



American Society of Biomechanics Newsletter

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From the President

Bruce Martin

I will begin this column by reiterating the appreciation that I expressed at the annual business meeting in August for the privilege of serving as the ASB's president. This society has always occupied a special place in my heart because of its informality, its scientific diversity, and its attention to the needs of students. My students and I have received a great deal of scientific nourishment from the ASB through the years. Thus, it is very gratifying to be elected president and to accept the challenge to contribute to this now mature society.

I enjoyed the NACOB meeting in Waterloo enormously. Held in our traditional setting of a university campus, it was beautifully managed and the campus itself was delightful. (And perhaps we still have not got the full effect; I kept trying to imagine walking from the dorms to the classrooms with 3 feet of snow on the ground.) Stuart McGill did an absolutely outstanding job of chairing the meeting, managing the endless local arrangements, and capping it off with a memorable banquet! The NACOB meetings certainly require an extra level of effort in developing a program that accommodates both societies with their different traditions and emphases. I thought the program was excellent, and appreciated the efforts of our Program Chair, Melissa Gross, and her CSB counterpart, Aftab Patla, in putting it together. Thanks, too, to Tom Buchanan, Claire Farley, Eileen Fowler, and Maury Nussbaum for reviewing all of our abstracts.

Our next annual meeting will be held Oct. 21-23, 1999 on the campus of the University of Pittsburgh, which will be another new venue for us. The meeting chair is Jun-Kyo Suh from the Department of Orthopaedic Surgery and the Musculoskeletal Research Center headed by former ASB president Savio Woo. The meeting is jointly sponsored by the Musculoskeletal Research Center, the School of Health and Rehabilitation Sciences, and the Center for Biotechnology and Bioengineering. This, too, is a unique campus environment - an urban campus in a famous city of great historical and industrial interest. This promises to be another excellent meeting, and I encourage you all to mark your calendars.

Recently, the Executive Board approved funding for our first regional student meeting (see the meeting announcement on page 14). This is a new ASB initiative, in tune with our on-going

efforts to support graduate education in biomechanics. The meeting will be held April 9-10, 1998, on the campus of California Polytechnic University at Pomona. The organizers are Michael Feltner from nearby Pepperdine University and Michele LeBlanc. This meeting is aimed at providing a "mini-ASB" forum in which students can present their work and hear a nationally prominent keynote speaker without the expense associated with attending a national meeting. Student members in the Los Angeles area should look into this, and members interested in organizing similar meetings with ASB sponsorship should contact the chair of the Conferences and Special Events Committee, Alan Litski.

In Waterloo we had several changes in the composition of the Executive Board. First, Joan Bechtold was succeeded as Secretary-Treasurer by Rob Shapiro. This is arguably the most demanding job in the Society, and I would like to publicly express my great appreciation to Joanie not only for all her work during the last three years, but also for her continuing work in transferring the accouterments of the office to Rob. This in itself is a substantial task. Thank you, too, Rob, for being willing to take on this crucial position. In addition, Mark Grabiner has replaced Bob Gregor as Past-President, Tom Buchanan has moved up to Program Chair, and Melissa Gross has moved over from that job to President-elect. As noted above, Jun-Kyo Suh is the new Meeting Chair, and we also have a new Student Representative, Eadric Bressel, from Colorado State University, who replaces Todd Royer from Arizona State University. Thanks to all those stepping up, down,

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or sideways, and special kudos to Bob Gregor for his many contributions to the Society during his three year tenure in the president track. (Sitting here, rummaging around in this pile of ASB stuff on my desk - oh, if only it would really all fit on my desk! - I am starting to realize what you have been through, Bob.)

I would now like to devote the rest of this column to introducing a topic for discussion among the membership over the coming months. I mentioned above that one of the things that I have always liked most about the ASB is its scientific diversity. Our "founding fathers," a diverse group themselves, built this feature into the Society through requirements in the bylaws that members' areas of specialization (membership categories) be defined and taken into consideration when nominating leaders. The original leaders of the ASB were themselves rather evenly distributed across the membership categories, and this showed in the diversity of the early meeting programs. While the diversity in submitted abstracts has declined, we have generally maintained it in our keynote speakers. I have always greatly enjoyed coming to the meetings and hearing papers on topics peripheral to my own interests but still biomechanical; this mixture of strangeness and familiarity is something I think we all look for when we seek rejuvenation in our lives. In recalling papers on the dynamics of carrying loads using a yoke, the aerodynamics of leaves, the mechanics of opera singing, and many others, I realize that this diversity is something that I have not found consistently in other professional societies. Some would argue that the limited depth necessary to make such presentations digestible to a more general biomechanical audience is not conducive to real advancement of the science, but I believe that we all gain by growing in breadth as well as depth. My conversations with other members suggest that this appreciation for ASB's diversity is quite universal.

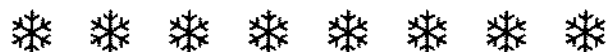
However, the other side of this coin is that the society's membership statistics rather quickly evolved into more-or-less the distribution we see today: the biological sciences and ergonomics and human factors categories each constitute about 7% of the members, and health sciences and exercise and sport science each have about 15% of the membership. This leaves over half of our members in engineering and applied physics. In discussing this with several members from "minority categories," the story that I consistently have heard is that while the founders had a nice idea, the group dynamics of a society such as ours produce pressures that work to homogenize the membership. While we all remember the keynote speakers from "minority fields" for the novelty of their talks, the members from these fields have found themselves in regular sessions attended only by the presenters themselves, or in which their topic is represented by only a paper or two. Consequently, instead of coming to ASB and being "token biologists," etc., they go to meetings where they can interact to a much greater degree with experts in their own field.

Like many others who have served on the Executive Board of our society, I have thought a lot about this situation, and wished a way could be found to foster the diversity that the founders desired. At this point, I have very reluctantly come to the conclusion that it

is impractical to expect that our membership distribution by category can be leveled, even if an inordinate amount of energy is applied to that end. If that is the case, should the bylaws be changed to reflect this reality? Perhaps a more effective approach would be to codify diversity into the society in some other ways, assuming we still value diversity.

Other than specifying that each member shall identify a category of membership (Article 4, Section 2), our bylaws presently only use these categories to try to ensure that the Society's leadership rotates among these categories. Article 5 of the bylaws specifies that (a) the three members of the nominating committee must all be from different membership categories and (b) the president-elect candidates must be from a different category than the current president-elect. (Actually, the Executive Board has followed the policy of having all categories represented on all committees, and including five members on the nominating committee, for some time now.) The above bylaws were clearly designed to keep the leadership of the Society from being controlled by members in a particular subdiscipline of biomechanics. However, my experiences in the Society suggest to me that its tenor and its meeting programs are governed much more by group dynamics and program committees than the interests of its presidents. Therefore, I would like to suggest that we give up the bylaws' implicit notion of balancing our membership across the five membership categories as unrealistic and modify our bylaws in three ways. First, that we eliminate restriction (b) above because there is no evidence that it fosters diversity; second, that we require all committees to include all five membership categories; and third, that we add the following sentence to Section 4 of the bylaws regarding the program committee: "The program of each annual meeting shall include a broad spectrum of work in biomechanics and nurture the interests of all five membership categories."

These changes would bring the bylaws into alignment with present practice and relieve us of constraints in choosing presidents that can at times interfere with nominating deserving and effective members. These constraints have not been effective in leveling the distribution of membership categories in either the presidency or the general membership. The 20 presidents before me were distributed as follows: engineers: 35%, health sciences: 25%, exercise sciences: 20%, biological sciences: 15%, and ergonomics: 5%. Of the three biologists, two were among the first four presidents (I'm assuming Gaynor Evans was in the biological sciences category). The question is, did the requirements of the bylaws significantly affect this distribution? Would changing them as suggested above, or in other ways, increase or decrease the scientific diversity of our meetings? Do most of us value this diversity? I know that the other members of the Executive Board share my interest in these questions, and we would like very much to know what you think. Please give me a call or drop me an email and let me know your thoughts on this issue!



From the Secretary/Treasurer

Rob Shapiro

As I begin my tenure as Secretary-Treasurer I would like to thank the membership for the opportunity to serve the society. Having been a member since the society's inception in 1977, I am pleased to be able to give something back. I would also like to thank Joan Bechtold and Carol Schutte for their continued assistance and support as we transfer boxes of documents from Minnesota to Kentucky. The society's finances and records have been in excellent hands and I hope to build upon my predecessors' outstanding work.

Election Results

As my first duty, let me report to you that Melissa Gross is our new President-elect and Trey Crisco is the new Program Chair-elect. Scott Delp will assume the Membership Committee Chair in early 1999. Until that time Trey will do double duty. At the meeting in Waterloo, Eadric Bressel was elected the student representative to the Executive Board. Congratulations and thanks to all the candidates.

Membership (as of 10/98)

As reported at our annual meeting the membership has increased by 4.5%. The breakdown by membership category is as follows:

Regular	694
Student	135
Emeritus	3
Sustaining	6
Sustaining (pending)	4
Total	842

Our current distribution among membership categories is:

Biological Sciences	7%
Engineering/Applied Physics	52%
Ergonomics/Human Factors	8%
Exercise/Sport Science	16%
Health Science	14%
Undeclared	3%

We continue to seek new Sustaining members. This number has increased significantly over the past year.

Finances (as of 8/98)

As reported at the annual meeting, the society's finances are sound. As we are still arranging transfer of funds the following represents the data reported at the August meeting.

Cash*	\$33,728.96
Stock Certificates	\$25,954.73
Mutual Funds	\$41,392.15
Total	\$101,075.84

*We are still in the process of determining a reinvestment strategy for \$25,000. Given recent market activity, our advisor at American Express indicates this is a good time to add to our portfolio.

Journal Subscriptions

As you are aware we have had some problems with journal delivery. Joan Bechtold and Carol Schutte have worked with Elsevier Publishers to get these problems under control. I will continue to work with Elsevier to make sure all members receive their journals in a timely manner. You will note that as part of our three-year agreement with Elsevier, the cost of the *Journal of Biomechanics* will increase two dollars this year. The subscription rate will now be \$61.00. You will note the rates for *Clinical Biomechanics* (\$71.00), *Medical Engineering and Physics* (\$99.00) and *Journal of Electromyography and Kinesiology* (\$96.00) have also increased. Human Kinetics has not increased the rate for *Journal of Applied Biomechanics* (\$40.00).

Annual Dues

With this newsletter you will be receiving your invoice for 1999 membership dues and journal subscriptions. As discussed by Mark Grabiner in the June 1998 newsletter, the society has decided to implement its first dues increase in over twelve years. This increase, for regular members only, raises annual dues to \$40.00. Please make your payment promptly as this enables us to get the journal subscription materials to the publishers in a timely manner. The deadline for dues payment is February 28, 1999. Please make sure that the demographic information listed on the invoice is correct.

If you have any questions please feel free to contact me at: rshap01@pop.uky.edu. You can also contact my assistant, Jill Carson at: jscars@pop.uky.edu. Once again, I look forward to the next three years and wish everyone a happy and successful 1999. Thanks for those prompt dues payments.

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Program Chair's Report

Tom Buchanan

The 23rd Annual Meeting of the American Society of Biomechanics will be held at the University of Pittsburgh next October. Dr. Suh and his colleagues at Pitt have some wonderful plans to make the meeting both fun and professional. We are looking forward to having some very provocative items in the program.

At the last NACOB meeting in Waterloo, all submitted abstracts were presented as posters. Only the keynote addresses, the awards talks, and a few special symposia were done as talks. The Program Committee is very interested in getting your feedback on this method of presentation. This approach has strengths and weaknesses. The advantage of this approach is that it puts all submitted papers on the same playing field. There is no feeling that some papers are first class and others are second class. It also allows the presenters to spend much more time explaining and defending their work to those who are interested. Finally, it creates a more casual atmosphere, allowing participants to set their own pace when choosing to examine the scientific presentations or take a break and chat with a colleague. The disadvantage of this format is that it does not give people a chance to give formal talks, which can be especially important to junior colleagues. It also does not provide as wide of exposure for the presenters. Posters tend to draw smaller and more intense discussion whereas talks reach much larger audiences but allow at most five minutes for discussion. Of course, many posters can be presented concurrently while talks must be presented sequentially, so there will always be a limitation on the number of talks that can be given. Posters also require facilities which can allow a few hundred people to wander about in a relaxed atmosphere—something that is not always easy to find.

A middle-ground approach is to use moderated poster sessions. These have the advantage of allowing the presenters to give formal talks about their posters. They also allow for some debate. They have the disadvantage of taking up about as much time per presentation as a regular talk and require someone well-prepared to serve as an interesting and provocative moderator.

At every meeting we have restrictions due to room size, etc., so our options may be limited by the facilities of our hosts, but the Program Committee is interested in getting feedback from you on your preferences. If have an opinion on these things, please drop me an e-mail message (buchanan@udel.edu). I am looking forward to seeing you all in Pittsburgh next autumn!

from the World Council on Biomechanics

Mark D. Grabiner

The 3rd World Congress on Biomechanics was held this past summer at Hokkaido University in Sapporo, Japan. Similar to previous World Congresses, the scope of the 3rd WCB ranged from molecular and cellular to tissue, system and organismic biomechanics. A truly outstanding program was put together from over 1000 abstracts that were received by the organizers. The program comprised five days of plenary and tutorial lectures, symposia, and free communications. During the Congress the World Council on Biomechanics elected its new members and officers. They are as follows:

Officers - Honorary Chair: Y.C. Fung
Chair: Savio L-Y. Woo
Vice Chair: Kozaburo Hayashi
Secretary: Leendert Blankevoort
Treasurer: James C.H. Goh.

New Council Members - Leendert Blankevoort, Morton Friedman, Mark Grabiner, Roger Kram, Yuji Matsuzaki, Christian Oddou, Masaaki Sato, Geert Schmid-Schonbein, Robert Schroter, Avraham Shitzer, Takami Yamaguchi.

During the course of the Congress, the University of Calgary was announced as the site of the 4th World Congress on Biomechanics, August 3-8, 2002. The meeting chairpersons are Dr. Benno Nigg and Dr. Ronald Zernicke. At the time of the next Congress, it will have been 12 years since the meeting had last been held in North America. Insofar as the time of the meeting closely corresponds to the annual meetings of ASB (and that of CSB), the meeting organizers have inquired as to whether we, ASB, would consider hosting our annual meeting in conjunction with the 4th World Congress on Biomechanics. CSB has already made the commitment to do so. The ASB Executive Board initially discussed this issue at the NACOB meeting last August and will address the issue again at the time of the mid-year meeting in February. I am interested in the level of enthusiasm of the ASB membership on this matter. Furthermore, I am very interested in hearing those factors that underlie your level of enthusiasm. Please take some time to email me your feelings about holding the 2002 Annual Meeting of the American Society of Biomechanics in Calgary, Alberta, Canada in association with the 4th World Congress on Biomechanics. My email address is: grabiner@bme.ri.ccf.org



*Don't Forget
to pay your dues!*



Guest Columnist

Bill Lew

TURBULENT VERSUS LAMINAR RESEARCH

An undergraduate professor of mine once told me that he thought research was like turbulent fluid flow - the fluid particles (researchers) expend a great deal of energy "colliding" with each other, and subsequently progress down the line of flow more slowly than if the interactions were "laminar". I suppose there is some sense to this analogy. "Collisions" in research occur, in part, because of the occasional over-sized ego, limited availability of research funds, and a finite amount of publication space in high quality journals. On the other hand, there is also a great deal of collaboration now-a-days, largely spurred on by complex problems requiring a multidisciplinary approach, and the importance placed on collaborative efforts by funding agencies.

I have often wondered if the research environment of today really differs much from that in the early days of our great scientific patriarchs. I find it interesting to read about the lives of these research giants. Competition was also stiff back then, there were some fierce confrontations, and the ego reigned supreme as it does now. However, sprinkled throughout the inevitable turbulence was a sense of professional congeniality. It was common for competitors to meet regularly over a beer or scotch to scientifically joust with each other in a casual, relaxed and constructive manner, and to debate the relative merits of their respective lines of thought in their research. I would guess that great progress in research was made during these friendly laminar interactions or confrontations. This model has something to offer us today.

In Minneapolis-St. Paul, we have taken a small step toward connecting with this congenial spirit of old. The four orthopaedic biomechanics laboratories in the Twin Cities have informally organized ourselves around the buzz word "tertulia", which loosely translated in Spanish means a philosophical discussion group. When we first began to meet, we had ambitious plans such as formulating a collaborative research project in which all four laboratories could participate, or writing a book together, or organizing ourselves into a consulting entity. It didn't take long to realize that delving into all these activities would be biting off more than we could chew right now. It is a major challenge to define a collaborative project since the emphases of our respective laboratories are so varied (sports medicine, osteoarthritis, total joint replacement, trauma and children's orthopaedic issues). So, we decided to step back a little and simply meet together every now and then, and try to foster a spirit of congeniality. We have ended up doing things like acting as a sounding board for each other's projects, sharing laboratory resources, and getting each other into our respective institution's courses and workshops at no charge. Perhaps something more may develop, and maybe not. In the meantime, it's fun, it's helpful, and the potential is great. I wanted to affirm those of you who do this sort of thing in other

parts of the country, and exhort others who don't try it. There's great power in laminar research.

Bill Lew is the Senior Scientist in the Midwest Orthopaedic Research Foundation, Minneapolis, MN (blew@morfn.org). He has an MS in theoretical and applied mechanics from Northwestern University and has been working in orthopaedic biomechanics for 25 years. Bill's research interests include sports medicine, total joint replacement, and orthopaedic design.

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Announcing a New Journal *Crash Prevention and Injury Control*

Official Journal of the Association for the Advancement
of Automotive Medicine

Editors-in-Chief
D.C. Viano W. D. Pilkey

Aims and Scope

The purpose of the journal is to bridge the disciplines of medicine, engineering, public health, and traffic safety in order to foster the multidisciplinary science of injury prevention and control. The archival journal focuses on applied research, interventions, and evaluation within the areas of crash prevention and control.

General topics within the journal's scope are: impact biomechanics; vehicle crashworthiness; occupant restraint systems; epidemiology and clinical outcome studies; data analyses with specific application to crash injury mitigation; evaluation of interventions; and economic consequences. The journal will include full-length papers, brief technical notes, survey articles, and book reviews.

Submit Manuscripts to:

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Attach the manuscript as a file and email it to ASL-
MANE@virginia.edu.

For more information, contact Susanne Jones, Gordon and Breach
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From the Past-President

Mark D. Grabiner

As Past-President, it is my privilege to serve as chairperson of the Awards Committee of the American Society of Biomechanics. The Awards Committee is pleased to open nominations for the 1999 award categories. All materials are to be submitted to the Awards Committee Chairperson. In addition, nominees for the Clinical Biomechanics Award and the Journal of Biomechanics Award must also submit the scientific abstracts to the Program Committee Chairperson. Nominations will close May 31, 1999.

Borelli Award

The Borelli Award, the most prestigious honor given by the American Society of Biomechanics, recognizes outstanding career accomplishment and is awarded annually to an investigator who has conducted exemplary research in any area of biomechanics. This award is open to all scientists, including non-ASB members, but excluding ASB officers and members of the Awards Committee. Candidates may be self-nominated or nominated by others including non-ASB members. Selection is based on originality, quality, and depth of the research and its relevance to the field of biomechanics. A letter of nomination, a comprehensive curriculum vitae and five publications on a single topic or theme must be submitted. The awardee is expected to attend the 1999 Annual Meeting of the American Society of Biomechanics and to deliver the Borelli Lecture. The award consists of a \$1500 check and an engraved plaque.

Young Scientist Awards

These awards recognize early achievement for promising young scientists, and is awarded annually to one predoctoral student and one postdoctoral scientist. Nominees for these awards must be current or pending members of ASB. Candidates may be self-nominated or nominated by an ASB member. For the Predoctoral award, submitted materials must include a letter of support from the department head or graduate research advisor, a short description of the nominee's current research involvement, a curriculum vitae, copies of published manuscripts and/or manuscripts submitted for publication, and an abstract of original research for presentation at the 1999 Annual Meeting having the nominee as first or sole author. For the Postdoctoral award, submitted materials must include a letter of nomination, the nominee's curriculum vitae, copies of published manuscripts and/or manuscripts submitted for publication, and an abstract of original research for presentation at the 1999 Annual Meeting having the nominee as first or sole author. These awards include a \$200 check, a certificate, and a waiver of conference fees for the 1999 Annual Meeting.

ASB-Microstrain Award

Microstrain, Inc., of Burlington, Vermont annually funds an award that recognizes superior achievement in the area of instrumentation. The award competition is open to undergraduate and graduate students who have made an innovative application of existing instrumentation or have developed new instrumentation

for use in the field of biomechanics. The awardee is expected to attend the 1999 Annual Meeting of the American Society of Biomechanics and to deliver a presentation of the work recognized by the award. The award includes a \$1000 check and an engraved plaque.

Journal of Biomechanics Award

This award, sponsored by Elsevier Science Ltd, publishers of the *Journal of Biomechanics*, recognizes substantive and conceptually novel mechanics approaches explaining how biological systems function. Nominees must be members of ASB. A cover letter specifying the candidate's interest in being considered for the Journal of Biomechanics Award and a copy of the abstract of original research submitted presentation at the 1999 Annual Meeting having the nominee as first or sole author should be submitted to the Chairperson of the Awards Committee. In addition, the abstract of original research having the nominee as first or sole author must be submitted to the Program Chairperson. The award decision will be based on the presentation of research by award finalists at the annual meeting. The award includes a \$500 check and an engraved plaque.

Clinical Biomechanics Award

This award recognizes outstanding new biomechanics research targeting a contemporary clinical problem and is co-sponsored by Elsevier Science Ltd, publishers of *Clinical Biomechanics*. Nominees must be members of ASB. A cover letter specifying the candidate's interest in being considered for the Clinical Biomechanics Award and a copy of the abstract of original research submitted presentation at the 1999 Annual Meeting having the nominee as first or sole author should be submitted to the Chairperson of the Awards Committee. In addition, the abstract of original research having the nominee as first or sole author must be submitted to the Program Chairperson. The award decision will be based on the presentation of research by award finalists at the annual meeting. The award includes a \$250 cash prize and an engraved plaque.

Travel Award

A travel award of up to \$1000 is awarded to foster collaborative research and interaction among scientists by helping to offset the costs of traveling to a host institution. All regular ASB members are eligible to apply. A cover letter describing the details of the project that is planned, a copy of the applicants curriculum vitae, and indication of availability of any matching funds from the host's or candidate's institution (desirable but not required) should be submitted. The funding period is from July 1 through June 30. Recipients of the Travel Award are expected to present a poster of the funded project at the 2000 Annual Meeting that will be held in Chicago, Illinois.

Student Travel Awards

These awards, generally around \$250, are available only to ASB student members and are intended to offset the cost of travel to the annual meeting. Student members can apply for these awards after receiving notification of their abstracts being accepted for presentation. A copy of the accepted abstract, acceptance letter, and a letter from the student's advisor indicating a need for assistance should be submitted to the Chair of the Awards Committee.



Between the Lakes

Joseph Hale

Let it snow . . .

One of the highlights of the NACOB '98 meeting in Waterloo was the Keynote Address by Dr. Richard Nelson, Emeritus Professor of Biomechanics at Penn State University. During his career, Dr. Nelson, or 'Dick' as he is known to his colleagues and friends, has 'fathered' a good many biomechanists as indicated by the number of conference attendees who were either directly or indirectly influenced by him. In his presentation, Dick recounted his experiences in the field of Forensic Biomechanics. These experiences included reconstructing a number of snow sledding accidents to determine whether a particular device was defective, thereby placing the rider at risk. Being a native Minnesotan, he was quick to assure the audience, "Dick knows sledding".

Given the prevalence of snow in Minnesota, it seems likely that anyone who spends very much time in this climate probably knows a good deal about outdoor winter activities of one form or another. As a recently transplanted Minnesotan, it occurred to me that perhaps, like Dick, "Joe knows sledding", or at the very least I could learn. Despite having lived in the more temperate climes of Virginia for the past six years, snow and sledding are not exactly foreign concepts for me. I grew up in Kansas and remember many wintery days spent sledding down snow-covered hills (contrary to popular belief, there are hills in Kansas!).

While many of you probably share similar memories (my apologies to those of you who grew up in southern California), that may have been more years ago than some of us, myself included, care to admit and many of us probably have not sledded since then. As I got older, my interest in sledding was abandoned in favor of alpine skiing, which conceptually is not all that different from sledding but requires considerably less effort to get back to the top of the hill! Fortunately, having a very active 18 month old son has given me cause to re-explore sledding as a winter recreational pastime.

To obtain a better appreciation of state-of-the-art sledding technology, I recently spent some time perusing the latest models at our local sled distributor, Toys-R-Us. Contrary to the traditional image evoked by the definition given in the American Heritage Dictionary (*n.* A vehicle mounted on runners, used for moving over snow and ice.), sleds are available in a variety of shapes and sizes, ranging in price from \$2 to \$50. Low-end models typically consist of a round, flexible plastic or aluminum saucer. The middle-range plastic models often incorporate a thin layer of padding and possibly some sort of braking mechanism to provide the rider with at least the illusion of being able to steer. Although such accessories are intended to improve the rider's comfort (safety?), they generally result in a sled which is heavier and more difficult to pull uphill. Amid the proliferation of molded plastic and inflatable sled designs, the classic Flexible Flyer with its ash platform and steel runners can still be found for around \$15. At the high-end, toboggans which allow you to share your downhill adventure with one, three or five companions of your choice are also available. In addition to store-bought models, make-shift sleds can be crafted from other objects. Although I deny any personal involvement in such activities, plastic trays as might be found in a dormitory cafeteria seem to be the sled of choice on many northern university campuses. Other possibilities, although clearly not intended for such purposes, include trash can lids, car hoods, and inner tubes.

Sledding and tobogganing are popular winter activities wherever there is deep snow and steep hills. Although its exact origins are unknown, the earliest sleds were used long before the discovery of the wheel to transport heavy objects from one place to another. Vehicles with runners were developed in Scandinavia as early as the Mesolithic Era, 65-100 million years ago. In ancient Rome, Celto-Germanic invaders pressed their large shields into service as sleds, sliding down a mountain slope to launch a surprise attack. Sledding did not attain the status of an organized sport until much later, with the first official race track being built in Switzerland in 1884. In the United States, sleds for sport and recreation became commercially available in the 1870's. Most of the early sleds had rigid wooden or iron runners and could not be steered. By the 1890's, sleds were improved by incorporating movable steel runners, enabling one to steer. Another later improvement was the addition of grooved runners to reduce sideways slipping.

In contrast to the major innovations in skiing and snowboarding equipment, the basic sled design has undergone relatively few changes over the years. The one notable exception has been the ongoing efforts to enhance sled performance for Olympic-level competition in events such as bobsled and luge; however, such advances don't transfer especially well to the low budget, backyard variety sled. In the latter case, sled design is seemingly driven more by visual appeal to the consumer than by actual improvements in performance. Unfortunately, technical information regarding performance and safety aspects of a particular sled design is typically not provided by the manufacturer to assist the consumer in evaluating what may be subtle, but important design differences.

The unfortunate consequences of poor (or nonexistent) engineering and research in sled design was made painfully clear during Dick's presentation. With the aid of computer modeling, an actual sledding accident that left the rider paralyzed was reconstructed. Although sledding injuries can and do occur in all age groups, the majority occur in children between the ages of 5 and 14, with 60-70% involving males. In 1995, more than 50,000 children across the United States suffered sledding-related injuries, ranging from mild to fatal. The most common were head injuries and extremity fractures.

Based on injuries treated in the emergency department at Boston Children's Hospital, there is a sense that a greater number of injuries are related to the use of inflatable snow tubes. Ironically, inflatable sleds were initially developed at the request of an alpine ski patrol to retrieve injured skiers from inaccessible places where the use of a conventional metal or fiberglass sled was impossible. Under certain snow conditions, snow tubes can develop great speed and offer poor steerability and maneuverability. Despite the propensity for injury, tube runs are becoming an increasingly popular addition to downhill ski areas.

In the interest of safe sledding, the AAOS issued a position statement in March 1997 which established guidelines including sledding only in designated areas free of fixed objects and supervision of children by parents. In addition to heeding such common sense guidelines, the risk of sledding injuries can be minimized by the use of a helmet and goggles.

Surprisingly, we have yet to receive a measurable snowfall in the Twin Cities this season. But as soon as we do, I plan to expand my quest for sledding enlightenment to the experimental realm. If anybody asks, I've gone sleddin'.

Happy Holidays!



Communications Committee

Gerald Smith

As most members are probably aware, the proceedings of the annual conferences have been going electronic for several years now. The recent NACOB98 meeting in Waterloo was added to the online site shortly before the meeting in August. The NACOB proceedings included nearly 300 papers all of which are available via the world wide web. Other popular online resources include the Graduate Program database which provides contact and application information for biomechanics programs nationally as well as some international listings. The development of these resources—like almost everything on the web—is still in an experimental stage. The ASB site was initially developed by Jill McNitt-Gray and her students at USC. After she finished her tenure as Education Chair for the society, the web site was moved to the current location at Oregon State University and a new ASB Executive Board position responsible for society communications was instituted. The past three years of web site development have been done under the umbrella and good graces of universities providing the web hosting software/hardware as well as consulting services. These three years of experimenting have proven the popularity and utility of providing various resources via the web. It is time for ASB to move forward from these experiments and commit to its own web site and directly pay for the services it receives from web hosts. These arguments were forwarded to the ASB Executive Board recently along with some cost/benefit analysis. The board has agreed that the usefulness of the web resources to the membership makes them worth funding. Moving the ASB web site will be slightly disruptive in the short term as users find access being rerouted to a new site; bookmarks will be outdated. But it will offer stability in the long term. We are currently contracting with a web host, reserving a unique ASB domain name, and recreating the new web site. The changes should be in place by late Fall. This process will give ASB a permanent web address which is readily identifiable and which will not change as new web editors take over periodically. Monitor the biomechanics list (biomch-l) for announcements about the new site. Please return comments/suggestions about the ASB online resources via email: Gerald.Smith@orst.edu

We Need Your Contribution

Members are encouraged to contribute to the newsletter. A note, a letter to the editor, a lead on an interesting story, information about a scientific meeting, in fact anything of interest to the ASB membership would be most welcome. Send information scrawled in long-hand, via e-mail, or on computer diskette for PC or Macintosh. If you have any other ideas, please get in touch. The next newsletter will be published in May 1999. **Deadline for submission of materials is 22 April 1999!**

Job Opportunities

Kathy Browder

Ergonomics Engineer with Erik Adams & Co., Dublin, GA. Responsible for development, implementation and evaluation of various components and activities of Ergonomics Program. BS in IE, ME, or EE and 2-5 years experience in manufacturing/industrial environment. Apply at WWW.AJB.DNI.US. Refer to job # IX1786505.

Senior Ergonomics Specialist with Abbott Laboratories, Abbott Park, IL. Establish, develop and maintain an effective ergonomic program to reduce the occurrence and cost of work-related musculoskeletal disorders. Apply at WWW.AJB.DNI.US. Refer to job # IX1785459.

Industrial Engineer-Ergonomics - Involved in risk, safety situations. Implementation of ergonomic programs. BS in Engineering. Contact Bill Elias, Elias Associates, Inc., PO Box 396, East Brunswick, NJ 08816, tel: 732-390-4600, fax: 732-390-9769, email: jelias946@aol.com.

Biomedical Engineering Technician - Technical support of biomedical instrumentation and electronic systems in hospital environment, including maintenance, repair, installations, customer training, and customer consultation. AS required/BS preferred with knowledge of computers and/or computer networks. BMET certification and experience desirable. Mail resume to VA Medical Center, Biomedical Engineering (138B), San Francisco, CA, 94121; fax: 415-750-6955; email: jeffrey.whitman@med.va.gov. Ref job # IT1806863.

Product Development Engineer - Development and maintenance of Rhinology products; technical consultant to facilitate proper design of new/modified products. BS in Mechanical or Biomedical engineering, 2 years experience in product development. Fax resume to 901-373-0232, email to debbie.cary@smith-nephew.com. Ref job # IT1748507.

Integration and Test Engineer - Dynamic Research, Inc., Los Angeles, CA. Scheduling, planning and coordination for hardware and software-based vehicle systems integration. MS ME or EE and 10 years experience in integrated systems development. Send resume to: Dynamic Research, Inc., 355 Van Ness Ave, Suite 200, Torrance, CA 90501; fax: 310-212-5046; email: EAD@DYNRES.COM. Ref job # 765504. For more information, visit WWW.DYNRES.COM

Ergonomics Engineer - Caterpillar, Inc., Mossville, IL. Develop and apply ergonomic solutions to vehicle design; aid in research and development of ergonomic tools and techniques. BS in Engineering and either an advanced degree in Human Factors or Ergonomics or appropriate vehicle ergonomic experience. Submit resume with cover letter to: Mr. Michael M. Manwaring, LM, Caterpillar Inc., Corporate Professional Employment, 100 NE Adams Street, Peoria, IL 61629-1490; fax: 309-675-6476

Human Factors Engineer/Usability Engineering Consultant Perform user interface requirements analysis, design, development, prototyping, and testing. Master's degree in Human Factors, Industrial, Experimental, Cognitive Psychology, or Computer Science plus 3 years experience; PhD preferred. Email resume to jobsh@us.ibm.com or fax to 800-426-6550. Ref job # jof25216.

Biomechanical/Seat Comfort Engineers - BS or MS in Engineering. Extensive coursework or experience in ergonomics or biomechanics, with a strong preference for seat-related knowledge. Contact Bob Millman at AutoPro Technical Recruiting, tel: 248-967-0700, fax: 248-967-0788, email: autopro@rust.net. Ref job # MN-SE-bde4bbea

Human Factors Engineer/ Ergonomics - Arthur D Little, Boston, MA. Development of personal equipment including evaluating physical interfaces. BS in Human Factors and 2-5 years experience required. Knowledge of military systems, biomechanics, specifications and standards desirable. Email resume to bauer.thomas@adlittle.com or fax to 617-498-7235.

Ergonomics Consultant - Travelers Property Casualty, Atlanta, GA. Provide ergonomic consulting services to clients involved in manufacturing, financial services, healthcare, retail, and distribution. MS in engineering, ergonomics or biomechanics plus 5 years experience. AEP, CPE or CIE preferred. Position requires 50% travel. Send resume and salary requirements to: Ken Haigler, Travelers Property Casualty, P.O. Box 473500, Charlotte, NC 28247- 3500; fax: (704)-540-3224; email: careers@travelers.com

Staff Engineer - American Honda Motor Company, Los Angeles, California. Provide expert technical analysis and advice for Legal Staff and management; investigate collision vehicles, devise and develop tests to demonstrate professional opinions. BS (MS/PE preferred) in Engineering and 3+ years of vehicle crashworthy/occupant protection experience. Send resume and salary history to: American Honda Motor Co., Inc., 1919 Torrance Blvd., M/S 100-1C-3A, Job Code: CC/JH2201, Torrance, CA 90501 Ref job # 791208.

Functional Clothing Mechanical Engineer - Arthur D. Little, Boston, MA. Design/develop functional and protective clothing (i.e., combat uniforms, body armor, g-suits, dry suits), individual equipment (i.e., load bearing equipment, survival vests, harnesses), and related softgoods. BS ME or Materials Science, MSME, 2-5 years experience in physiological impact assessments, biomechanics, instrumentation, experimentation, and human factors. Email resumes to: montecalvo.gary@adlittle.com Ref job # 845738

Biomedical Engineering Research Assistant - Study ergonomics, biomechanics, electromyography, and other areas related to workplace health and safety. BS or MS in electrical, mechanical, or biomedical engineering. Send resumes to Ted Clancy, Liberty Mutual Research Center for Safety and Health, 71 Frankland Rd., Hopkinton, MA 01748; tel: 508-435-9061 x206; email: msmail5.clancye@tsod.lmig.com.

Ergonomics Specialist with ManPower Technical, San Jose, CA. Integration of ergonomics into business practices. BS in Engineering with emphasis in Ergonomics, Human Factors or related field. MS or Certified Professional Ergonomist preferred. Contact Sandra Lawrence at 408-557-2713 or Slawrence@manpower-tech.com. Ref job # MT8238

Grants Development Manager - Duties include conducting marketing analysis of the need for grant writing support services within osteopathic profession, identifying funding opportunities, developing contacts with external funding agencies, and preparing grant proposals. Advanced degree and 5 yrs experience. Submit resume with salary requirements to Human Resources, American Osteopathic Association, 142 E. Ontario, Chicago, IL 60611; FAX: 312-202-8214.

Director, Research Laboratory - Dept of Rehabilitation Medicine, Albert Einstein College of Medicine/Montefiore Medical Center, New York, NY. Plan, organize, direct and execute biomedical research activities that correlate with departmental fields of interests, particularly in biomechanics. PhD in Biomechanics or Engineering. Minimum 5 years experience in a similar position, demonstrated experience in conducting research and publishing, and proven background in obtaining grants. Contact Barry Rodstein, MD, MPH at barry.r@mci2000.com for more information.

FACULTY POSITIONS

Motor Control/Motor Learning - Assistant Professor tenure-track position. Supervision and teaching of graduate/undergraduate students. PhD, with promising publication record and ability to develop research program supported by external funding. Send CV, publication reprints, names of 3 references, and cover letter stating future research goals to Dr. Barry Fowler, Director, Graduate Programme, Kinesiology and Health Science, York University, North York, Ontario M3J 1P3. For more information, visit <http://www.yorku.ca/faculty/academic/bfowler>. Deadline: 12/31/98.

Mechanical Engineering (Biomechanics) - Ass't Professor, tenure-track faculty position to teach graduate/undergraduate courses, and initiate and sustain strong sponsored research programs. Background/interest in manufacturing processes, controls, or biomechanical engineering. PhD in engineering required. Submit resume and names of three references to: Professor Suresh G. Advani, Acting Chair, Department of Mechanical Engineering, University of Delaware, Newark, DE 19716-3140. Deadline: March 1, 1999.

Mechanical Engineering - Ass't Professor tenure-track faculty position. Duties include teaching graduate/undergraduate courses, initiating and sustaining strong sponsored research programs. PhD in engineering, with background/research interest in manufacturing processes, controls, or biomechanical engineering. Submit resume and names of 3 references to Professor Suresh G. Advani, Acting Chair, Department of Mechanical Engineering, University of Delaware, Newark, Delaware 19716-3140. Deadline: 03/01/98.

Biomechanics - Ass't Professor tenure-track faculty position. Teach undergraduate courses in biomechanics; direct biomechanics laboratory; develop research program in biomechanical aspects of movement; secure external grants and contracts. Submit cover letter, vita, and 3 letters of recommendation to Dr. Jim McMillan, Health & Kinesiology, P.O. Box 8076, Georgia Southern University, Statesboro, GA, 30460-8076. tel: 912-681-0495; fax: 912-681-0381; email: jmcmilljb@GaSoU.edu.

Biomechanics - Ass't Professor tenure-track faculty position in the Dept of Health & Physical Education at California State University, Sacramento. For more information, please visit the university's web site at <http://csueb.sfsu.edu>.

Industrial Engineering - Professor and Head of Dept. of Industrial Engineering at North Carolina State University. PhD in Industrial Engineering or related field, distinguished record of scholarly achievement, and qualified for appointment as tenured Full Professor. Send resume, names of at least 3 references, and other supporting documentation to: Chair of IE Head Search Committee, Box 7901, North Carolina State University, Raleigh, NC 27695-7901. Deadline: 01/15/99.

POST DOCTORAL TRAINING OPPORTUNITIES

Post-Doctoral Traineeship - Designed to provide physicians and scientists the training necessary to become leaders in rehabilitation-related research. Trainee works with mentor in one of five areas: Biomechanics, Biostatistics/Epidemiology/Health Services Research, Multiple Sclerosis, Neuromuscular Disease, Pain. Trainees are expected to initiate projects, present and publish their findings, and be capable of submitting NIH grant applications. PhD, MD or comparable doctoral degree required. Contact Michele M. Merten, Mayo Clinic Dept. of Physical Medicine and Rehabilitation, 200 First Street SW, Rochester, MN 55905; tel: 507-284-2946; fax: 507-284-0920.

Post-doctoral fellow/research associate - immediate opening in the Orthopaedic Biomechanics Laboratories at The University of Chicago for gait research, including biomechanical modeling and simulation. PhD in Biomechanics or related discipline with concentration in mechanical engineering and coursework in rigid body dynamics required; must have excellent grammatical and writing skills. Please send a resume, statement of research interests, C.V., and 3 references to Louis F. Draganich, Ph.D., 5841 S. Maryland Ave/MC3079, Chicago, IL., 60637. Email replies must be followed by printed copies (ldragani@surgey.bsd.uchicago.edu).

NOTE: Applicants are strongly encouraged to contact the listing individual/institution directly to determine the current status of a position and to obtain additional information.

Additional opportunities can be found on the ISB home page (<http://isb.ri.ccf.org/jobs/index.html>) and on the Biomechanics World Wide home page (<http://www.per.ualberta.ca/biomechanics>) under the Career Opportunities category.

Calendar of Events

Don Anderson

1-6 Dec 1998 American Society for Bone and Mineral Research Meeting, San Francisco, CA. American Society for Bone and Mineral Research Tel: 202/857-1161; Fax: 202/223-4579.

7-9 Dec 1998 2nd International Workshop on Biomedical Aspects of Manual Wheelchair Propulsion: The State of the Art II, Amsterdam. Marloes L. den Besten, Tel: +31-20-44 48470; Fax: +31-20-44 48529; e-mail: M_L_den_Besten@fbw.vu.nl, www.fbw.vu.nl/events/wheelchair98/program.htm.

21-24 Jan 1999 17th ASMI Injuries in Baseball Course, American Sports Medicine Institute, Birmingham, Alabama. Judi Drew, American Sports Medicine Institute, 1313 13th Street South, Birmingham, AL 35205. Tel: 205/918-2135; Fax: 205/918-0800; e-mail: judyd@asmi.org.

10-13 Mar 1999 4th Annual Meeting of the Gait and Clinical Movement Analysis Society (GCMA), Dallas, Texas. Frank L. Buczek, Jr, PhD, Program Chair, 1999 GCMA Annual Meeting, Shriners Hospitals for Children, 1645 West 8th Street, Erie, PA 16505. e-mail: fbuczek@erie.net.

2-3 Apr 1999 Advances in Tendon Lesions, Injuries and Repair, Genval (Brussels), Belgium. F. Schuind, MD, PhD, Department of Orthopaedics, Erasme University Hospital, 808 route de Lennik, B-1070 Brussels, Belgium. Tel: + 32 2 555 68 44; Fax: + 32 2 520 35 56; e-mail: fschuind@ulb.ac.be.

16-18 Apr 1999 36th Annual Rocky Mountain Bioengineering Symposium, Copper Mountain, Colorado. RMBS Conference Chair, Dr. P.E. "Pat" Patterson, Dept. of IMSE, 205 Engineering Annex, Iowa State University, Ames, IA 50011. Tel: 515/294-8661; e-mail: ppatters@iastate.edu; www.rmbs.org.

20-23 May 1999 18th Southern Biomedical Engineering Conference & 2nd International Conference on Ethical Issues in Biomedical Engineering, Clemson University, Clemson, SC. Subrata Saha, Ph.D., Director, Bioengineering Alliance of South Carolina, 313 Rhodes Research Center, Clemson University, Clemson, SC 29634-0906. Tel: 864/656-7603; Fax: 864/656-4466; e-mail: amarand@clemson.edu; sbec.abe.msstate.edu Abstracts due December 18, 1998.

2-5 June 1999 Annual Meeting of the American College of Sports Medicine, Seattle, WA. Michael Feltner, Dept. of Sports Medicine & Physical Ed., Pepperdine University, Malibu, CA 90263. Tel: 310/456-4312; Fax: 310/317-7270; e-mail: mfeltner@pepperdine.edu; www.acsm.org/sportsmed.

16-20 June 1999 ASME Summer Bioengineering Conference, Big Sky, Montana. Program Chair, Vijay K. Goel, Ph.D., Iowa Spine Research Center, Department of Biomedical Engineering, 1410 EB, College of Engineering, University of Iowa, Iowa City,

IA 52242. Tel: 319/335-5638; Fax: 319/335-5631; e-mail: Vijay-Goel@uiowa.edu; www.asme.org/divisions/bed/summer99.html

30 June - 6 July 1999 XVII International Symposium on Biomechanics in Sports, Hillary's Resort and Underwater World, Perth, Western Australia. Ross Sanders PhD, Chair ISBS99 Organising Committee, Senior Lecturer in Biomechanics, Edith Cowan University. Tel: 61 8 94005860; Fax: 61 8 94005717; e-mail: r.sanders@cowan.edu.au; www.uni-stuttgart.de/External/isbs/. Papers due February 14, 1999.

10-15 July 1999 14th Symposium of the International Society for Posture and Gait Research, University of Waterloo, Waterloo, Ontario, Canada. Aflab Patla, Ph.D and James S. Frank, Ph.D. Chairs, Department of Kinesiology, University of Waterloo, Waterloo, Ontario, Canada, N2L 3G1. Tel: 519/888-4567, x 6884; Fax: 519/885-2694; e-mail: ispg@healthy.uwaterloo.ca; www.ahs.uwaterloo.ca/ispg.

5-7 Aug 1999 Fourth Symposium of the ISB Technical Group on Footwear Biomechanics, Greenwood Inn, Canmore, Alberta, Canada. Darren Stefanyshyn. e-mail: darren@KIN.UCALGARY.CA; www.uni-essen.de/~qpd800/FWISB/Canmore99.html. Papers due March 31, 1999.

8-13 Aug 1999 XVIIth Congress of the International Society of Biomechanics; Calgary, Canada. ISB99, Attention: Margaret-Anne Stroh, The University of Calgary, Conference Mgmt. Services, 1833 Crowchild Trail N.W., Calgary, Alberta, T2M 4S7 CANADA. Tel: 403/220-6229, Fax: 403/284-4184, e-mail: mastroh@acs.ucalgary.ca. Abstracts due January 31, 1999.

21-23 Oct 1999 Annual Meeting of the American Society of Biomechanics, Pittsburgh, PA. J.K. Suh, Ph.D., University of Pittsburgh, Pittsburgh, PA. See page 15 for additional meeting information and call for abstracts.

4-8 Nov 1999 European Medical & Biological Engineering Conference (EMBEC'99), Vienna, Austria. Heinz-Bodo SCHMIEDMAYER, Technische Universitaet Wien, Wiedner Hauptstrasse 8-10/325, Institut fuer Mechanik, A-1040 WIEN / AUSTRIA / EUROPE, Tel.: (+43 1) 58 801 x 5524, Fax: (+43 1) 587 58 63; e-mail: Heinz-Bodo.Schmiedmayer@tuwien.ac.at, www.univie.ac.at/EMBEC99/.

3-8 Aug 2002 4th World Congress on Biomechanics, University of Calgary. Dr. Benno Nigg and Dr. Ronald Zernicke.



Funding Opportunities

Peter Vint

Hello from the land of NASCAR! In the last funding opportunities column, I compiled a list of grant writing and funding resources. Many of these resources included Internet links and many new links have been added. If you have not yet done so, you may wish to bookmark this page at: www.orst.edu/dept/HHP/ASB/newsletter/V11N1/funding.html

The following guides are available in many libraries and grant offices at universities. Some of these can be found on-line at: www.opengroup.com/rabooks/welcome.shtml.

General Guides to Sponsors

The Catalog of Federal Domestic Assistance, published by the federal government, provides a basic reference to all Federal assistance programs. Arranged alphabetically by federal agency and cross-referenced by subject, program, and popular name or acronym. The Catalog may be accessed through the Internet at: www.gsa.gov/fdac/.

The Annual Register of Grant Support 1999 includes details of the grant support programs of government agencies, public and private foundations, corporations, community trusts, unions, educational and professional associations, and special interest organizations. Indexed by organization, geographic location and subject area.

Directory of Research Grants, arranged by subject area, contains brief descriptions of federal, private, corporate, and professional organizations that support programs in the subject area. Indexed by organization name, subject area and name of grant program.

The Grants Register contains a comprehensive list of international scholarships and fellowships; research grants; exchange opportunities; vacation study and travel awards; competitions and prizes; professional and vocational awards. Indexed by subject area, award and awarding organization.

The Directory of Biomedical and Health Care Grants describes nearly 4,000 programs sponsored by corporations, professional associations and special interest groups, as well as those funded by state and local governments on sources of pure research and health care services to facility expansion and in-service training programs. The Directory of Biomedical and Health Care Grants gives you the facts on funding support for: graduate scholarships, internships, assistantships, faculty fellowships, conferences, dissertations, individual projects and facilities or organizations. To aid searches for federal grants, it lists National Science Foundation (NSF) announcement numbers, National Institutes of Health (NIH) program numbers, requests for application (RFA) numbers, and requests for proposal (RFP) numbers.

CRISP: Biomedical Index to Public Health Service (PHS) Supported Research is the print version of the listing of PHS supported grants and contracts. Indexed by subject, project number, and investigator.

Directories of Private and Corporate Sponsors

The Foundation Directory, the primary sourcebook of non-profit, non-governmental foundations, lists and describes very briefly all foundations with assets over \$1 million which make grants totaling at least \$100,000 in one year. Indexed by organization, geographic area, and field of interest.

The Foundation Grants Index, published annually, lists grants of \$5,000 or more awarded by the 100 largest foundations. Organized by state; indexed by recipient, key words and phrases, and subject categories.

Taft Foundation Reporter contains profiles of 500 major private foundations. Organized alphabetically, the directory is indexed by fields of interest, state, and types of grants awarded.

Taft Corporate Giving Directory profiles more than 500 corporate grant programs that give directly or through corporate foundations. The directory is indexed by headquarters' state, type of grant, type of recipient, operating location, and sponsoring company. Information on company officials is also included and indexed.

The National Directory of Corporate Giving provides detail information on 1,905 corporate foundations and an additional 990 direct-giving programs include such essential information as the names of key personnel, types of support generally awarded, giving limitations, financial data, purpose and activities statements, and application procedures. Some general information on corporate funding may be found by visiting: fdncenter.org/book/ndcguid.html.

Special Interest Guides

Directory of Financial Aid for Women 1997-1999 contains descriptions of federal and private programs designed primarily or exclusively for women, and includes sections on scholarships, fellowships, loans, grants, awards and internships.

International Funding Guide provides information on funding opportunities and services available to institutions and individuals seeking support for international activities. The Guide includes federal and private agencies, foundations, foreign governments and multilateral agencies. Indexed by agency, program type, and geographical area.

Computer Resource Guide for Nonprofits includes descriptions of software packages appropriate to nonprofits as well as a guide to sponsors, mostly private corporations and foundations, which have an interest in computer programs or grants for computer equipment. Indexing includes type of award, recipient, geographic area and product vendor location.

Please help me help you by sending me your suggestions for future topics for the funding opportunities column (pfvint@homas.uncg.edu). Also, if you have any useful resources that you would like to share with the Society, I would be happy to announce them in upcoming issues. Until then . . . Happy hunting!

Students' Corner

Ladrie Bressel

Greetings from your new student representative reporting to you from the Rocky Mountain region home of the Tour de France podium finisher Bobby Julich, the Jon Benet Ramsey murder case, and oh yeah the superbowl champion Denver Broncos.

I would like to begin by complimenting and thanking those student representatives who preceded me and established a high standard for the student representative position. Serving in this capacity is an excellent opportunity to meet and talk with members of the Executive Board and to engage in discussions with other student members and mentors regarding career issues. The primary purpose of the student representative is to act as a facilitator between the students and the executive board and to further student involvement in the society. Although I am new to the position, I would like to encourage other students to consider this position for the 1999-2000 term.

Having attended the NACOB 98 meeting in Waterloo, I am reminded of the benefits for disseminating information and networking among colleagues within a society. Among the many highlights of NACOB 98 was the keynote address given by Dr. Nelson on forensic biomechanics as well as the debate between Dr. Zajac and Dr. Andriacchi regarding the best way to calculate joint torques. As students know, many professional meetings are not feasible due to costs. However, the ASB provides excellent student rates and travel awards to offset the cost associated with travelling to the meeting. For example, of the nine student members who applied for travel awards, all received \$250. With the financial incentives given by the ASB, which include other awards listed in this newsletter, I encourage all students to attend and experience the annual meeting in Pittsburgh, PA 1999.

Regarding the upcoming year, benefits available to the students will continue to include the job resource center, the virtual mentor program, and open email communication via the student representative and the Executive Board. The job resource center is a collection of postings including recent research, academic, and industrial positions taken from the internet at various sites. The virtual mentor program consists of email communication between students and mentors in the field of biomechanics and bioengineering. If you would like to receive information on either of these programs, please email me at ebresse@blue.unco.edu. In addition to these services, I hope to implement more student opportunities within the ASB (e.g. recruiting a speaker for the student luncheon at the Pittsburgh meeting). I also would like your input regarding new ideas to benefit students, so please email me with your suggestions.

Here are some facts regarding the job opportunities in our field. According to statistics obtained from the U.S. Department of Labor, the growth potential for university/college faculty is projected to be 14 -24% by the year 2005. With regards to

bioengineering, the projected growth rate is 25% - 35%. From these statistics, it is apparent that jobs available to us students are expected to increase yet remain competitive. It therefore is imperative that we prepare ourselves through academia, research and by getting involved with ASB!

Let the voice of students be heard! Get involved and recruit your fellow students! That's all folks!



Announcement

ASB Regional Student Meeting

In an effort to foster collaboration and the exchange of knowledge among biomechanics programs in the greater Southern California area, Michele LeBlanc (California State Polytechnic University at Pomona) and Michael Feltner (Pepperdine University) announce the inaugural Southern California Conference on Biomechanics (SCCB). The conference is intended to provide an opportunity for graduate and undergraduate students in biomechanics to present their research to the local scientific community. The conference will be held April 9-10, 1999 on the campus of Cal Poly Pomona. Thanks to the sponsorship of the American Society of Biomechanics and the host institutions, there are no registration fees for conference attendance. Keynote addresses at the conference will be provided by Dr. Jesus Dapena of Indiana University and Dr. William C. Whiting of California State University, Northridge. More information regarding the conference can be obtained at the conference web site: <http://www.intranet.csupomona.edu/~mkleblanc/sccb/>

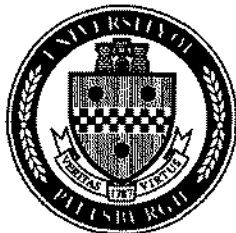


Attention ASB Members

If you are interested in becoming more active in the Society (e.g., serving on a committee or chairing a conference session), contact Suzanne Smith, Education Committee Chair (page 4) with your name, address, phone/fax number, email address, and your desired involvement. This information will be included in a database which is periodically updated and distributed to the Executive Board. Thanks!



23rd Annual Meeting of the AMERICAN SOCIETY OF BIOMECHANICS



**University of Pittsburgh
Pittsburgh, Pennsylvania**

October 21-23, 1999

First Call for Abstracts

Meeting Chair

Jun-Kyo Suh, PhD
Musculoskeletal Research Center
E1641 Biomedical Science Tower
200 Lothrop Street
Pittsburgh, PA 15213-2582
(412) 648-1985
jsuh@pitt.edu

Information

Information about the meeting, accommodations and/or a Call for Abstracts packet may be obtained from the Meeting Chair, Jun-Kyo Suh, or downloaded from the meeting web page:
<http://motion2.ortho.pitt.edu/asb.html>

Program Chair

Thomas S. Buchanan, PhD
University of Delaware
126 Spencer Labs
Newark DE 19716
(302) 831-2410
buchanan@udel.edu

Abstract Deadline

Abstracts must be received by April 1, 1999 in order to be considered for presentation at the meeting. Notice of acceptance will be given by June 1, 1999. For additional information about abstract preparation, please contact the Program Chair, Thomas S. Buchanan.

Awards Committee Chair

Mark D. Grabiner, PhD
Cleveland Clinic Foundation
Dept. of Biomedical Engineering
9500 Euclid Ave. Wb3
Cleveland, OH 44195
(216) 444-7276
grabiner@bme.ri.ccf.org

Awards

The American Society of Biomechanics is pleased to annually award the Giovanni Borelli Award, the Pre- and Post-Doctoral Young Scientist Awards, the Journal of Biomechanics Award, the Clinical Biomechanics Award, the ASB-Microstrain Award, the ASB Travel Fellowship and Student Travel Awards. We encourage you to submit applications and nominations for these prestigious awards. For more information about the awards please contact the Chair of the Awards Committee, Mark D. Grabiner.

Education Committee Chair

Suzanne Smith

1998 NACOB EVALUATION: It's been several months since NACOB 98 but the Education Committee has been quite busy with the conference evaluation. An overwhelming 89 evaluation forms were received from the attendees. Over 50% of the evaluations were submitted electronically. Forty-three submissions were received from members of the American Society of Biomechanics, while 25 submissions were received from the Canadian Society of Biomechanics. The remainder (24) were submitted by non-members. Of the 67 members, 17 submissions were from students. The interest areas of Exercise and Sports Science and Engineering and Applied Physics dominated with 62% of the total submissions. The Biological Sciences were represented by less than 10% of the respondents.

The format of the NACOB meeting differed from the format used by the ASB in recent years. The scientific program included debates and panels while the general scientific sessions were all poster presentations. Regardless of these differences, the mean ratings on the general format of the scientific program were all above average. The highest ratings were given to the debates and posters. The lowest ratings were given to the panels and tutorials, although only 11 individuals provided an overall rating for the tutorials. The specific ratings, which evaluated each presentation or panel, reflected the results for the overall ratings. For the panels, the comments provided by the respondents indicated the need for tighter organization and topic focus, more cohesion between panel members, and more audience participation. These comments will certainly provide valuable guidance for future panels. However, a notable 26% of the respondents preferred that the panels be reduced at future conferences. Twenty-three percent of the respondents did recommend expanding the keynote lectures.

For the past several ASB meetings, the poster sessions have received relatively low ratings, raising some concern about the all poster format planned for NACOB. However, the highlight of the NACOB evaluations was the greatly improved ratings given to the poster sessions. The organizers were aware of the problems and issues with the ASB poster sessions and took on the challenge. They are commended for their efforts. Of course problems do arise at the last minute; some of the poster boards were the wrong size. Unfortunately, some posters were located in a low traffic area with very low lighting. Comments from the respondents did emphasize the use of the thematic poster session for future conferences. In addition, it was suggested that the authors be given allotted times to be present at their posters but have the opportunity to visit other posters in their session. Almost an equal number of respondents indicated that the posters should be expanded as should be reduced although these numbers were small compared to those not showing a preference. Regardless of the success of the poster sessions, a very large number of respondents (43%) recommended that podium sessions be

included in future conferences. Another positive outcome of the evaluations which certainly deserves mentioning was the very high ratings given to the young investigators awards session. One respondent put it in perspective; "the future is in good hands".

Minimal comments were provided on the tutorials or pre-conference courses. However, both courses were given positive ratings during informal questioning of several attendees. The first pre-conference course or tutorial on "Ethical Issues in Biomechanics" was attended by 12 individuals. The second pre-conference course on "EMG Signal Decomposition" was attended by 42 individuals. Travel time and nonfamiliarity with the meeting facilities were thought to be factors contributing to the low attendance. One of the concerns of the Education Committee is the scheduling of these tutorials. ASB tutorials are directed towards our student population, although all attendees are encouraged to attend. It is critical that the sessions be scheduled to accommodate the students. Last year, the ASB scheduled the tutorials at the end of the meeting and there were a few comments on travel conflicts. Any recommendations from our students on scheduling the tutorials for the 1999 ASB meeting would be greatly appreciated.

The majority of conference features received good to outstanding ratings. Even the audio/visual support received high ratings. The highest ratings were given to the staff for a job well done. Several respondents provided suggestions for improving certain aspects of the conference. Topics for future sessions were also suggested. All comments/suggestions are being documented and will be provided to the ASB Executive Board. A special thanks is given to all attendees who took the time to fill out the evaluation forms. Your ratings and comments are invaluable in planning future ASB, CSB, and NACOB conferences. The Education Committee would also like to congratulate Stuart McGill and his crew on a great job!

INTERESTED MEMBERS: One of the items not included in the NACOB Evaluation Form was the opportunity for members to express their interest in becoming more active in the Society. A list of interested members is being updated. If you are interested in becoming more active by participating on the various committees, please email the Education Chairperson. You will be sent a short form to fill out with contact information and your interest in the Society. We are requesting that a short curriculum vitae also be provided so that the Executive Board can get to know you better. Members on committees are approved by the Executive Board.



AMERICAN SOCIETY OF
BIOMECHANICS

Graduate Program Information

The ASB maintains an on-line database of universities and colleges with graduate programs in biomechanics. The database is organized alphabetically by country and state and currently includes information on institutions from Canada, the United Kingdom, and 42 different states within the United States. The database is available at the following URL: <http://www.asb-sci.org/gradprog/gradprog.htm>

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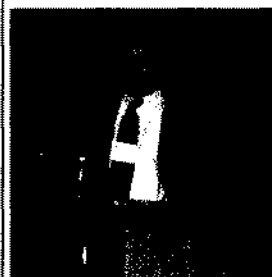
Congratulations to the 1998 ASB Award Winners

BORELLI AWARD

Malcolm Pope, University of Iowa (not pictured)

YOUNG SCIENTIST PRE-DOCTORAL AWARD

Allison Arnold,
Northwestern University



YOUNG SCIENTIST POST-DOCTORAL AWARD

Christopher Jacobs,
Penn State University

CLINICAL BIOMECHANICS AWARD

(pictured clockwise from upper left)

Gene Jameson, American Sports Medicine Institute

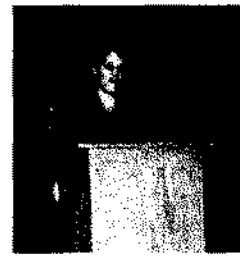
Andrew Karduna, Allegheny University

Christopher Scifert,
University of Iowa



MICROSTRAIN AWARD

Tammy Haut,
University of California, Davis



Photographs by Mardon B. Frazer

Membership Committee

Trey Crisco

A total of 60 new applications were reviewed in the last three review cycles: February, May and August 1998, a decrease of approximately 15% compared with the same three cycles last year. The distribution of these applications by membership category and discipline did remain stable, however, within 1% - 6% of the 1997 distribution in each category for this same period. Typical of past years, most of the applications were in Engineering/Applied Physics (51%). The next highest number of applications was in the area of Exercise/Sport Sciences (21%). Health Sciences, Biological Sciences, and Ergonomics/Human Factors received the least number of applications (12.5%, 6% and 8.5%, respectively). There was a slight drop in Biological Sciences and a correspondingly slight rise in the percentage of Health Sciences applicants. Student applications (acceptances) in these three cycles have comprised 63% of the total. These same three periods last year had a greater number (67%) of regular applicants acceptances. In this period 13 applicants were rejected. The rejection rate for these last three cycles was 21%, a rise of 6% for this same period last year. To continue the growth and vigor of the Society, the Membership Committee reminds you to encourage your colleagues and students to apply for membership. Please recall that once you are a member, questions related to dues and journal subscriptions should be directed towards the Secretary/Treasurer of ASB, not the Membership Committee. Also note that Student members who graduate must reapply for Regular membership.

Advertising in the ASB Newsletter

The Editorial Board invites various businesses and corporations that have products or services of interest to members of the Society to advertise in the ASB Newsletter. Advertising space may also be purchased for job postings or other special announcements.

The current advertising rates are as follows:

1/4 page	\$75
1/2 page	\$150
full page	\$250
back page	\$500
separate insert	\$500 per insertion

If you are interested in placing an advertisement or have any information concerning potential advertisers, please contact Gary Heise (gdheise@bentley.univnorthco.edu).

Commercial Members

Commercial membership categories are aimed at encouraging affiliation by commercial organizations that market products which are used by the biomechanics research community, or companies that are otherwise engaged in activities that fall within the Society's general interest areas. The benefits and fees for Commercial Members of the Society have been reorganized. Based on level of support, commercial membership categories in decreasing order are Sustaining Member, Supporting Member, Contributing Member, and Corporate Member. Companies wishing to become a Commercial Member are encouraged to contact either Trey Crisco or Bruce Martin (page 4) for details.

The ASB Executive Board is pleased to recognize:

SUSTAINING MEMBERS

Peak Performance Technologies, Inc.

CONTRIBUTING MEMBERS

Motion Analysis Corporation

CORPORATE MEMBERS

Aircast

DePuy

Orthofix, S.R.L.

Tekscan

We are also happy to acknowledge and thank the following companies for their past support:

Howmedica

Kistler Instrument

MTS Systems

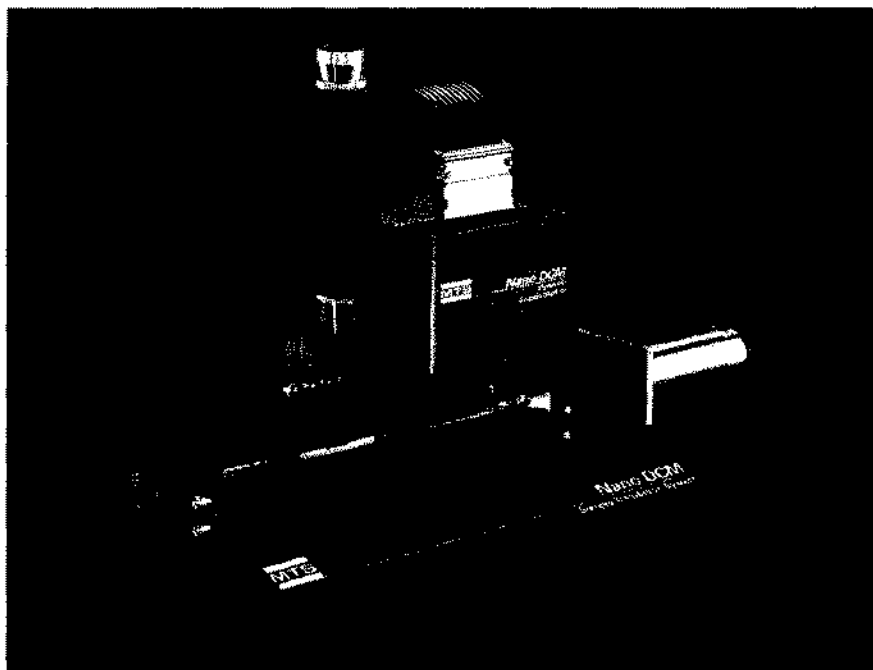
Noraxon U.S.A

All members of the Society are invited to suggest names of potential commercial members. Please send your suggestions to Trey Crisco, Membership Committee Chairperson, at the address indicated on page 4 of this newsletter. If you have a particular contact person at the company, please make sure to include his/her name.

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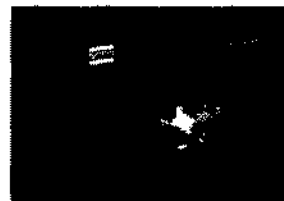


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