



American Society of Biomechanics Newsletter

Vol. 9

December 1996

No. 2

From the President

Robert J. Gregor

Greetings from Atlanta, which seems to be the place for meetings, Olympics, etc. in 1996. I would like to take this opportunity to thank the membership for selecting me as President of the Society and I look forward to serving in that capacity during the coming year. The ASB is truly an interdisciplinary group of scientists and students and one that continues to grow and develop into one of the premier Societies in the United States. The Twentieth Annual Meeting of the Society was held on the campus of Georgia Institute of Technology from October 17th to 19th with a Satellite Workshop on the function of biarticular muscle held at Emory University on Sunday, October 20th. The meeting had over 250 attendees with 75 attending the Satellite Workshop. Sixty five percent of the ASB registrants were regular members with the remaining 35 percent students. On behalf of the Society I would like to extend my appreciation to the Department of Continuing Education at Georgia Tech as well as the Department of Physiology, specifically Richard Nichols, for their efforts in making the annual meeting and satellite programs a success. Continuing Ed organized the registration, etc. for the ASB meeting at Tech and Richard organized the schedule at Emory for the satellite session.

Dave Fyhrie deserves our utmost appreciation for serving as Program Chair in Atlanta and organizing all of the guest speakers as well as the schedule of posters and oral presentations. All sessions were well attended with a good balance between engineering and the physical sciences and the various life science sessions. Challenges remain however, regarding the growth of the society as it relates to the annual meeting. The Program Committee had to decline approximately 30% of the submitted abstracts to fit the accepted submissions into the two day schedule. Ideas to include a greater percentage of the submitted abstracts range from expanding the meeting to three days to having more posters and/or more parallel sessions during the traditional two day

affair. Opinions of the membership are important to the Executive Board and the different meeting organizers and we welcome any ideas extended to a Society officer regarding alternate formats for our annual meeting. This event is the centerpiece of Society functions and receives our greatest attention. We welcome members and participants from all areas of biomechanics and continuously work for balance and meeting everyone's needs to make our Annual Meeting the most rewarding experience for all attendees. Issues related to the annual meeting will again be considered at the mid-year meeting of the Executive Board in February.

The Executive Board experienced the usual turnover in members in Atlanta and I would like to take this opportunity thank all those who served the Society in their selected capacities giving of their time and energy to ensure efficient functioning of the ASB. I would like to first extend my appreciation and thanks to Kai-Nan An for serving in his role as President of the Society during the past year. I was especially impressed with his presentation at our business meeting in Atlanta making the President's lecture a bit more formal than has been done in the past and providing insight into the research breadth within the Society. Kai now assumes the role of Past President and I look forward to working with him on the Board during the coming year.

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I would also like to thank Phil Martin for serving as Past President of the Society and his leadership in developing the Graduate Student Grant-In-Aid Program. The Society has experienced extensive growth in the past few years and it is the expressed intention of the Executive Board to return financial benefits resulting from this growth back to our greatest resource, the student membership in the Society. As result of grants from, for example, the Whitaker Foundation, student registration fees at the annual meeting are typically very low (20% of the regular member registration fee in Atlanta). In an effort to further facilitate the professional development of our student members, the Society now offers a Grant-In-Aid Program. The inaugural application deadline was October 1, 1996 with the details of application announced in the Newsletter and on the BIOMCH-L listserver. All members of the Board look forward to Phil's continued input to the Budget and Finance Committee and the continued development of opportunity for graduate students in biomechanics.

In recent years, a major topic of discussion related to our annual meeting has been the issue of electronic publishing. Thanks to the efforts of Jill McNitt-Gray, who recently rotated off the board in her capacity as Chair of the Education Committee, the Society now has a Home Page on the World Wide Web and has explored the potential of electronic publishing of meeting abstracts. For the first time, with the invaluable assistance of Gerald Smith at Oregon State University, authors of accepted abstracts in Atlanta were invited to submit their abstract for publication on the Web. Since there was only about a 20% response to this request, the Society used the hard bound copies of the abstracts as the primary publication for the meeting. Those abstracts that were submitted for electronic publication can be accessed at: <http://www.orst.edu/dept/HHP/ASB/>. (By the way, additional copies of the printed abstracts are still available for the meeting in Atlanta. Just mail a check addressed to Georgia Tech for \$US25 to me at Georgia Tech and we will mail you a copy as long as supplies last). The Society continues however, to explore the electronic format for publication from future meetings. I would like to thank Jill for her hard work and diligence in developing the ASB Home Page and for her contributions in our initial efforts in electronic publishing. This is a very time consuming task and the Board now recognizes additional resources should be devoted to this task to insure the successful use of this format by the Society. Again the Board welcomes input from Society members on this issue, both positive and negative, regarding use of the Home Page and the possibility of having meeting proceedings available over the Web. Or stated another way, will we need hard bound copies of the abstracts at future meetings? Give us a call, e-mail, etc.

I would finally like to welcome to the Board Mary Rodgers, Program Chair for 1997, Vasanti Gharpuray, Meeting Chair at Clemson University, Suzanne Smith our new Education Chair, and Sheila Stevens our new student representative from Stanford University. Thanks to Peter Vint who served as our previous student representative and his many contributions in organizing student input to the Society (e.g., the Virtual Mentor Program).

It has become quite evident the ASB is growing at a very rapid pace, becoming much more stable as a Society representing many different disciplines in the field of biomechanics and accepting several important challenges to efficient Society function in the coming year. Peter Cavanagh, President of the ISB, recently posed some interesting questions to the ISB membership and I would like to do the same for the ASB. It may seem redundant to some but a good idea is a good idea, and Peter had a good idea. The ASB has approximately 800 members yet only a small portion of that number (approximately 20-25%) attend the annual meeting. So the questions are, what do you as members expect from the Society and what do you expect at our annual meeting? Are you satisfied with the format and types of sessions? Should other exhibitors be included? The ASB, and specifically the field of biomechanics, has come of age. The Executive Board of the ASB in its efforts to serve the Society request your input during this period of growth. We seek to improve Society function on several fronts, are working to those ends and would like the membership to be very much included in that process. We welcome your input. Have a very happy and safe Holiday season and we all (little southern influence here) look forward to a prosperous 1997.

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The Education Committee encourages all members to visit the ASB Homepage at <http://www.usc.edu/dept/biom/asb.html>. The homepage will be periodically updated to include the current ASB Newsletter, contact information regarding the executive board members, additional graduate programs, and information and the Call for Papers for the 1997 Annual Meeting. The ASB Homepage can also be accessed from the Biomechanics World Wide homepage located at: <http://dragon.acadiau.ca/~pbaudin/biomch.html>. The individual homepages of biomechanists around the

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world are available through the Biomechanics WWW page. The ASB Graduate Program Data Base can be accessed through the Education in Biomechanics listing. Selected abstracts from the 20th Annual meeting can now be accessed by clicking on Biomechanics Societies. The electronic publication of abstracts is the accomplishment of Gerry Smith, a member of the Education Committee, in coordination with Dave Fyhrie, Program Chair for the 20th Annual Meeting.

The Education Committee is requesting suggestions for tutorial topics and presenters. Recommendations provided in the 1996 ASB Meeting Evaluations included statistics, motor control, modeling, joint injury mechanics, biological testing/precautions, and standards for reporting kinematics data.

Journal of Biomechanics

Editors Ask for Suggestions

Al Schultz

The *Journal of Biomechanics* editors have good news and bad news. The good news is that authors are submitting manuscripts at record rates. The bad news is that the Journal has an annual budget of 1700 pages, and despite manuscript rejection rates now approaching 70 percent and much more restricted article lengths (mostly, a 3000 word limit), the Journal is still averaging a one year acceptance-to-publication time.

The Editors would like to hear your comments on the issue. Should article length be further restricted? Should the rejection rate be made even higher? Should we all continue to tolerate the long acceptance-to-publication time?

Please send your responses and suggestions to Dick Brand (dick@uiobrl.obrl.uiowa.edu), with, if you are willing, a copy to me (aschultz@umich.edu). Thanks.

*Don't forget
to pay your
ASB dues!*

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1996-1997

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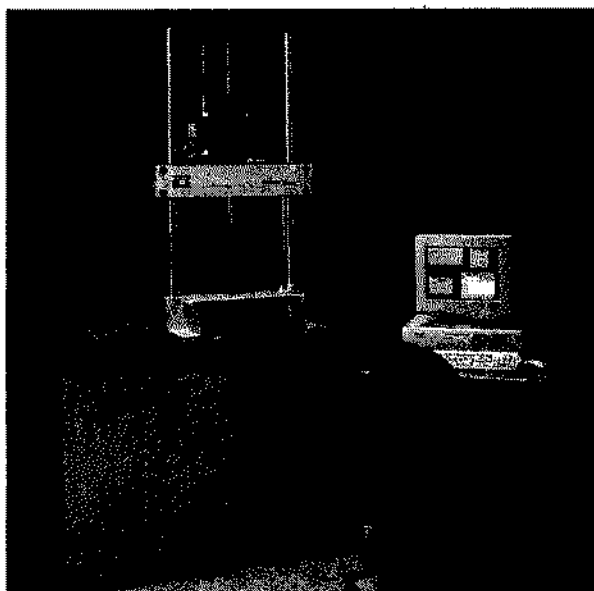
Fully Portable Test System Has Wheels, Uses Standard Outlets

If you need a portable but very effective low force test system that can be wheeled on a cart from station to station, or lab to lab, here's the MTS Mini-Bionix® System you've been looking for. MTS has packaged its very popular Model 858 system with a wheeled cart that also contains an air-cooled, very quiet hydraulic pump and new TestStar™ IIs electronics console. The pump operates from most standard AC outlets. Simply wheel the cart to your test location, plug in the cart, test controller, and computer and you're ready to test.

This system is designed for typical biomaterials tests and is readily configured for testing biological tissue, soft plastics, fibers, bundles, wires, tubes and more at force ratings as low as 0.1 gram (.001 Newton) with a low-force load cell. It also can test at forces as high as 1100 lb. (5kN).

New Controller

The system is available with the new TestStar IIs control system, a new, economical, Windows-NT based controller capable of



doing a wide range of tests on many types of materials and components. For more information ask for the new TestStar IIs brochure.

For more economical test control, the Portable Mini-Bionix is also available with the MTS Model 407 Controller, a single station digitally supervised test controller. The Model 407 is capable of producing a variety of typical test waveforms.

LabVIEW Compatible

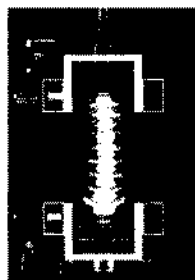
A new feature of the Model 407 offers you LabVIEW capability. Because many test laboratories employ LabVIEW software, MTS now offers a package including drivers and software that makes the Model 407 LabVIEW compatible. This economically priced package will let you employ this software with your 407 controller.

For more information on the fully portable Mini-Bionix, TestStar IIs, and the Model 407 with LabVIEW contact the company or send in the reader service card.

Circle Reader Service # _____

New Fixtures Enhance Bio Test Capabilities

Several new fixtures developed by MTS Systems Corporation for use with Bionix test systems let you easily perform tests on special products and test specimens.



For example, this new four-channel spine fixture utilizes the Mini-Bionix as a base axial-torsion test system. Top and bottom fixtures provide axial compression and torsion motions. The fixtures are able to rotate independently (in phase or out of phase).

Pure bending or second order buckling motion can be simulated. When combined with the system's axial-torsion loading, full torso twisting kinematics is generated.

An option for this system provides torque measurement through two torque sensors

mounted between the rotary actuators and the specimen holder.



This multi-degree of freedom knee wear test fixture requires axial-torsion actuation and was designed for use with the MTS Mini-Bionix system. The five degrees employed are:

- Axial loading to 10 kN
- Torsion (tibial rotation)
- Flexion/extension up to 120°
- Shear (anterior-posterior shearing to 20 mm)
- Varus/valgus alignment (manually adjusted)

The Bionix Knee Wear Test Fixture includes a chamber and catch basin for use with fluids to simulate the service environment.



This is a close-up view of a new four degree-of-freedom hip simulation test system designed for use with the MTS Mini-Bionix axial-torsion test system. With this configuration, you can simulate the actions of level walking, stair climbing and rising from a chair.

A chamber allows testing in a simulated body environment at 37° C.

More information on these and the many other fixtures produced by MTS is available from your MTS Sales Engineer or directly from the company.

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Guest Columnist

Kit Vaughan

WHAT IS THE IMPACT OF YOUR RESEARCH?

One of our obligations as scientists is to publish our research findings in the peer-reviewed archival literature. In fact, it might reasonably be argued that to conduct research without sharing it is not only selfish but a waste of time. So, once we have concluded that a piece of research is worth publishing, we have to decide what journal will be the most appropriate vehicle to carry our message. Clearly we would like our ideas and findings to have the widest possible impact on our field of endeavour. In this article I will explore this notion of "impact" and provide a few pointers to ASB members who may be at that exciting stage of your research careers when you are ready to submit your first journal paper.

There is a company based in Philadelphia, PA called the Institute for Scientific Information (ISI) which publishes the *Science Citation Index (SCI)* on an annual basis. Each year ISI perform a bibliographic analysis of nearly 6000 science journals and enter a detailed and comprehensive set of information into their database. Based on this database they publish their *Journal Citation Reports (JCR)* which seeks to answer the questions:

* What are the largest journals? * What journals are the most frequently used? * What are the "hottest" journals? * What journals have the highest impact? * What publications does a journal cite — and which cite it?

They have devised an "impact factor" which is a measure of the frequency with which an "average article" in a journal has been cited in a particular year. The impact factor for *Journal X* would be calculated by dividing the number of all citations of articles published in *Journal X* during the previous two years by the number of articles *Journal X* published in those two years. The cross-referencing capability of *JCR* means that they can easily track how often articles in other journals cite articles in *Journal X*.

Now that you understand how the system works, let us see how some of the journals in our field stack up:

- 1.548 *Journal of Biomechanics*
- 1.462 *Journal of Bone and Joint Surgery (Am)*
- 1.270 *Journal of Orthopaedic Research*
- 0.728 *Journal of Biomechanical Engineering*
- 0.518 *Clinical Biomechanics*
- 0.136 *Journal of Applied Biomechanics*

Lest those among you who normally publish in the *Journal of Biomechanics* may be tempted to gloat over the apparently lowly ranking of the *Journal of Applied Biomechanics*, I hasten to add the impact factors of some real high flyers:

- 39.191 *Cell*
- 25.466 *Nature*
- 22.673 *New England Journal of Medicine*
- 22.067 *Science*
- 17.332 *The Lancet*

So, if your PhD dissertation explored some aspect of cellular mechanics, and you felt that it was an innovative piece of work worthy of the widest possible exposure, it is not difficult to guess that you would select *Cell* ahead of the *Journal of Biomechanics*. I should point out that all the above numbers are based on 1994 (and published in 1995). My library here in Cape Town will be getting its 1995 edition of *JCR* in the next few weeks.

In case you think these numbers are a little meaningless, you may be interested to know that the Foundation for Research Development (FRD), South Africa's equivalent of the National Science Foundation, takes them very seriously. Scientists seeking funding from the FRD score points according to their publications. Thus a paper in the *Journal of Biomechanics* would be worth 1.548 points, more than twice the number of points scored for a paper in the *Journal of Biomechanical Engineering*. It does not stop there, however. You earn full points only if you are the sole author. Thus, if you have four co-authors on your paper, you earn points to the value of 0.2 times the impact factor. It makes you think!

While I must say that such a system does seem to be overly bureaucratic with its emphasis on the "bean counting" philosophy, there are some redeeming benefits. First, you are encouraged to consider your target journal very carefully. Second, it forces you to devote some serious thought to who should be included as a co-author. Finally, you are likely to aim high and submit your work to a journal that is well regarded by scientists in general.

One of the other ways that the FRD rates the impact of our work is to request a listing of our personal citations. This is the number of times that our published papers have been cited. Since SCI does not distinguish between citations by others and those where we cite our own work, this inevitably leads to a plethora of self-citation! Next time you read an article in a scientific journal, calculate the proportion of the references that are the authors' own work. It is an interesting exercise, and I will be the first to admit that I place too heavy an emphasis on the relevance (and therefore the impact) of my own prior publications.

Another measure of the impact of your work is the response of colleagues to a piece of published research. There is a sense of satisfaction when, at a congress, a person will strike up a conversation based on a paper you have just published or your name is included in a slide. The best of all is when postcards come flooding in requesting reprints of your article (it's no accident that ISI are responsible for most of these ubiquitous cards!).

I will share with you an interesting anecdote on this topic of reprint requests. My institution, the University of Cape Town, counts two Nobel laureates amongst its former faculty members. One of these is Alan Cormack, who was awarded the Nobel Prize for Physics for his research that led to the computerised axial tomographic (or CAT) scanner. This pioneering work was conducted while Dr. Cormack was on faculty in UCT's Physics Department and he conducted his research with colleagues in Radiology at Groote Schuur Hospital. Their work was published in an obscure journal (of unknown impact factor!) and led to a total of two reprint requests. One of these was from a group of mountain rescue officials in Switzerland who thought this technique might be used to locate skiers buried in an avalanche!

I would like to finish this article with some personal philosophy. Research that is not published in any form has no impact. Research that is presented at conferences has limited and ephemeral impact. Research that is published in an archived journal, even one with a lowly impact factor, is a contribution to scientific posterity, the impact of which will be available for years to come.

Dr. Christopher (Kit) L. Vaughan was recently appointed Hyman Goldberg Professor and Chairman of the Department of Biomedical Engineering at The University of Cape Town in Cape Town, South Africa. He is the past Editor of the ASB Newsletter and currently serves as the Secretary-General for the International Society of Biomechanics. His email address is: KVAUGHAN@anat.uct.ac.za.

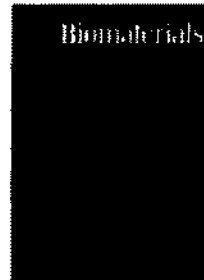
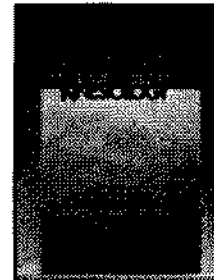
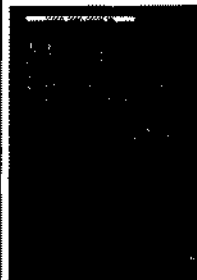
Editor's note:

In last issue's Guest Column, Dr. Cheryl Coker's advisor at the University of Virginia was incorrectly identified. Although Kit Vaughan worked closely with Dr. Coker on her research, Linda Bunker actually served as her major advisor.

THE PERFECT TEAM

Dear ASB member.

More of the best journals in your field are now set at a special rate for ASB members:



Medical Engineering & Physics

- carries the latest developments in biomedical engineering including:

- ✓ clinical engineering
- ✓ biomedical computing
- ✓ biological systems
- ✓ instrumentation
- ✓ medical imaging technology
- ✓ biomaterials
- ✓ biomechanics
- ✓ rehabilitation

(ASB rate: US\$96.00)

Journal of Electromyography and Kinesiology

- is the primary source for outstanding original articles on the study of muscle contraction and human motion through combined mechanical and electrical detection techniques

(ASB rate: US\$88.00)

Biomaterials

- addresses the science and application of biomaterials and associated medical devices, covering the basic science and engineering aspects of biomaterials

(ASB rate: US\$255.00)

This is in addition to the special rates currently in place for the **Journal of Biomechanics** and **Clinical Biomechanics**.

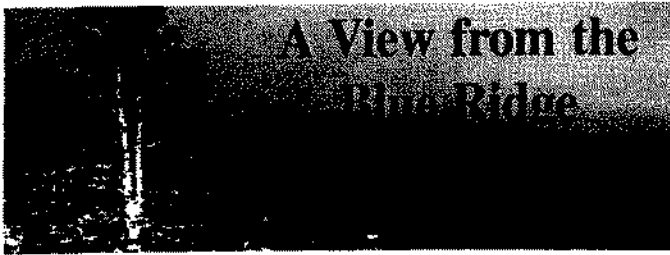
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"So much time, so little to do."

If you are anything like me, you probably have some difficulty in relating to this line from Dudley Moore's character in the movie 'Arthur'. For most people, the situation seems to be quite the opposite; there just never seems to be enough time.

Despite Benjamin Franklin's admonition in 1748 that 'time is money', most of us do not actually place a monetary value on each minute of our day. As evidence of this, ask someone to give you twenty dollars. Without a convincing argument or an agreement to repay the money, you will likely encounter considerable resistance. (On the odd chance that they actually do give you the money, I claim half as the instigator of this little exercise!) However, ask that same person for twenty minutes of their time and see what happens. Although most people are reluctant to randomly hand out money, they are extremely eager to give their time to someone without question. Time, like money, must be explicitly managed.

Although technology has provided the means to save time through such innovations as electronic mail, spell checking, and speed dialing, it has also created the potential for even greater demands on our time. The sheer volume of information that we are confronted with on a daily basis is staggering. The ease with which this information can be obtained has initiated a vicious cycle whereby more and better information is constantly required to make informed decisions.

Since we are obviously not going to create more time, the solution to this dilemma lies in looking at how we make use of our available time. Keeping a journal of daily activities in 15 minute blocks over several weeks is a good way to track where your time is going. Journal data can be used to identify things that you are doing that:

- don't really need to be done,
- could be delegated to someone else,
- could be done more efficiently, or
- waste other people's time.

By some estimates, people waste approximately 2 hours per day. Signs of time wasting include:

- messy desk and cluttered (or no) files
- can't find things
- miss appointments or need to reschedule them
- late and/or unprepared for meetings
- volunteer to do things other people should do
- tired/unable to concentrate.

Sound familiar? The bad news is that the direction in which our society is moving almost guarantees that the time crunch will get worse before it gets better. The good news is that time management techniques can improve our ability to deal with this problem.

MINIMIZE INTERRUPTIONS - Interruptions fragment large blocks of quality work time and are one of the most common causes of wasted time. In addition to the actual time devoted to each interruption, 4-5 minutes are required to refocus on the task at hand. Consequently, it is important to reduce both the length and frequency of interruptions. According to a study of software-programming teams, the strongest predictor of productivity had nothing to do with the particular programming languages being used as was suspected, but rather was the availability of a support person to answer the phone and shield team members from interruptions [Attewell, 1996]!

HANDLE EVERY PIECE OF PAPER ONCE - In this electronic era, this adage can be extended to other media as well. A good filing system is essential to this point. Based on its relative importance, each item should either receive immediate action, be filed appropriately for future reference, or be discarded.

PLANNING - Planning is important. Develop daily, weekly, and semester plans and update them regularly. 'To Do' lists are a convenient tool for doing this and probably something that most of us use already. A four quadrant To Do list can be used to assign priorities based on whether a task is due soon or not and whether it is important or not [S. Covey, 1989]. Obviously, a task that is both important and due soon would receive the highest priority while a task that is not important and not due soon may not even merit doing. Another trick to making such a list and effectively using it is to break big projects down into smaller steps; contemplating an entire project can be overwhelming. Then do the least desirable task first. As was so elegantly explained by someone at a recent time management seminar that I attended, "If you have to swallow a frog, don't look at it too long".

LEARN (WHEN) TO SAY NO - Establishing priorities and planning, key elements in effective time management, are both facilitated by the development of short and long-term objectives. The benefit-to-cost ratio of all activities can then be assessed with these objectives in mind. Always ask yourself the following questions:

- Why am I doing this?
- How will it help me to meet my objectives?
- Do the benefits outweigh the time invested?
- What happens if I choose not to do it?

Everything you do consumes time that is forever lost to other opportunities. If the answer to any of the above questions is inconsistent with your objectives, then exercise your option to say 'no'. Granted there may be instances when such a response is simply not appropriate (e.g., direct requests from your supervisor) or a more tactful approach is required ("if you can't find anyone else, I'll do it"). Conversely, if it fits in with your overall objectives, don't hesitate to try something new.

Time management strategies may seem like common-sense, but like any tools or techniques, they tend to be relatively ineffective unless applied appropriately. Putting these strategies into practice can be surprisingly difficult to do; however, the alternative is much less attractive.

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Editor's note:

Since the last Newsletter, the Editorial Board has undergone some changes in personnel. Stephanie Goar, who served as layout editor since December 1992, has moved on to greener pastures. She is engaged to be married this spring and at last account, was looking for employment in the Dallas area. (Anyone in need of a skilled, MBA-trained lab manager take notice!) Stephanie's contributions to the Newsletter have been vital to its continued success and will be greatly missed. The Editorial Board would also like to thank the outgoing student representative, Peter Vint, for his contributions and welcome the new student representative, Sheila Stevens (see page 15).

ASB Newsletter

ASB Awards Announcement

ASB is pleased to announce its 1997 Award categories. All members are eligible to apply and are encouraged to invite their students and associates to apply as well. These awards recognize superior achievement and signify a high level of career accomplishment in the field of biomechanics.

BORELLI AWARD

This prestigious award for career accomplishment is awarded to an investigator who has conducted exemplary research in any area of biomechanics. Open to all scientists, including non-ASB members, except ASB officers and members of the Awards Committee. The award consists of a \$1000 cash prize and an engraved plaque. 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. Five publications on a single topic or theme must be submitted. Awardee will be expected to present the research at the Borelli Lecture at the 1997 Annual Meeting.

YOUNG SCIENTIST AWARDS

This award recognizes early achievement for promising young scientists, and is awarded to one predoctoral and one postdoctoral scientist who are current or pending members of ASB. Award includes a certificate, \$200 cash prize, and a waiver of conference fees for the 1997 Annual Meeting. Candidates may be self-nominated or nominated by an ASB member. Submission of an abstract of original research for presentation with candidate as first or only author and supporting materials is required. Predoctoral materials include letter of support from the department head or graduate research advisor, short description of the candidate's research involvement, and papers submitted for publication. Postdoctoral materials include candidate's CV and prior research publications or submissions.

CLINICAL BIOMECHANICS AWARD

This award recognizes outstanding new biomechanics research targeting a contemporary clinical problem and is cosponsored by Butterworth-Heinemann, publishers of *Clinical Biomechanics*. Candidates must be members of ASB. The award includes a \$250 cash prize and an engraved plaque. A cover letter and abstract submission is all that is required to be sent to the Program Chair. Award is based on presentation of research by award finalists at the annual meeting.

TRAVEL AWARD

A travel fellowship of up to \$1000 is awarded to foster collaborative research and interaction among scientists. All ASB members are eligible to apply. The award can provide travel funds (often restricted by other grants) to carry out work supported by other means. Matching funds from the host's or candidate's institution are desirable, but not required. The funding period is from July 1 through June 30.

Contact Kai-Nan An, Awards Committee Chair (page 4) for additional information.

Job Opportunities in Biomechanics

FACULTY POSITIONS

Exercise Science and Physical Education - Ass't Prof level position with a specialization in biomechanics and a strong secondary interest in motor control. Teach undergraduate and graduate courses in biomechanics with the possibility of contributing to instruction in motor control. Advise undergraduate and graduate students in laboratory research. Conduct research and scholarly writing in biomechanics and motor control. Pursue external funding to support research activity. Serve on various department, college, and university committees and be an active participant in appropriate professional organizations. Application deadline: 2/1/97 or the first of each month thereafter until filled. For complete job announcement, contact: Philip E. Martin, Chair - Search Committee, Department of Exercise Science and Physical Education, Box 870404, Arizona State University, Tempe, Arizona 85287-0404; tel: 602-965-1023; fax: 602-965-8108; philip.martin@asu.edu.

Biomechanics Faculty Positions - Applications are solicited from those who have displayed or show promise of significant leadership in the area of biomechanics. Qualifications include an outstanding academic record, significant publications in major peer reviewed journals, doctorate in a field related to biomedical engineering with at least one engineering degree, and a demonstrated commitment to teaching and research. Potential areas of specialization include fluid, cell, or tissue biomechanics and/or other biomechanics application areas. Send resume and five references before April 15, 1997 to: Prof. Don B. Chaffin, Chair of Search Committee, Dept of Biomedical Engineering, University of Michigan, 2350 Hayward, 3304 G.G. Brown, Ann Arbor, MI 48109-2125.

Bioengineering Center Director - Tenured professorial rank in the College of Engineering and School of Medicine. Director will lead efforts to further develop research and teaching programs in biomaterials, biomechanics, cellular bioengineering, biomedical systems, molecular bioengineering, biomedical imaging and biomedical instrumentation. Contact: Prof. Yongmin Kim, Chair of the Bioengineering Director Search Committee, Dept of Electrical Engineering, Box 352500, University of Washington, Seattle, WA 98195-2500.

Biomedical Engineer - Biomechanical engineer with a strong background in experimental and analytical methods related to the musculoskeletal system. PhD or equivalent degree and strong record of independent research is a prerequisite. Tenure-track faculty position; academic rank and compensation commensurate with qualifications and experience. Contact: Fred F. Behrens, MD, Chairman, Dept of Orthopaedics, New Jersey Medical School - UMDNJ, 90 Bergen Street, Doctors Office Center, Suite 5200, Newark, NJ 07103.

Biomedical Engineering Faculty - The Center for Biomedical Engineering seeks applicants for three tenure track faculty positions (Asst, Assoc, or Full Prof level) in cardiovascular research, cellular engineering, and biomedical imaging. Applicants should be prepared to establish an independent research program, teach graduate and undergraduate classes, and assist in curriculum development. Contact: Prof. Van C. Mow, Columbia University, SW Mudd Bldg, Rm 24, New York, NY 10027; tel: 212-305-1515; mow@cuorma.orl.columbia.edu.

Biomechanical Engineer - tenure-track faculty position at the Ass't Prof level; joint appointment in the Depts of Biomechanical Engineering and Functional Restoration. Candidates should have a Ph.D. in bioengineering, or related discipline; with research interests in some specific area of musculoskeletal biomechanics. Applicants should submit resume, list of publications, and three references by February 1, 1997 to: Prof. Dennis R. Carter; Search Committee Chair, Biomechanical Engineering Division, Mechanical Engineering Dept, Stanford University, Stanford, CA 94305-3030; carter@bones.stanford.edu.

Biomechanics Faculty - appointment level commensurate with candidate's qualifications. The successful candidate must be an independent investigator, with established research program and willing to contribute to existing research programs and to assist with graduate student training. PhD or equivalent in bioengineering, mechanical engineering, or related discipline, history of publication in specialization area, and ability to pursue/secure extramural research funding required. Submit CV, statement of research interests, and three letters of recommendation to: Brian L. Davis, PhD, Biomechanics Search Committee, Department of Biomedical Engineering, Wb3, The Cleveland Clinic Foundation, 9500 Euclid Avenue, Cleveland, Ohio 44106.

Biomechanics/Motor Learning - tenure-track position at Ass't Prof level. Earned doctorate in Exercise Science or related field with an emphasis in biomechanics or motor learning; strong commitment to teaching and research required. Primary responsibilities include undergraduate teaching and helping to expand an established interdisciplinary lab. Contact: Robert W. McGowan, Ph.D., Chair, Health and Sport Science, University of Richmond, Richmond, VA 23173; tel: 804-289-8353; mcgowan@urvx.urich.edu.

Biomechanics Faculty - immediate opening for tenure-track faculty member with expertise in the area of bone biomechanics. Appointment in Biomedical Engineering and leadership position in Injury Control Research Center. PhD degree in appropriate field and US citizen/permanent resident status required. To apply, send CV, list of research support, summary of research/teaching interests, and names/addresses of 3 references to: Linda C. Lucas, Ph.D., Chair, Department of Biomedical Engineering, BEC 256, University of Alabama at Birmingham, Birmingham, Alabama 35209; tel: 205-934-8422; fax: 205-975-4919; llucas@eng.uab.edu.

Kinesiology Faculty - tenure track position at ass't., assoc, or full professor level depending on qualifications. The individual will be expected to teach and do research focusing on Human Factors/ Ergonomics aspects of human performance. Contact: Michael G. Wade, Professor & Director, School of Kinesiology and Leisure Studies, University of Minnesota, 111 Cooke Hall, 1900 University Ave. SE, Minneapolis, MN 55455; tel: 612-625-0555; fax: 612-624-2509; mwade@tcumn.edu.

RESEARCH/FELLOWSHIP POSITIONS

Research Support Specialist - The Musculo-Skeletal Research Labs (<http://msrl.ortho.sunysb.edu>) and the Graduate Program In Biomedical Engineering (<http://www.mipl.rad.sunysb.edu/bme>) seek a college graduate with strong computer administration skills; M.S. in engineering preferred, experience in biomedical engineering helpful. Curriculum vitae, and 3 references to: Clinton Rubin, PhD, HSC T18-030, State University of New York, Stony Brook, New York 11794-8181.

Research Position - Hand Biomechanics Lab, Inc. is seeking a key laboratory/clinical scientist for biomechanical studies related to new product development and basic science studies on the etiology of carpal tunnel syndrome. Minimal requirements include a PhD in

engineering/bioengineering with experience in the musculoskeletal system. Contact: John Agee, MD, Director, Hand Biomechanics Lab, Inc., 77 Scripps Drive, Suite 104, Sacramento, CA 95825.

Research Engineer - Leading manufacturer of cardiac proprietary heart valves and components seeks an accomplished Research Engineer to plan/execute fluid dynamic and durability studies, develop tests to evaluate medical devices, and investigate kinematics of prosthetic heart valve components. BS in engineering with 5 yrs experience or MS with 2 yrs experience and background in accelerated durability testing and hydrodynamic testing of prosthetic cardiac valves required. Contact: CarboMedics, Inc., 96151ER, 1300 East Anderson Lane, Austin, TX 78752; fax: 512-435-3306.

OTHER POSITIONS

Laboratory Manager - to oversee daily operation of test lab, support Engineering and Manufacturing materials research, and develop test procedures and methods for all equipment. BS with appropriate lab experience (3 yrs min.) within bicycle helmet and/or sports related product industry/mechanical aptitude with solid understanding of physics and mathematics. Greg Cramer, EFL International, 8777 East Via de Ventura, #300, Scottsdale, AZ 85258; tel: 602-483-0496, extension 18; fax: 602-483-2832; greg@eflinternational.com.

Biomedical/Mechanical Engineer - A small but growing research firm located in the Texas Research Park is looking for a Biomedical/Mechanical Engineer with experience in orthopaedic device and GMP/ISO manufacturing. MS or BS with appropriate experience in mechanical design, medical device development, in vivo testing, 3-D modeling, CNC machining, and ceramic processing. Send resume to: Nancy R. Fox, BioMedical Enterprises, Inc., 14785 Omicron Drive, Suite 205, San Antonio, TX 78245; fax: 210-677-0355; nancy@bme-tx.com

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

Additional opportunities can be found on the ISB home page (<http://www.kin.ucalgary.ca/isb/jobs/jobs.html>) and on the Biomechanics World Wide home page (<http://dragon.acadiau.ca/~pbaudin/biomch.html>) by selecting Career Opportunities.

Calendar of Events

22-28 Feb 1997 SPIE's International Symposium: Medical Imaging 1997; Newport Beach, CA; SPIE International Headquarters, P.O. Box 10, Bellingham, WA 98227-0010, USA. Tel. (360) 676-3290 Fax. (360) 647-1445 e-mail: spie@spie.org.

11-13 Apr 1997 34th Annual Rocky Mountain Bioengineering Symposium; Dayton, Ohio ; Rocky Mountain Bioengineering Symposium, Dr. Hamed Benghuzzi, Department of Health Sciences, University of Mississippi Medical Center, 2500 N. State Street, Jackson, MS 39216, Tel. (601) 984-6324 Fax. (601) 984-6344 e-mail: benghuzz.shrp@smtp.umsmed.edu; abstract by 01 Dec 1996

4-6 Apr 1997 16th Southern Biomedical Engineering Conference; Broadwater Beach Resort and Hotel, Biloxi, MS; 16th Southern Biomedical Engineering Conference, attn: Dr. Joel D. Bumgardner, Department of Restorative Dentistry/Biomaterials, School of Dentistry, 2500 North State Street, Jackson, MS 39216-6170 Tel. (601) 325-3282 Fax. (601) 325-3853 e-mail: jbumgard@abe.msstate.edu, <http://abe.msstate.edu/abenews/bumgard.html>

7-10 May 1997 3rd International Symposium on Computer Methods in Biomechanics and Biomedical Engineering; Barcelona, Spain; John Middleton, Biomechanics and Biomedical Engineering Centre, Engineering Building, University of Wales Swansea, Singleton Park, Swansea SA2 8PP, Wales, UK. Tel. 01792-295517 Fax 01792-295514 e-mail: J.Middleton@Swansea.ac.uk

1-4 Jun 1997 XII Annual International Conference on Occupational Ergonomics and Safety Conference; Washington, DC; Prof. Biman Das, Technical University of Nova Scotia, Industrial Engineering Department, PO Box 1000, Halifax, NS B3J 2X4, CANADA Tel. (902) 420 7606 Fax. (902) 420 7858 e-mail: dasb@tuns.ca

11-15 Jun 1997 Summer Bioengineering Conference; Sunriver Resort, Sunriver, Oregon; Dr. Ray Vanderby, Dept. of Orthopaedic Surgery, University of Wisconsin, Madison, 600 Highland Ave, Madison, WI 53792-3228, Tel. (608) 263-9593 Fax. (608) 263-0454 e-mail: vanderby@ortho.surgery.wisc.edu.

21-25 Jun 1997 International Society of Biomechanics in Sports (ISBS); Texas Woman's University, Denton, TX; Colleen Ferguson, Office of Continuing Education, TWU, PO Box 425649, Denton, TX 76204-5649, Tel. (817) 898-3408, e-mail: F_Wilkerson@TWU.EDU

25-29 Jun 1997 Fourth National Symposium on Teaching Biomechanics; Texas Woman's University, Denton, TX; Colleen Ferguson, Office of Continuing Education, TWU, PO Box 425649, Denton, TX 76204-5649, (817) 898-3408, e-mail: F_Wilkerson@TWU.EDU.

18-19 July 1997 International Conference on New Frontiers in Biomechanical Engineering; Tokyo, Japan; Hiromichi Fujie, Ph.D., Conference Secretary, Faculty of Engineering Science, Osaka University, 1-3 Machikaneyama, Toyonaka, Osaka 560, Japan. Tel. 81-6-560-6172 Fax. 81-6-560-6212 e-mail: jared@me.es.osaka-u.ac.jp.

21-23 Aug 1997 VIth International Symposium on Computer Simulation in Biomechanics; The National Olympics Memorial Youth Center, Tokyo, Japan; ISCSB6, c/o Dr. Ae, Institute of Health and Sport Sciences, University of Tsukuba, Tsukuba City, Ibaraki 305 Japan Tel. +81 298 53 2675 Fax. +81 298 53 6507 e-mail: ae@taiiku.tsukuba.ac.jp 15 Feb 1997 deadline for abstracts.

21-23 Aug 1997 Symposium on Footwear Biomechanics: ISB Working Group on Functional Footwear; Tokyo Metropolitan University, Tokyo, Japan; Martyn R. Shorten, Ph.D., 2835 SE Tolman St., Portland OR 97202-8752, USA Tel. (503) 774-7855 Fax. (503) 774-7868 e-mail: biomech@teleport.com <http://www.teleport.com/~biomech/tokyo97.html>. abstracts due 15 Mar 1997.

24-29 Aug 1997 XVth ISB Congress; Tokyo, Japan; S. Fukushima, Congress Secretary <http://idaten.c.u-tokyo.ac.jp/ISB97/isb97.html> or <http://www.komaba.ecc.u-tokyo.ac.jp/~ckawa/isb97.html> abstracts due 15 Jan 1997.

17-20 Sept 1997 21st Annual Meeting of the American Society of Biomechanics; Clemson, SC (See page 16 for meeting details and call for abstracts.)

25-28 Sept 1997 1st International Scientific Congress "Kinesiology - Present and Future"; Dubrovnik, Croatia; Kresimir Kristic - Conference Secretary, Faculty of Physical Education, 10000 Zagreb, Horvacanski zavojski 15, Croatia; Tel.: +385 1 336822 Fax : +385 1 334146

16-21 Nov 1997 International Mechanical Engineering Congress and Exposition: ASME Winter Annual Meeting; Dallas, TX; ASME Conference Office, 345 E. 47 Street, New York, NY 10017. Tel. (800) 843-2763 Fax. (212) 705-7841 <http://www.asme.org/conf/congress97/index.html>

3-6 Dec 1997 9th International Conference on Biomedical Engineering; Singapore; Ontako Conference Secretariat, Block 9, Kallang Place, #04-09, Singapore 339154 Tel. 65-295-2822 Fax. 65-295-2181 <http://www.nus.sg/Seminars/lhome.htm> abstracts due 1 Apr 1997.

2-8 Aug 1998 The Third World Congress of Biomechanics; Hokkaido University, Sapporo, Japan; Kozaburo Hayashi, Osaka University; Biomechanics Laboratory, Department of Mechanical Engineering, Faculty of Engineering Science, Osaka University, Toyonaka, Osaka 560, Japan Tel. +81-6-850-6170 Fax. +81-6-850-6171; e-mail: hayashi@me.es.osaka-u.ac.jp

14-19 Aug 1998 3rd North American Congress on Biomechanics; University of Waterloo, Ontario, Canada; Stuart McGill (mcgill@healthy.uwaterloo.ca).

28 June - 2 July 1998 8th International Symposium of Biomechanics and Medicine in Swimming; Jyväskylä, Finland; Dr. Kari L. Keskinen, University of Jyväskylä, Department of Biology of Physical Activity, Aquatics Research Laboratory, P.O. Box 35, FIN-40351 Jyväskylä, Finland. Tel. + 358 - 41 - 602056 Fax. + 358 - 41 - 602031 e-mail: keskinen@pallo.jyu.fi.

8-13 Aug 1999 XVIIth Congress of the International Society of Biomechanics; Calgary, Canada; Secretary General, 1999 ISB Congress, Faculty of Kinesiology, University of Calgary, 2500 University Drive N.W., Calgary, Alberta, T2N 1N4 CANADA isb99@kin.ucalgary.ca

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 longhand, via e-mail, or on computer diskette for IBM or Macintosh. If you have any other ideas, please get in touch. The next newsletter will be published in June, 1997. **Deadline for submission of materials is 15 May 1997!**

Sustaining Members

The sustaining membership category is 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. We are happy to acknowledge and thank the following companies for their support as Sustaining Members:

Aircast

DePuy

Howmedica

Kistler Instrument

Motion Analysis Corporation

MTS Systems

Noraxon U.S.A

Orthofix, S.R.L.

Peak Performance Technologies

We invite all members of the Society to suggest names of potential sustaining 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.

For a good time . . .

Visit the ASB home page
www.usc.edu/dept/biom/asb.html

From the Secretary/Treasurer

Joan Bechtold

Our membership total for 1996 is 740 members (667 members in 1995), of which 613 are regular members, and 116 are student members. The students continue to be a vital component of our society, with many of our efforts directed towards education (tutorials and student subsidies at annual meeting, Grant-in-Aid program for graduate students, and pre-and post-doctoral awards). ASB finances are up \$11,867 from last year, due in large part to the excellent management of the Stanford meeting.

Thank you for your continued support and contributions to the Society.

The results from our annual balloting were as follows: our new President-elect is Mark Grabiner, and our new Program Chair-elect is Melissa Gross. We approximated the US average percentage of voters during this election year, with 316 of our members voting (42%). Congratulations!

Please update your dues and subscription to the *Journal of Biomechanics* by the end of the year.

I represented ASB at a recent AIMBE (American Institute of Medical and Biological Engineering) summit meeting of their constituent societies. AIMBE's goal is to further biomedical research and technology issues with our lawmakers, funding sources, and the general public. The focus of this meeting was to develop strategies to improve communication with member societies, members, and the public. Recommendations included (1) establishing an office of communications, (2) developing tools to communicate advances in the biomedical field, and to promote realistic expectations among the lay public. In the future an email "alert" system may be instituted, to allow rapid communication of public policy issues to the 32,000 constituent members. A goal for this alert system would be to initiate communications with congress on urgent issues affecting our field. (All the more reason to provide us with your current email address!).

Update your demographics to keep your new letters coming.

I am happy to report that Elsevier cancelled their proposed price increase in the *Journal of Biomechanics* to ASB. We

are currently working with them to establish a fixed rate for the next three years, to stabilize our membership costs. And, new this year, Elsevier is offering discounted rates on additional journals to the membership. The pricing was established to be in line with that offered to other societies. In addition to the *Journal of Biomechanics* (which, remember, ASB members must subscribe to unless they certify in writing that they receive it through another of their societies), and *Clinical Biomechanics*, Elsevier is proposing:

- *Medical Engineering and Physics*: \$96 (8 issues)
- *Journal of Electromyography and Kinesiology*: \$88 (4 issues)
- *Biomaterials*: \$255 (24 issues)

Please note that this is a one year trial period, and the opportunity to continue this special pricing will be based on the number of ASB members subscribing. We hope this is a benefit to the Society, and thank Elsevier for initiating this trial run.

Pay your dues before you forget!

The Society has a new Education chair, Suzanne Smith. She replaces Jill McNitt-Gray, who served the ASB very creatively and tirelessly during the last 3 pivotal years, when electronic communications became integral to our work. Sheila Stevens is our new Student Representative; she was voted in during the annual meeting in Atlanta. Welcome to both Suzanne and Sheila.

Thank you for paying your dues! You have avoided the membership lottery!

I would also like to encourage the membership to investigate the awards available to the membership at the annual meeting. We have a wealth of talent in our society, and this is an excellent recognition of your particular expertise. Contact Kai-Nan An (Awards Committee Chair) for application information.

Thank you for updating your demographics. Your information is important to us.

Please continue to contact me if you have any questions regarding your membership, subscriptions, or as a clearinghouse for where to find the information you need.

My very best wishes for a happy and successful 1997, and, *thanks for paying your dues!*

Students' Corner

Sheila Stevens

At the Annual Meeting held in Atlanta, Peter Vint handed me the virtual gavel and my tenure as student representative began. This position has not been well defined in the past, leaving the door open for many creative programs to be developed. Past representatives have left their mark by creating an email list of student members, mini research symposiums, an on-line job resource center, and a virtual mentor program. I am currently updating the student email list and attempting to maintain the job resource center and the virtual mentor program. If you are a student member of ASB and have not heard from me via email, please drop me a line at sheila@bones.stanford.edu so I can add you to the list.

The job resource center is a collection of recent research, academic and industry positions that have been posted over the internet at various sites. If you would like to receive the latest listings, drop me an email and I will forward them to you. Many of these listings can also be found at the ISB homepage (<http://www.kin.ucalgary.ca/isb/jobs/jobs.html>) and the Biomechanics Worldwide Web home page (<http://dragon.acadiau.ca/~pbaudin/sections.html#Careers>). The virtual mentor program was developed to put individual student members in contact with professionals in industry, research and academia. This program is a great way to network and discuss issues one-on-one. This program was under utilized in the past year, but it has a lot of potential. I am currently contacting mentors from the past year to get their feedback and I am also trying to recruit new mentors. If you are interested in being matched with a mentor, or if you are interested in being a mentor, please send me an email message.

In addition to the programs started by past representatives, I am planning ways to increase interaction between student members of ASB. As students and researchers, our paths must cross many times at conferences and meetings. However, even though I have been a member of ASB for over 3 years, I know only a handful of other student members personally. I am planning an informal social gathering of ASB student members attending the Orthopedic Research Society meeting in San Francisco this coming February. The ASB Executive Board holds a mid-year meeting at this conference because a large percentage of members are in attendance. I felt the student members could also take advantage of this opportunity. I am hopeful other students will follow my lead and initiate similar get togethers at

other major meetings throughout the year. If you are planning to attend ORS or another biomechanics-related conference and are interested in getting together with other students, let me know and I will facilitate as much as possible.

Watch for email concerning a calendar of upcoming conferences, abstract deadlines, student competitions, etc. Workshops on abstract writing, experimental design, presenting papers and thesis writing have also been suggested in the past. However, due to the very full schedule at the Annual Meeting and the large distances separating student members, these ideas may have to be incorporated on-line or at the local level. If you are interested in becoming more involved with the student section of ASB let me know. ASB sincerely values its students members, as evidenced by the subsidized student conference fees and programs such as the Graduate Student Grant-in-Aid. In the next year as student representative, I hope to widen the benefits of student membership in ASB. Membership can be much more than just a means to receive the journal. Hope to hear from you soon!

Advertising in ASB Newsletter

The Editorial Board invites various businesses and corporations that we feel have products that would be of interest to members of the American Society of Biomechanics to advertise in the ASB Newsletter.

We are interested in expanding our advertising base and would like any information you may have on North American companies that might have a product or an interest in advertising in the next issue of the Newsletter. Job postings or other special announcements may purchase advertising space as well. The price list is as follows:

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

Please contact the Newsletter Editor if you have any information concerning potential advertisers.

Twenty-First Annual Meeting American Society of Biomechanics



Clemson University
Clemson, South Carolina

September 17-20, 1997

First Call for Abstracts

Information

Information about the meeting, accommodations and/or a Call for Abstracts packet may be obtained from the Meeting Chairs, Vasanti M. Gharpuray and R. Larry Dooley or downloaded directly from the meeting web page:

<http://www.ces.clemson.edu/bio/1997asb.html>

Meeting Chairs

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Abstract Deadline

Abstracts must be received by April 1, 1997 in order to be considered for presentation at the meeting. Notice of acceptance will be given by June 1, 1997. For additional information about abstract preparation, please contact the Program Chair, Mary M. Rodgers.

Awards

The American Society of Biomechanics is pleased to annually award the Giovanni Borelli Award, the Pre- and Post-Doctoral Young Scientist Awards, the Clinical Biomechanics Award and the ASB Travel Fellowship. We encourage you to submit applications and nominations for these prestigious awards. For more information about the awards please see page 9 or contact the Chair of the Awards Committee, Kai-Nan An (page 4).



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