th International Conference on Countercurrent Chromatography (CCC 2006), held in the Lister Hill Center on the campus of the National Institutes of Health (NIH) in Bethesda, Maryland, August 8-11, a unanimous vote among the members of the international advisory committee determined that the name for the society will be International Society for Countercurrent Chromatography.

The establishment of a scholarly scientific society represents an important

milestone in the recent history of research on partition and countercurrent technology, which goes back to the pioneering World War II-era work of Drs. Archer J.P. Martin and Richard L.M. Synge and Dr. Lyman Craig's invention of countercurrent distribution (CCD) in the late 1940's. More than a half-century has passed since Drs. Martin and Synge shared the 1952 Nobel Prize for the invention of partition chromatography and, according to Mr. Samuel Pro at the University of Illinois at Chicago (UIC), "the official formation of this society is long overdue". Since their first international meeting, CCC 2000 in London, the crowd of partition enthusiasts has steadily grown to an impressive 150 participants attending the most recent Bethesda meeting.

There was some debate regarding the name of the society, with some members favoring the terms "partition" or "extraction" over the terms, "countercurrent" or "chromatography". In the end, however, everyone agreed that the term "countercurrent chromatography" has historical significance and sufficiently encompasses all techniques that employ modern liquid-liquid, partition-based separation technology. The newly formed ISCCC will now provide a scientific "home" to scientists from all around the world who develop and apply partition technology to a myriad of chemical and biological problems.

The CCC 2006 conference was the fourth meeting of its kind, and the first to be held in the United States. Noted experts in all aspects of the technique including Drs. Jim McAlpine from Ecopia Biosciences, Canada, Ian Sutherland from Brunel Institute for Bioengineering, United Kingdom, Walter Conway from State University of New York, Artak Kostanyan and Boris Spivakov from the Russian Academy of Sciences, Guido Pauli from UIC, Akio Yanagida and Yoichi Shibusawa from Tokyo University, Japan, Alain Berthod from Universite de Lyon, France, Kurt Hostettmann from University of Geneva, Switzerland, Tian-You Zhang from Beijing Research Center for Separation and Purification Technologies, China, Peter Winterhalter from University of Braunschweig, Germany, Hisao Oka from Kinjo Gakuin University, Japan, Qizhen Du from Zhejiang Gongshang University, China, Adrian Weisz from the Food and Drug Administration, and many others presented their latest findings.



CCC 2006 attendees.

BILL BRANSON, NIH PHOTOGRAPHER

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Countercurrent Chromatography Culture

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The topics ranged from theoretical aspects of fluid dynamics to novel solvent systems, but a major focus was on the practical use of CCC technology for medical and pharmaceutical research and for purification of all classes of compounds, from inorganic ions and small organic molecules to large biomolecules.



The meeting was dedicated to the late Dr. Edward Chou, who is known for promoting the technique and training users worldwide through his efforts to commercialize the self-balancing coil planet centrifuge since the late 1980's. Dr. Chou would often make the analogy that "CCC is like riding a bike: once you get past the initial fears of adopting this new technology, you will soar on your own". This sentiment was echoed throughout the meeting, as participants demonstrated an open sense of excitement about the degree to which the technology and instrumentation has advanced in recent years. With today's precisely engineered centrifuges, the singular gravitational force used to separate Drs. Martin and Synge's binary solvent mixtures, employed in their pioneering work on vitamins and amino acids, has evolved to 250 x g and rising.

CCC 2006 was also the first CCC conference where awards were given for outstanding contributions to the field. The five-member CCC 2006 organizing committee, consisting of Drs. Luke Chadwick from Kalsec, Yoichiro Ito and Ying Ma from the National Heart, Lung and Blood Institute at NIH, Guido Pauli, and Adrian Weisz, appointed an awards committee, which handled the nomination of candidates and the selection of the awardees. The Edward Chou Award, established to honor outstanding contribution to the scientific knowledge base of countercurrent chromatography and its application, was awarded to Qizhen Du for his work on the development of Slow-Rotating CCC (SRCCC) and application of novel solvent systems.

The Crafty Chromatographer Prize, designated to honor an excellent student for an outstanding original contribution to the conference (undergraduate or graduate), was awarded to Ms. Jianwei He of the University of Guelph, Canada, for the presentation she gave describing her work applying CCC to the investigation of the mycotoxin, deoxynivalenol, from *Gibberella zeae*. The twenty-five member international advisory committee of CCC 2006 unanimously nominated Dr. Pauli as the chairperson to task a committee that will produce recommendations and guidelines for the formal establishment of the International Society for Countercurrent Chromatography (ISCCC). The official internet website of the society is <http://isccc.net>. The 5th International Meeting (CCC 2008) will take place in Rio de Janeiro in 2008, and will be chaired by Dr. Gilda Leitao from Universidade Federal, Brazil, and plans for the 6th meeting are in place to hold CCC 2010 in either France or Switzerland, chaired by Drs. Alain Berthod and Andrew Marston from the University of Geneva.

Please contact Dr. Pauli at gfp@uic.edu or Dr. Chadwick at luke.chadwick@gmail.com for more information.



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based. In 1975, the *Journal* changed from a quarterly to a bimonthly publication, finally transitioning into a monthly publication in 1992. Another major modification came in 1978 when the title became the *Journal of Natural Products*.

The Editor-in-Chief in 1996, Dr. A. Douglas Kinghorn, brought the *Journal* through this exciting and challenging time. Dr. Kinghorn, at that time Professor in the Department of Medicinal Chemistry and Pharmacognosy at the University of Illinois at Chicago (UIC), began his term as Editor-in-Chief of the *Journal of Natural Products* with the January issue of Volume 57 (1994). He took over the job from Dr. James E. Robbers who had edited the *Journal* from 1984-1993 (Volumes 47-56). Dr. Kinghorn is the fifth Editor-in-Chief of the *Journal* since 1938; the others were Dr. Theodor Just 1938-1959 (Volumes 1-22), Dr. Arthur E. Schwarting 1960-1976 (Volumes 23-39), and Dr. Jack L. Beal 1977-1983 (Volumes 40-46). Dr. Kinghorn now edits the *Journal* from The Ohio State University where he is the inaugural Jack L. Beal Chair of Natural Products Chemistry and Pharmacognosy.

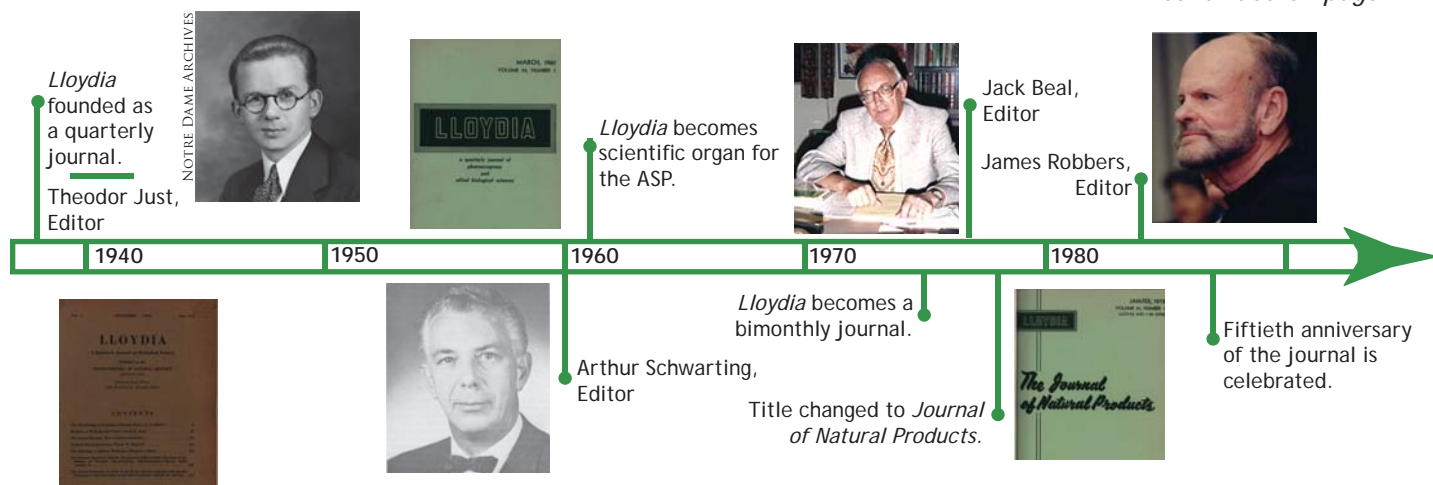
The Times They Are A-Changin'

Intense negotiations between ACS and ASP to copublish the *Journal of Natural Products* began in the mid-1990's when ACS approached ASP. Dr. Kinghorn remembers the outstanding contributions in this regard of former ASP Presidents Drs. Les Mitscher and John Cassady, as well as the major input of long-term ASP Treasurer, Dr. David Slatkin. Dr. Kinghorn commented "these were strong guys who stood toe-to-toe with ACS in the negotiations." He went on to note that the final agreement was good for both ASP and ACS.

ASP President Roy Okuda recalled that there was some trepidation among ASP members that ACS might overwhelm ASP's contribution to the *Journal*. However, these fears were eased, the negotiation was sealed, and copublishing began with the January 1996 issue of the *Journal*. As part of the agreement, ASP and ACS are both included on the Management Board of the *Journal*, with representation in 2006 by Dr. David Slatkin and former Associate Editor, Dr. Jerry McLaughlin, for ASP and Ms. Anne O'Melia and Ms. Debora Bittaker for ACS. Editor-in-Chief Kinghorn serves as an ex officio member of this group, which meets once a year in Columbus to determine the overall budget and to establish other priorities for the *Journal*.

In his editorial for the January 1996 issue of the *Journal*, Dr. Kinghorn wrote, "The present joint venture involving the two scientific societies represents the beginning of a new chapter in the development of an already highly regarded journal. It is intended, therefore, that this arrangement will lead to a wider dissemination than in the past of information on the chemistry and biology of natural

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A Decade of Collaboration continued

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products of animal, microbial, marine, and plant origin, in the most expedient manner possible." Indeed, during the ensuing decade, copublishing with ACS has brought a more efficient and timely publication system, using technology that would have been difficult to image at that time. Concurrently, the scientific quality of the *Journal* also improved significantly.

The Low-Tech Old Days

The review and publication process has changed considerably in the past decade. Prior to joining forces with ACS, the *Journal* was a relatively small operation, run by the Editor-In-Chief. In those bygone days the *Journal* had no web presence, and most of the correspondence was by mail or by telephone. As a result the editorial offices were each independent operations with minimal data sharing. First, manuscripts were received at the central editorial office at UIC. Dr. Kinghorn would assign the manuscript to one of the Associate Editors, Drs. David Kingston, Harry Fong, and Richard Powell, or himself. The manuscripts were then sent to the assigned editor to begin the peer-review process.

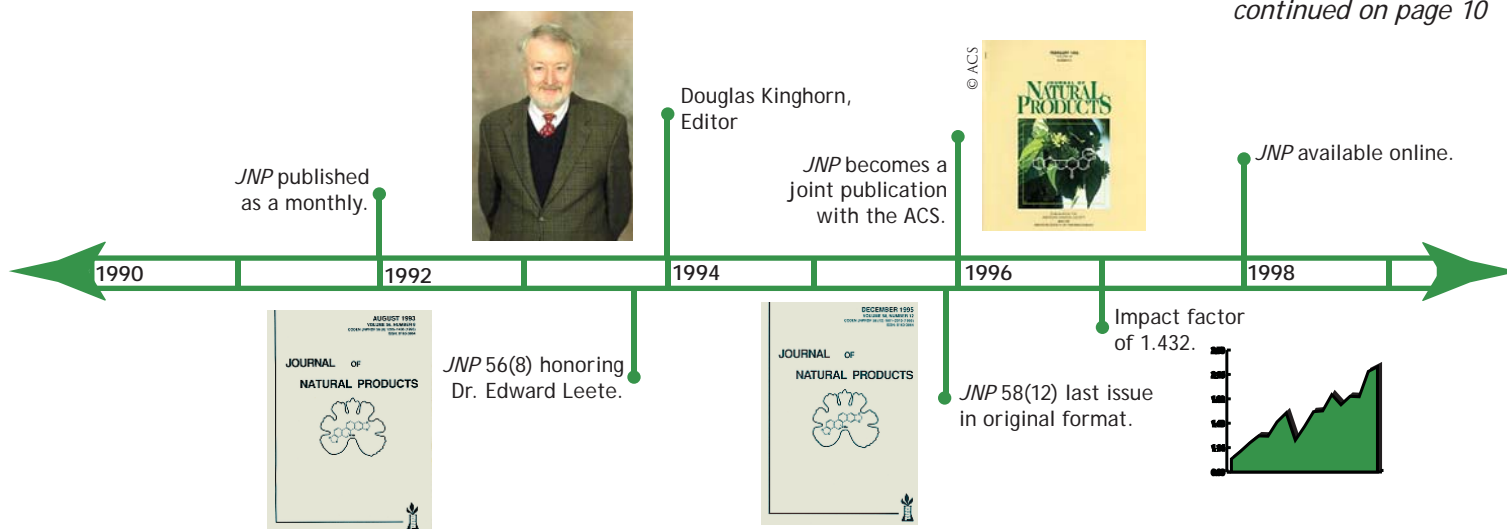
Prior to the ASP-ACS partnership, each editor of the *Journal* selected reviewers from a personal collection of addresses. Each editor had a set of referees, and in theory there was no overlap between them. Former Associate Editor Kingston said, "My own file of referees consisted of a set file cards on which I marked the date the referee was invited to do the review and the date the review was received. I also sometimes entered my own personal comments on the reliability and speediness of the referees on these cards, comments which I shall keep to myself!" Dr. Powell, who began his tenure as Associate Editor in 1991, recalls that his collection of reviewers were also maintained on file cards, and eventually "my able assistant and wife, Rosemary, arranged for purchase of a computer which greatly improved the efficiency of our correspondence and the ease of selecting reviewers".

Some editors report inheriting lists of reviewers from their predecessors. However, the lists were often in need of updating and expansion to reflect changes in the *Journal*. Efforts were made to enlist top names in the field of natural products both nationally and internationally as new reviewers.

Invitations to review a manuscript were sent out by mail, with a copy of the manuscript enclosed with the invitation letter. This mailing, coupled with the normal two-week period allowed the referee and the time for return mail meant that it usually took anywhere from three to four weeks to get the reports back, and some referees took much longer.

Editors tried not to use any individual referee more than four times a year, and many reviewers were only used once or twice. In theory none of the other *Journal* editors used another editor's referees, but without a centralized database, occasionally this did happen. Some editors during this

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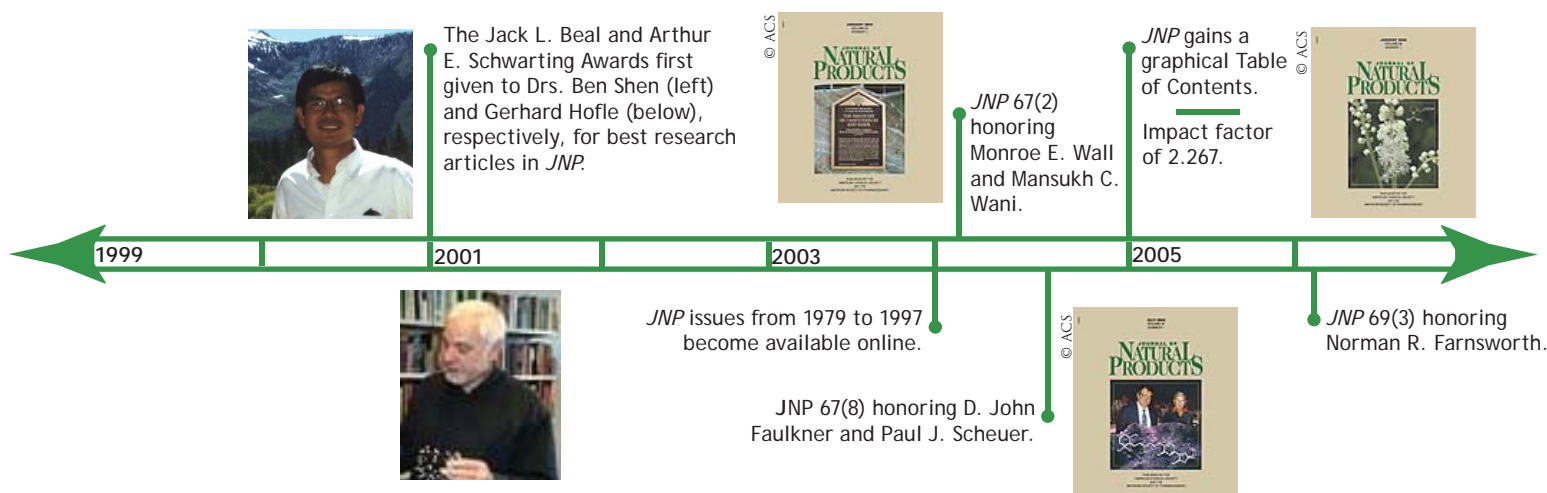
pre-ACS time remember getting manuscripts returned with a note saying that the referee had just reviewed a manuscript for another *Journal of Natural Products* editor. Of course editors had no control over the use of referees by other journals; Dr. Kingston remembered, "I sent a manuscript to the late Dr. John Faulkner and got back a note stating that he had obviously been elected 'referee of the month' and had received manuscripts from something like five journals within a week or so. To his credit he still did the review of the *Journal* manuscript!"

Dr. Marynel Ryan, the Editorial Assistant for Dr. Kinghorn from 1993-1998, remembered that prior to copublishing with ACS, there was tremendous pressure on the editorial office to organize all aspects of *Journal* business from large scientific issues to small printing details. Like Drs. Powell and Kingston, she related that aspects of editing the *Journal* prior to the ACS agreement were decidedly low-tech. For example, in the peer-review process, Dr. Ryan would page through photocopied lists of manuscript numbers with handwritten referee information in order to keep track of the current status of a given submission. Dr. Ryan recalled that she and Dr. Kinghorn would often spend 60 hours a week editing the *Journal* in the first few years.

Once an editor received two or sometimes three referees' reports on a manuscript, a decision was made on whether or not to accept it. Dr. Kingston recalled that in most cases the referees were in agreement, and he would almost always accept their recommendation. He noted that, "If the referees disagreed I would usually send the manuscript to a third referee, although sometimes the case made by one of the referees, usually for rejection, was so cogent that I simply accepted this recommendation and explained my reasoning in my cover letter to the authors." If the manuscript was scientifically acceptable, an editor went through it and made whatever editorial corrections were necessary and returned it to the authors for revision. According to Dr. Kingston, "it was rare that any manuscript escaped without any need for revision".

When an editor received the revised manuscript from the authors, it was checked over to be sure that the authors had responded appropriately to all the referees' comments. If they had, the editor would accept it for publication, but if they had not the editor could send it back for further revision. Once an associate editor had accepted a manuscript, an acceptance letter was sent to the corresponding author and the revised manuscript to the editor. At this point, an associate editor's job was over. The editor's job, however, was just beginning since they then handled all the editorial work connected with the printing and production of the finished *Journal*.

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"On looking back, it is hard to believe Marynel Ryan and I scrutinized every accepted manuscript and every set of page proofs for the *Journal*, in addition to doing our day jobs", said Dr. Kinghorn. "I take my hat off to the former editors I knew, Drs. Schwarting, Beal, and Robbers, for each being able to handle every published manuscript in this way for so many years."

Dr. Kingston commended The Spahr and Glenn Company for doing a good job of printing the *Journal* prior to ACS, but noted that they were a small company and did not have the resources to do more than this. The *Journal* paid for a production assistant at Spahr and Glenn, but there was still a lot of extra work on the editor's shoulders. Dr. Ryan recalled that it was bittersweet to some ASP members to change publishers, and losing the *Journal of Natural Products* account was a blow to the relatively small printing house. Dr. Kingston commented, however, that there was almost no possibility under this old system that the *Journal* could have been made available on the web. In turn, internet access has made the *Journal* available to a much wider readership, and has increased its impact factor and its international visibility.

The *Journal* Plunges into the Information Age

With joint ASP-ACS publication of the *Journal* in 1996, access to ACS state-of-the-art technology for tracking manuscripts, rapidly exchanging information between the editors, and selecting reviewers provided vast improvements in the overall publication process. Dr. Ryan noted, "The reduction in the intensity of our work that came with ACS collaboration was like a dream come true!" She remembers many conversations with Dr. Kinghorn about how great it was that they no longer had to go through one step or another in what had been a functional, but far from streamlined, process before copublication.

Dr. Brian Crawford, Senior Vice President of Journals Publishing at ACS, mentioned that while the *Journal of Natural Product* constitutes only about 1% of the total pages published by ACS journals, "it shares 100% of the benefits that a large and forward-looking publication program provides: cutting edge technology, marketing expertise, and global reach".

The editorial offices are now connected via a web-based system, and so it is possible to see which referees have been given assignments. In the early days of the ACS system the editors still sent out hard copy manuscripts, but with the advent of the Paragon system in 2003, this step has been eliminated in favor of a web-based system. Dr. Crawford notes that ACS continues to invest in the development of new systems for peer review, production, and web products. All of these ACS-initiated changes in production have increased the speed and efficiency of the editorial operations, and allowed the use of more than two referees in selected cases.

Another big change was in the production of the printed *Journal*. All post-acceptance responsibilities were moved from Editor Kinghorn's office to the ACS journal production department, staffed by a large team of professionals. This was a huge benefit to the Editor Kinghorn, who could now concentrate on scientific issues without having to get involved in production details. The change in the *Journal's* format was a fringe benefit of this change, since the larger page size made the page count for each article less, thus making it easier to photocopy articles. This improvement has steadily continued in the past decade. Dr. Powell emphasized, "The changes over the last 10-15 years have been nothing less than phenomenal!"

Dr. Kinghorn recalled that "in the old days, prior to working with ACS, we did not publish the *Journal* on a given day, but had to wait until we had enough papers to complete an issue". Today, a listing of the authors and titles of the articles in each new issue of the *Journal* is available for perusal on the home page <http://pubs.acs.org/journals/jnprdf/index.html> on or about the 22nd day of each month.

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The *Journal* Roars Ahead

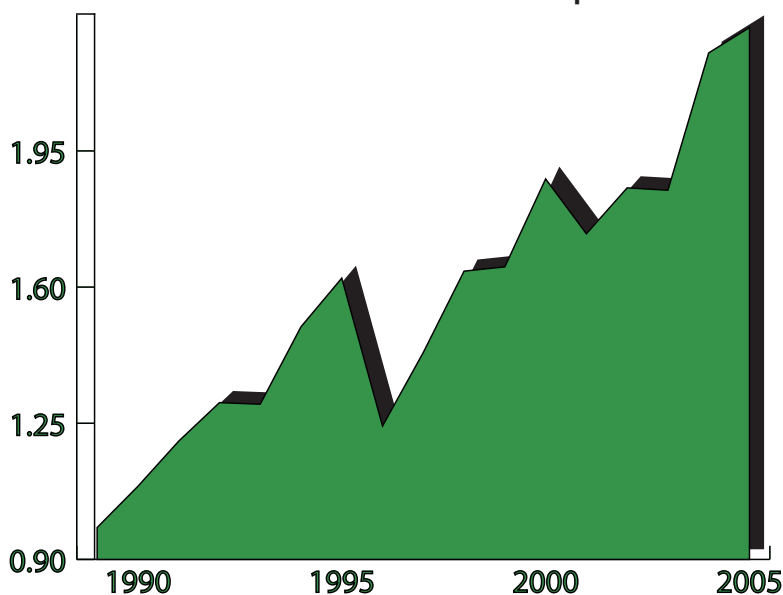
Changes in the *Journal* extend far beyond the production process. There has been a very significant increase in scientific status and impact of the *Journal of Natural Products* during the first 10 years of joint ASP-ACS publication. The number of scientific articles has increased from 303 (1232 pages) published in 1996, to 385 (1836 pages) published in 2005. Impact factors have become an important way for readers and authors to access the quality of scientific journals. The impact factor for the *Journal of Natural Products* has almost doubled in the past decade. Dr. Kinghorn sees this improvement in large part as being due the high quality of the reviews received from the excellent referees in the *Journal's* database.

The impact factor of a journal is comprised of two parts: the numerator, which is the number of citations in the current year to items published in the previous two years, and the denominator, which is the number of substantive articles and reviews published in the same two years. In 1996 the impact factor was 1.243, and the latest available impact factor for the *Journal* is 2.267 for 2005, the highest in its history. Matthew J. Price, Director, Sales & Marketing for the American Chemical Society commented, "Since achieving a + 1.0 ISI(R) impact factor in 1990, the *Journal of Natural Products* has doubled its impact factor and achieved more than five times the number of total citations in one year (2005). This is truly a sign of a healthy and vibrant journal that is widely disseminated, widely read, widely cited, and widely respected."

During this period, the number of citations in the scientific literature of papers published in *Journal of Natural Products* increased from 3,634 in 1997, to 9,928 in 2005. From 2004 to 2005 alone, there has been a 13% increase in citations. The *Journal* is ranked as fifth among medicinal chemistry journals in terms of its total number of cites, and is one of five American Chemical Society journals credited with nearly 40% of all citations in the field of medicinal chemistry.

In 2005, the *Journal of Natural Products* was cited by 482 journals. This represents an increase of 297 citing journals in 2001. The journal that has cited the *Journal of Natural Products* the most is *Natural Products Reports* (582 times). The other journals citing *Journal of Natural Products* 200 or more times include *Tetrahedron* (305), *Phytochemistry* (258), *Organic Letters* (255), *Tetrahedron Letters* (254), *Chemical and Pharmaceutical Bulletin* (245), *Planta Medica* (209), *Journal of Agricultural and Food Chemistry* (202), and *Journal of Ethnopharmacology* (200).

Journal of Natural Products' Impact Factor



The most cited papers in the recent history of the *Journal of Natural Products* largely consist of review articles. Editor Kinghorn has worked to expand the number of invited reviews published in the paper, and this has a positive effect on impact factor as well. The most cited *Journal of Natural Products* paper, as of August 2006, is Professor Pier-Giorgio Pietta's review article entitled "Flavonoids as antioxidants" in Volume 63(7), with 314 citations. The accompanying table summarizes the top 10 most cited articles from the *Journal of Natural Products*.

A Decade of Collaboration continued

Journal of Natural Products' Top Ten

| Authors | Title | Citation | Amount Cited |
|---|--|----------------------------------|--------------|
| Pietta, P.G. | Flavonoids as antioxidants | 63 (7): 1035-1042 July, 2000 | 314 |
| Alali, F.Q.; Liu, X.X.; McLaughlin, J.L. | Annonaceous acetogenins: Recent progress | 62 (3): 504-540 March, 1999 | 232 |
| Cragg, G.M.; Newman, D.J.; Snader, K.M. | Natural products in drug discovery and development | 60 (1): 52-60 January, 1997 | 222 |
| Haslam, E. | Natural polyphenols (vegetable tannins) as drugs: Possible modes of action | 59 (2): 205-215 February, 1996 | 213 |
| Newman, D.J.; Cragg, G.M.; Snader, K.M. | Natural products as sources of new drugs over the period 1981-2002 | 66 (7): 1022-1037 July, 2003 | 179 |
| Cos, P.; Ying, L.; Calomme, M.; Hu, J.P.; Cimanga, K.; Van Poel, B.; Pieters, L.; Vlietinck, A.J.; Berghe, D.V. | Structure-activity relationship and classification of flavonoids as inhibitors of xanthine oxidase and superoxide scavengers | 61 (1): 71-76 January, 1998 | 162 |
| Baloglu, E.; Kingston, D.G.I. | The taxane diterpenoids | 62 (10): 1448-1472 October, 1999 | 124 |
| Wang, H.B.; Nair, M.G.; Strasburg, G.M.; Chang, Y.C.; Booren, A.M.; Gray, J.I.; DeWitt, D.L. | Antioxidant and antiinflammatory activities of anthocyanins and their aglycon, cyanidin, from tart cherries | 62 (2): 294-296 February, 1999 | 121 |
| Sun, N.J.; Woo, S.H.; Cassady, J.M.; Snapka, R.M. | DNA polymerase and topoisomerase II inhibitors from <i>Psoralea corylifolia</i> | 61 (3): 362-366 March, 1998 | 109 |
| Shu, Y.Z. | Recent natural products based drug development: A pharmaceutical industry perspective | 61 (8): 1053-1071 August, 1998 | 104 |

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Art and Commemoration

Special issues has become a way for the *Journal of Natural Products* to highlight and honor significant, lasting contributions by leading figures in natural products research. Prior to joint ASP-ACS publication of the *Journal*, there was one special issue for the late Dr. Edward Leete, and this occupied part of the August 1993 publication. In the past decade, there have been three additional special issues: Volume 67(2), February 2004 honoring the late Dr. Monroe E. Wall and Dr. Mansukh C. Wani (Editors Kinghorn and Powell); Volume 67(8), August 2004, honoring the late Dr. D. John Faulkner and the late Dr. Paul J. Scheuer (Editors Steven C. Bobzin, John H. Cardellina II, William H. Gerwick, and Roy K. Okuda); and Volume 69(3), March 2006 honoring Dr. Norman R. Farnsworth (Editors Harry H.S. Fong, Geoffrey A. Cordell, and A.D. Kinghorn). The *Journal* is currently working on a special issue for the late Dr. Kenneth Rinehart in March 2007 (Editors James B. Gloer, Guy T. Carter, Jun'ichi Kobayashi, and Cedric Pearce).

The February 2004 special issue honored Dr. Wani and the late Dr. Wall for their achievements discovering anticancer compounds from nature, including paclitaxel and camptothecin. The issue took over a year to prepare, and many prominent natural products researchers who had collaborated with Drs. Wall and Wani contributed papers. Dr. Wani commented, "It was indeed a great tribute to the late Dr. Monroe E. Wall and me to have a special issue of the *Journal of Natural Products* dedicated to our work on bioactive natural products. We are grateful to all the authors who contributed to this issue."

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A Decade of Collaboration continued

Dr. Wani commended Dr. Kinghorn for his efforts with Dr. Powell in editing this special issue, and went on to say, "As an Editor-in-Chief of the *Journal of Natural Products*, Dr. Kinghorn has raised the bar of this publication through his tireless efforts."

Cover art has added a great creative flourish to the *Journal* in the past decade. The cover illustrations used since 2001 can be accessed along with their captions on the "Cover Details" option in the *Journal* web page. The image of *Camptotheca acuminata* appeared on the cover for each of the 12 issues of Volume 59. Volume 60 welcomed a marine natural product, dolastatin 10, that overlaid an underwater photo of the shell-less mollusk *Dolabella auricularia*. Since Volume 62, two cover illustrations are used annually, each for six months. Dr. Christine Salomon, then a graduate student in the laboratory of the late Dr. John Faulkner, snapped the photograph of the sponge, *Lufariella variabilis*, that adorned the covers of the special issue for Drs. Faulkner and Scheuer, and the remaining issues of Volume 67.

Dr. Salomon, the field photographer on a number of Dr. Faulkner's collection trips, said "It was a wonderful surprise and an honor to have my photograph of *L. variabilis* used for the cover image of the *Journal of Natural Products*! This sponge is a rather plain looking species compared to many of the more flashy and colored invertebrates on the reef, but juxtaposed with the structure of manoalide and photo of John Faulkner and Paul Scheuer, the resulting collage turned out beautifully. I was one of John's last graduate students, and I know that he would have been so pleased to know that his efforts were recognized in such a fitting tribute featuring his favorite invertebrate, the sponge."

During his tenure as Editor-in-Chief, Dr. Kinghorn has established two special recognitions for articles published in the *Journal*, named in honor of two distinguished former editors, Drs. Arthur E. Schwarting and Jack L. Beal. Dr. Kinghorn recalled that the original idea to honor the best papers in the *Journal* came from Dr. John M. Cassady, Chair of the ASP Foundation Board, who also obtained the necessary funding. The Schwarting Award is open to all papers published in the *Journal* within a given year, and the Beal Award is awarded to a younger investigator. Winners are selected using a two-tier process involving the *Journal* editors and an ad hoc committee. Associate Editor Powell notes that these awards have come about largely through the leadership of Dr. Kinghorn. The Beal and Schwarting Awards were first given in 2001 to Drs. Ben Shen and Gerhard Hofle, respectively.

This year's Schwarting Award winner was a paper entitled, "Using jasplakinolide to turn on pathways that enable the isolation of new chaetoglobosins from *Phomopsis asparagi*" by Omar E. Christian, Jennifer Compton, Keisha R. Christian, Susan L. Mooberry, Fredrick A. Valeriote, and Phillip Crews. Corresponding author, Dr. Crews, describes the paper as a key proof of concept in his quest to exploit factors leading to the production of diverse molecular structures from cultured microorganisms. He remembered great excitement in being recognized in this way by the *Journal* and exclaimed, "we were jumping up and down with joy when we got word of the award"! He went on to mention that the award helped to make first author Dr. Christian much more competitive in the job market. Dr. Christian recently landed his first faculty position at the University of the Virgin Islands, and Dr. Crews credited the Schwarting Award for "opening the eyes of potential employers to the significance of Omar's research".

It Takes a Village

Dr. Kinghorn emphasized that "editing a publication like this is definitely not a one-man job". He is very gratified to have been assisted in the editorial aspects of producing each issue with an outstanding group of colleagues, currently comprised of Associate Editors Daneel Ferreira, William H. Gerwick, and Richard G. Powell, Assistant Editor Alice M. Clark, and Book Review Editor John H. Cardellina II. Prior to Dr. Gerwick's appointment in 2002, Dr. Francis J. Schmitz was the first "marine" editor for the *Journal*, during the period 1999-2001. Dr. Clark was the first female Associate Editor of

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A Decade of Collaboration continued

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the *Journal* (1999-2003), before stepping down to take on a major administrative position at University of Mississippi.

A key person overlooking the publication quality of the *Journal* is Ms. Diane Black, the Associate Editor in charge of the *Journal of Natural Products* at Chemical Abstracts Service in Columbus, where the pages of the *Journal* are composed. Ms. Black works very closely with the editorial assistants in the four offices of the *Journal*, and Editor Kinghorn gives her and her associates special credit for the smooth publication of the *Journal*.

Another crucial aspect involved in the steady improvement of the scientific reputation of the *Journal* is the group of outstanding natural product scientists who serve on the Editorial Advisory Board. The copublication arrangement between ASP and ACS is structured so that there are 12 members representing each society. Over the last decade the number of female members of this group has steadily grown, and there are now members from a total of seven different countries, reflecting the international nature of the *Journal*.

Hail to the Chief

Dr. Kinghorn's efforts as Editor-in-Chief of the *Journal* are widely viewed within the Society as being exceptional. According to Associate Editor Richard Powell, "Doug has worked tirelessly and continuously to improve the status, reputation, and scientific content of the *Journal of Natural Products*. His efforts to include special issues dedicated to the recognition of career contributions of noteworthy workers in the field of natural products have been particularly effective in promoting the *Journal*. It has been a most satisfying experience to have been assisting our dedicated and highly regarded Editor, Doug Kinghorn, for the last 10 years." Former Associate and Book Review Editor Kingston concurred, "Doug was the editor when the switch to copublication with the ACS was made; he worked hard to make this transition a successful one, and he deserves much of the credit for the current success of the *Journal*."

ACS also views this joint venture with great pride. Dr. Crawford of ACS said, "Dr. Kinghorn's emphasis on the identification of quality research in natural products and his insistence on ethical integrity in the peer review process have provided a foundation for the *Journal's* editorial growth and influential stature. ACS recognizes that his clear vision of and dedication to the *Journal's* mission and goals have provided us with a scholarly publication that we can proudly market as part of our portfolio. Dr. Kinghorn is one of the strong contributors to the ACS 'Cycle of Excellence'."

Current ASP President Dr. Roy Okuda recalled that the success of this partnership was not considered a sure thing by all ASP members. He related that "When this partnership with ACS was first discussed, I recall there was some trepidation, but now I doubt anyone would feel it has been anything but a tremendous success. Under Doug Kinghorn's stewardship, the *Journal of Natural Products* has evolved into the premier journal in the field today. By all measures, the *Journal* has continued to improve in such parameters as impact factor, subscription, and manuscripts received. Doug and his Associate Editors have ensured that the quality of the articles in the *Journal* remains high. The *Journal* is the principal 'face' of the ASP in the scientific community, and is a product of which we can be very proud!"

Drs. A. Douglas Kinghorn and David Kingston contributed to this article.

COVER MECHANICALS REPRINTED WITH PERMISSION FROM J. NAT. PROD. 59(1), 67(2), 67(8), AND 69(3). COPYRIGHT JAN. 1996, FEB. 2004, AUG. 2004, AND MAR. 2006 AMERICAN CHEMICAL SOCIETY. COVER ART REPRINTED COURTESY OF PATRICIA MANNATT, JIMMY CRAWFORD, CHRISTINE SALOMON, AND GUIDO PAULI.

The 48th Annual Meeting of the ASP

Gearing Up for the Maine Event

The organizers cordially invite you to participate in the 48th Annual Meeting of the American Society of Pharmacognosy at the Holiday Inn by the Bay in Portland, Maine from Saturday, July 14 to Wednesday, July 18, 2007.

The pre-meeting workshops on Saturday, July 14, include an NMR workshop for students and *Clinical Pharmacognosy: Contribution of Pharmacognosy to Clinical Trials of Dietary Supplements*. The four sessions of this workshop are titled *Preclinical Studies, Generic Herbal Preparations, Clinical Studies on Botanicals, and Safety*. The Program Committee for this workshop includes Drs. Marilyn Barrett, Ray Cooper, Jorge Gruenwald, Fredi Kronenberg, and Jim McChesney.

The abstract deadline for oral presentations is April 15, 2007 and the poster presentation deadline is May 1, 2007.

The American Society of Pharmacognosy offers a number of travel grants to students who wish to attend the meeting and present a poster or a short lecture. Information on how to apply can be found on the ASP website at www.phcog.org/awards/awardgrant.html.

Housing: Holiday Inn by the Bay's conference rate is \$160 per night for single or double occupancy. Reservations must be made by June 6, 2007. The Eastland Park Hotel is also offering a conference rate of \$149 per night for single or double occupancy. Reservations must be made by June 14, 2007. Ten rooms are also reserved at the Eastland Park for graduate students at a rate of \$100 per night, and includes the option of adding a third person at a surcharge of \$15. This rate requires a rooming list with the graduate student's name and who they will be sharing a room with. Students interested in this rate should contact Dr. Stefan Gafner at stefang@tomsofmaine.com. Students also have a housing option at the University of Southern Maine's Portland Hall. A limited number of dorm rooms are available there at \$35 per person per night. If you are interested in reserving a room there, contact conferences@usm.maine.edu specifying the nights desired. Directions to the Holiday Inn by the Bay and Eastland Park Hotel are posted on the ASP website.

Travel: Portland is served by an airport, PWM, into which many major carriers fly. This is the most convenient choice for meeting participants. The conference site is approximately 10 minutes from the Portland airport by a \$10 dollar taxi ride. The Holiday Inn by the Bay operates a complimentary airport shuttle for guests. To arrange this, guests must call 207-775-2311 upon arrival. The Portland Explorer city bus also travels through the airport from 11am to 5pm, but not on a regular schedule. The fare is \$2. Boston Logan airport, BOS, is about 110 miles southwest of Portland, and may offer more economical flights with fewer connections. It is a two-hour drive from Boston to Portland on the I-95 turnpike, bus and train service is also available. New Hampshire's Manchester airport, MHT, is approximately 100 miles west of Portland and offers another alternative for flying into the region.

General questions in regards to the meeting can be addressed to Dr. Gafner at stefang@tomsofmaine.com. Questions about registration, travel, and accommodation should be addressed to the USM registration service through Ms. Elizabeth A. Morin, Director, Department of Conferences at eamorin@usm.maine.edu.



Conference Calendar

The *Newsletter* is pleased to announce the following upcoming conferences and meetings. The events portrayed here reflect what listings and notices the *Newsletter* has specifically received. For a more extensive calendar, please visit the ASP website at www.phcog.org. If you have a conference or event you would like mentioned, please send us relevant information, including any graphics or appropriate fliers, at asp.newsletter@lehman.cuny.edu.

Biology, Chemistry, Pharmacology and Clinical Studies of Asian Plants

Surabaya, Indonesia
April 9-11, 2007

Organized by the International Organization for Chemical Sciences in Development: The Working Group on Plant Chemistry

www.unige.ch/iocdsurabaya2007

CPT2008 The IXth World Conference on Clinical Pharmacology and Therapeutics

Québec City, Canada
July 27 - August 1, 2008

Organized by the Canadian Society for Clinical Pharmacology (CSCP) and the International Union of Pharmacology and Clinical Pharmacology (IUPHAR)

www.cpt2008.org

The 48th Annual Meeting of the American Society of Pharmacognosy

Portland, ME
July 14-18, 2007

Organized by The American Society of Pharmacognosy

www.phcog.org/AnnualMtg/Portland.html

7th Joint Meeting of: Association Francophone pour l'Enseignement et la Recherche en Pharmacognosie

American Society of Pharmacognosy

Society for Medicinal Plant
Research
Gesellschaft für
Arzneipflanzenforschung e.V.

The Phytochemical Society of Europe

Athens, Greece
August 3-8, 2008

www.phcog.org

Materia Medica

Linnaeus and Medicinal Products

An international conference on drugs of natural origin in the honour of Carl Linnaeus.

Uppsala, Sweden
September 5-8, 2007

www.lakemedelsakademin.se/materiamedica

New Members of ASP

ASP would like to welcome new members. The Society's main objectives are to provide the opportunity for association among the workers in pharmacognosy and related sciences, to provide opportunities for presentation of research achievements, and to promote the publication of meritorious research. New members include six domestic full members, four international full members, and five associate members. We look forward to meeting you and learning more about you and your work.

Full Members:

Jim Bolt
Rogers, Arkansas

Dr. Ian Castro-Gamboa
Araraquara, Brazil

Dr. Jason A. Clement
Frederick, Maryland

Todd R. Daviau
Saint Petersburg, Florida

Randy B. Donelson
St. Paul, Minnesota

Dr. Simiso Dube
Bulawayo, Zimbabwe

Dr. Sagar S. Kadali
Burlington, Canada

Dr. Chester D. Opalsky
Arlington, Virginia

Dr. Samson Sibanda
Bulawayo, Zimbabwe

Dr. Jonathan White
Kansas City, Missouri

Associate Members:

Tina R. Icenogle
Indianapolis, Indiana

Matthew Metcalf
Baltimore, Maryland

Sharla L. Powell
Chicago, Illinois

Anshu Rathi
Lucknow, India

Cara R. Welch
Metuchen, New Jersey

ASP Awards and Grants: New Deadline

Please note that there has been a change made to the deadline for receipt of applications for student and active member grants and awards. The new deadline will be February 15th of each year, as opposed to the previous date of March 31st of each year. Thus, the next upcoming deadline is February 15, 2007. More information about ASP grants and awards can be found at www.phcog.org.

Meet a New ASP Member

by Amy Keller

ASP welcomes many new members to the Society this fall. Our featured new member, Dr. Jason Clement, is a resident of Frederick, Maryland, and works as a postdoctoral fellow at the National Cancer Institute. Dr. Clement took time out of his schedule to discuss his background, current research, and of course, his favorite movie. We are grateful for the opportunity to get more acquainted with him.

Why did you join ASP?

I joined ASP because I wanted to be able to meet others working in the natural products field and to maintain past contacts. The employment services and contacts available through the ASP website are also a great potential resource. ASP meetings I have attended have been very well-organized, and being part of the exchange of ideas at the meetings is another reason I joined the ASP. Someone once told me that natural products chemists are like one big family, and the ASP certainly contributes to this closeness.

MARY DEAN COLEMAN



Dr. Jason Clement

What are your research interests in pharmacognosy?

I am most interested in the discovery of potential antitumor agents from natural sources, although I am also interested in the treatment of infectious diseases. Nature has yielded to humanity many useful compounds for the treatment of disease, and I am committed to searching for new compounds that might ease the suffering due to cancer. I am also interested in the development of new bioassay methods for antitumor natural product drug discovery.

What is your scientific background?

I attended Western Carolina University (WCU) from 1996 to 2000, where I received my B.S. in Chemistry. While working with Dr. Royce Woosley at WCU, I performed analytical studies of the volatile organic chemical components of Canadian Hemlock trees in the Shenandoah and Great Smoky Mountain National Parks using GC-MS. After entering Dr. David Kingston's group at Virginia Tech in 2000, I worked on bioassay-guided isolation and characterization of natural products from both terrestrial plant and marine sources using enzyme-based assays. After receiving my Ph.D. in Chemistry in 2005, I joined the Molecular Targets Development Program (MTDP) at the National Cancer Institute in Frederick, Maryland, in January, 2006 as a Cancer Research Training Award postdoctoral fellow. Working with Dr. Tawnya McKee in the MTDP, I am currently isolating inhibitors of MDM2, a key regulator of the tumor suppressing protein p53.

What would like to achieve through your membership?

I have been inspired to work harder and think about projects differently after attending ASP meetings, and this is one of the main things I would like to continue to do. I would also like to continue to establish contacts with others in the field of pharmacognosy. All of us in the society can learn from each other, and we can spur one another on to better things in our work.

What are you currently reading and what is your favorite movie?

The Bondage of the Will by Martin Luther and *How to Read the Bible for All Its Worth* by Gordon D. Fee and Douglas Stuart. My favorite movie is Ben-Hur.

Behind the Scenes in Pharmacognosy

The Asian Angel Demystified

In April of this year, the *Journal of Natural Products* published “Serotonergic activity-guided phytochemical investigation of the roots of *Angelica sinensis*”, authored by Dr. Shixin Deng and others in the laboratory of Dr. Guido Pauli. This article held the number 12 spot in the list of the 15 most accessed articles in the *Journal* during the April through June quarter of publication. Dr. Pauli graciously answered our questions regarding this powerful plant and intriguing study.

How did you become interested in *Angelica sinensis*, or Dang Gui as it is known in China?

Briefly, because it is a very prominent Traditional Chinese Medicine (TCM) herb for treatment of female conditions. Also, the University of Illinois at Chicago (UIC) pharmacognosy group has a history of studying TCM herbals and Shixin Deng, a recent Ph.D. graduate and native of China with a strong background in TCM, was highly motivated to study the phytochemistry and pharmacology of TCM herbals.

A. sinensis, also called Dang Gui or Dong Quai, is one of the most popular traditional herbs in Asia. It has a nickname meaning “female ginseng” or “lady’s ginseng”, which indicates its importance and popularity. The common name, Dang Gui, in Chinese literally means “recovery to normal conditions”, suggesting its function of helping the body to recover

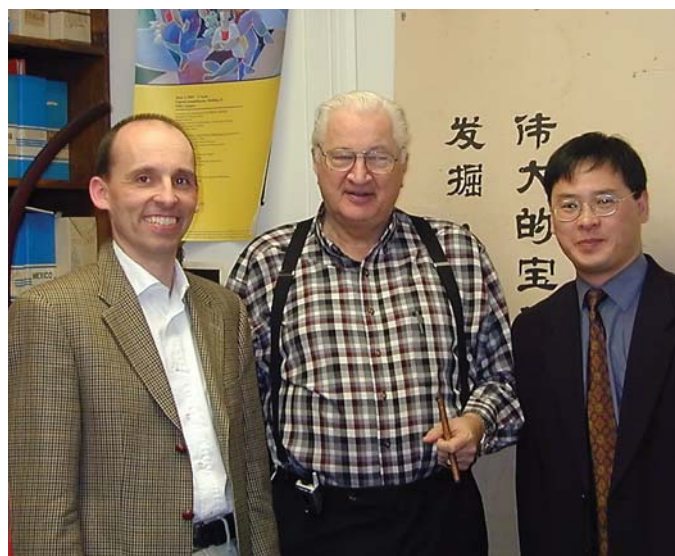
from weakness or illness and return to a normal condition of well-being. The UIC/National Institutes of Health (NIH) Center for Botanical Dietary Supplements Research is one of the six national Botanical Centers, and has particularly specialized on studying plants with benefits for women’s health. When the Center started in 1999, one of the 10 plants selected for study was, of course, *A. sinensis* due to its strong literature and TCM track record.

Who in your laboratory carried out the research?

This project was performed by a collaborative team, reflected by the list of authors of the paper. The core team consisted of pharmacognosists, phytochemists, biologists, pharmacologists, and analytical chemists. Advice from the environment also came from botanists.

The main work was done by Ph.D. student, Shixin Deng, as part of his dissertation project. His focus was the phytochemical work, performing bioassay-guided fractionation and isolation, and identification of the bioactive compounds from *A. sinensis*. Shixin Deng also interpreted the analytical data.

Shixin’s major advisors were myself, Project Leader in the Botanical Center Project 1, and Dr. Norman Farnsworth, Director of the Botanical Center. Important components for his research came from Botanical Center Project 1 post-doctoral researcher Dr. Shao-Nong Chen. Biological evaluation was done in collaboration with Botanical Center Project 2, headed by Dr. Judy Bolton, and MS expertise was contributed by Core B, namely Drs. Dejan Nikolic and Richard van Breemen.



Angelica authors (from left) Drs. Guido Pauli, Norman Farnsworth, and Shixin Deng.

DANIEL FABRICANT

Behind the Scenes in Pharmacognosy

Could you provide a brief explanation of the phytochemical work on this plant and the results in your own words? In what way are the data in your paper new?

The phytochemical work resulted in the findings of a structurally diverse portfolio of compounds present in *A. sinensis*. Compounds include polyynes, monomeric and dimeric phthalides, and lignans. In particular, the finding of new dimeric phthalides expands the diversity with new alicyclic ring systems and skeletons.

An elaborate phytochemical isolation scheme was used, parallel to biological (serotonergic) evaluation, involving various chromatographic techniques such as CC, VLC, DCCC, MPLC, HPLC, and PTLC.

Over 20 compounds were isolated and their structures were elucidated by modern spectroscopic methods, including detailed analyses of ^1H spin patterns of all isolated compounds.

Overall, as part of his dissertation work, Shixing isolated five novel compounds, including a structurally unique symmetrical phthalide dimer. Four other compounds were isolated for the first time from *A. sinensis*. Interestingly, in addition to the new structure skeleton, a sulphonamide was isolated. However, its presence as a "native compound" needs further confirmation. Some of the isolates are potential new bioactive marker compounds for the quality control and standardization of *A. sinensis* preparation, and are potential lead structures for further pharmacological studies in the future.

What impact does this research have?

Besides the new phytochemical findings mentioned above, the study also discovered new biological activities of *A. sinensis*. The effects observed in 5-HT and GABA α receptor assays indicate that *A. sinensis* phytochemicals have previously unknown neurotransmitter-like activity (serotonergic and GABAergic). This could account for its traditional use for pre-menstrual or menopausal symptoms, and improve menopausal women's mood symptoms such as anxiety, depression, and irritation. Although these activities, as typical for many herbal preparations, cannot be attributed to a single active compound, active principles for these biochemical targets are now known.

Finally, the dissertation project also discovered that *A. sinensis* contains polyynes which exhibited potent and selective anti-TB activities *in vitro* (paper submitted). This suggests other potential uses for *A. sinensis*.



Botanical illustration of *Angelica sinensis* or Dang Gui.

From the Archives

Greenhouse Tours and Sand Traps

by Dr. Edward Kennelly

In 2009, the American Society of Pharmacognosy will be celebrating the 50th anniversary of its founding. The Society is planning a number of ways to commemorate this auspicious occasion, including the ASP Photo Project and ASP Archives. The Newsletter has begun digging into these resources in order to publish items from the past and annotate them with member memories. ASP encourages all members to submit items to the ASP Photo Project and Archives. If you would like to suggest topics to be featured in "From the Archives", please forward them to the Newsletter.

GEORGE CONSTANTINE



Tour of the OSU greenhouses.

This issue's featured archive photos were taken at the ASP 10th Annual Meeting in Corvallis, Oregon, August 18-22, 1969. The picture to the left shows four conference attendees touring the Oregon State University (OSU) greenhouses. Dr. Ara DerMarderosian (far left), currently Professor of Biological Sciences at the University of the Sciences in Philadelphia, recalls that greenhouse tours were a staple of early ASP meetings. He remembers, "All local organizers of ASP meetings wanted to show how good their local people could grow medicinal plants."

The photo shows a number of important medicinal and poisonous plants in cultivation at OSU including *Aloe vera*, being examined by Dr. DerMarderosian. To his right is *Ricinus communis* (castor), and in the background on the right is *Catharanthus roseus*.

In addition to Dr. DerMarderosian, others in the photo include Dr. John K. Brown (far right) of the University of the Pacific School of Pharmacy. Dr. Kenneth Euler, Professor Emeritus of University of Houston College of Pharmacy, may be second from the right. When shown the photo, Dr. Euler noted that he was turned a little too far away from the camera to confirm his presence. He relates that he and Dr. Brown were good friends and colleagues from their days as graduate students at the University of Washington, and likely that they would be together during the greenhouse tour.

Dr. George Constantine, Professor Emeritus at OSU, was one of the local organizers for the 1969 meeting. He said that the greenhouse in this picture was part of a complex of 20 greenhouses on the west side of the OSU campus, and it was given up by the College of Pharmacy about two decades ago.

Dr. Constantine recalls the 10th Annual Meeting fondly. He especially remembers an outdoor social event where school buses were used to transport participants to an Oregon beach (right). According to Dr. Constantine motor vehicles were allowed to drive on Oregon beaches, so "our drivers did that, and we paid the price"!

On the way home, one of the buses parked on the beach would not start, so he and other participants had to push it out of the sand. As a reward, Dr. Constantine and his fellow ASP members brought one of the remaining kegs of beer back in the bus and partook of the hops-flavored beverage all the way back to OSU!



Trip to an Oregon beach.

GEORGE CONSTANTINE

David J. Slatkin, Ph.D, Treasurer
The American Society of Pharmacognosy
3149 Dundee Road, #260,
Northbrook, Illinois 60062

ASP Membership

Full Membership

Full membership is open to any scientist interested in the study of natural products. Dues are \$75 per year. In order to receive the Journal of Natural Products the subscription rates are as follows: United States, Canada, and Mexico: \$131 (Print Edition), \$70 (Web Edition), \$140 (Archive Web Edition); All other countries: \$196 (Print edition), \$70 (Web edition), \$140 (Archive Web Edition).

Associate Membership

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