

ACCE News

Vol. 6, No. 4 - August 1996

ACCE Mission

1. To establish a standard of competence and to promote excellence in Clinical Engineering Practice.
2. To promote safe and effective application of Science and Technology to patient care.
3. To define the body of knowledge on which the profession is based.
4. To represent the professional interests of Clinical Engineers.

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President's Message

Thomas J. Bauld

1996 ANNUAL MEETING PARTICIPATION

My appreciation to all the ACCE members who attended both the informal social hour on Sunday evening as well as the Annual Meeting on Tuesday night. Both activities were highly successful and provided good personal networking opportunities in addition to catching up on current events and reinforcing old friendships.

There were many milestones on this our 5th anniversary as the clinical engineering organization. We had the induction of our first ACCE Fellow, the esteemed George Johnston. Several other members are also being considered for this special recognition. Our strategic plan, Vision 2000 has received the endorsement and support of the Board and the membership. Implementation of the priority initiatives is now beginning with the help of a large number of members. This activity represents the intense effort of so many individuals, that they would be hard to list. Suffice it to say that Mo Kasti and Tom Judd have been instrumental in achieving the success to date and we applaud them for their dedication and inspiration.

ACCE AUDIO CONFERENCE COURSES

We have an outstanding faculty for this excellent and cost-effective educational series. Take advantage of this truly continuing education program. Participation will help you and all your local colleagues keep up on many developments in the field. You might wish to invite staff members, other department managers at your institution, and your boss to the classes. Courses air on the third Thursday of the month.

ACCE LOGO

The ACCE logo can now be applied to articles of clothing. You select the item, send it to Morse Medical where it is sewn on in the color of your choice. This is an opportunity to show your professional affiliation.

ACCE News

Your new editor, Joe Dyro, is demonstrating his commitment to production of the publication on a regular basis. Please provide him support and content material. Don't forget that you can access *ACCE News* from our web page.

RETIREMENT AS PRESIDENT

Again I'd like to say thanks to all the ACCE members and especially the Board members who are retiring this year for all the help and support they have provided to me and the organization. I've always been impressed by the wisdom and expertise that are shown by individuals such as Phil Katz and Gailord Gordon. We wish them well. Furthermore, we wish the best of luck to our new officers. Please give all the help you can to Frank Painter as the new ACCE President. Frank has been a key leader in the ACCE since its inception; but no one can be

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successful alone. Welcome and communicate to all the new officers: Vice President Ira Tackel, Treasurer Bryanne Patail, Secretary Jennifer Ott and the new Board members, Denver Lodge and Binseng Wang. They all bring a wealth of ideas and talent to our organization. We are truly fortunate to have such depth and capability in our members.

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ACCE News on the Web: see ACCE homepage

<http://info.lu.farmingdale.edu/~acce/>

Editorial

Mending Walls

Joseph F. Dyro, Editor

"Something there is that doesn't love a wall, that wants it down."

Robert Frost from Mending Wall

In two weeks I will be attempting to recognize my classmates from 35 years ago at the Portland High School class reunion. I will also be hoping to win the raffle of a dozen Maine lobsters. While they do not go very well with Moxie, they are tasty all the same. For those who want to listen, members of my class can hear the same speech I gave at graduation so long ago. Drawing from Frost's poem, *Mending Wall*, I implored my classmates to look for ways to break down walls that divide, to know people better, and to strengthen relationships.

In this *ACCE News* I have chosen an international theme. ACCE members who have

actively promoted clinical engineering worldwide have contributed. One of the 1996 Advocacy Award winners is Lúcio Flavio Brito of Brazil. Bob Morris relates a touching anecdote from Mongolia. George Johnston's enormous contribution to the profession internationally as well as nationally is highlighted in Profiles in Clinical Engineering. International Committee members plan a bold agenda for 1997. Al Jakniunas recaps his recent roundtable, *World Wide Market Industry Survival Issues Over the Next Five Years*.

Isolationists take note! International clinical engineering is fun, rewarding, and necessary. What fun it was to chip off chunks of the Berlin Wall upon returning from the Weimar International Clinical Engineering Conference in 1990. An equally exhilarating experience was the beginning of the disassembly of the Great Wall of China while teaching in the Third Advanced Clinical Engineering Workshop in Beijing in 1996.



Dyro Embarks on Ambitious Project

Rewards are emotional, intellectual and monetary. Knowing that you are helping others is a tremendous feeling. Much can be learned from our fellow clinical engineers. Attend just one international conference and you will be impressed by the high level of achievement and professionalism demonstrated. Consulting work abounds across the globe as health care systems are designed, rebuilt, and improved. Short-term and long-term assignments at levels of remuneration to

fit every pocketbook are available. Let there be no question as to the worldwide nature of the medical device market in which clinical engineers are in the vanguard, assessing, planning, implementing, and managing systems of medical device technologies.

ACCE News Deadline:

All copy must be in my computer by the first day of the following months: January, March, May, July, September, November. E-mail is best at jfdyro@aol.com. Or you may fax to 516-751-7802. You may even speak to me at 516-751-7244.

The Board

President	Frank R. Painter
Vice-President	Ira Tackel
Secretary	Jennifer C. Ott
Treasurer	Bryanne Patail
Member-at-Large	Greg Davis
Member-at-Large	Ethan Hertz
Member-at-Large	Denver Lodge
Member-at-Large	Binseng Wang
Past President	Thomas J. Bauld

Committee Chairmen

Advocacy	George I. Johnston
Membership	Binseng Wang
Government Relations	Ethan Hertz
Vision 2000	Mo Kasti
Nominations	Thomas J. Bauld
Education	James O. Wear
International	Alan Levenson
Inter-Society	Yadin David

American College of Clinical Engineering
5200 Butler Pike
Plymouth Meeting, PA 19462-1298
610-825-6067
610-825-9284 BBS

Letters to the Editor

Dear Joe,

ACCE, its members, workshops, and existence has been a determinant factor in my career. I should like to express my sincere thanks for all the support I have received. I just received the news that I am the recipient of two 1996 Advocacy Awards. This news and the implications of the award gave me a

new horizon and renewed energy to continue working in this exciting and helpful profession.

In the ten years since obtaining my B.S. in mechanical engineering in São Paulo, I have learned how an engineer contributes to the development of the medical system. Brazil is changing rapidly. Biomedical and clinical engineering academic programs are flourishing. Over the years I have been especially encouraged and aided by Frank Painter, Yadin David and Tom Judd. The US programs in clinical engineering have served as invaluable models and guides for my work in Brazil.

I like clinical engineering despite difficult and taxing situations and I sometimes feel tired. But I am lifted up by my love of country, its people and its schools, and the sensation that everything is possible here.

Sincerely,
Lúcio Flavio Brito

Meeting Reports

Cost Effectiveness and Productivity

Joseph F. Dyro

Philadelphia's Thomas Jefferson University Hospital on May 31, 1996, was the site of the 11th Annual Cost Effectiveness and Productivity Meeting. ACCE members comprised one half of those attending.

The first annual meeting of clinical engineering experts took place in Boston under the leadership of Manny Furst, Tucson, Arizona. The group's objective is to seek ways to make the practice of clinical engineering more effective. The one-day conference features presentations by leading clinical engineers who describe their methods for improving productivity within their departments. Mike Argentieri now co-chairs the meeting with Furst.

Today, hospital administrators are looking for cost effective mechanisms for servicing their technologies. Both in-house and outside service organizations need metrics to assess their performance and help them identify where to improve the bottom line. The thirty in attendance at this year's meeting, hosted by Ira Tackel, Director of Medical Instrumentation at Jefferson, heard talks given by Ted Cohen, Dave McKinney, Mike Argentieri, Elliot Sloane, Larry Hertzler, Dave Dickey and Terry Clemans. The discussions focused upon identifying the necessary metrics for measuring performance. Practical examples were given by various speakers on reducing costs and successfully competing for the business.

Ted Cohen, University of California at Davis,

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began with a progress report on The Validating Metrics Pilot Study launched at last year's meeting. Cohen updated the group on the data being collected for the Study and discussed the following three measurements: (1) ratio of service cost to acquisition costs; (2) turnaround time; and (3) downtime. Cohen reported a large variability of data, the need to improve definitions, especially turnaround time, compliance on cost issues, and the need to improve definition and consensus on quality metrics such as turnaround time, downtime, failure rate, and workorder counts. Following the report, a lively and fruitful discussion ensued on other repair and maintenance metrics used in other departments. In developing metrics, care must be taken to address the following: (1) operational definition; (2) portability of definition to other users; (3) inter-hospital comparisons; (4) advantages; and (6) disadvantages.

Dave McKinney, San Diego, CA, presented a project developed by him and Manny Furst on performance improvement through standardized measures and peer comparison.

Mike Argentieri covered the latest on the proposed FDA Good Manufacturing Practices (GMP) regulations. He raised concern that the FDA may regulate servicing of medical devices by hospitals and independent service organizations (ISO). He then summarized the final SMDA regulation set to take effect on July 31, 1996.

The following presented short reports: Ira Tackel on the University Hospital Consortium's Clinical Engineering Committee; Nancy Pressly on the FDA Center for Devices and Radiological Health; Bob Stiefel on the AAMI Clinical Engineering Management Committee; and Joe Dyro on the American College of Clinical Engineering. A lively discussion on the FDA ensued, sparked by the comments of Arnie Mahachek, Johns Hopkins Hospital. The need for the FDA to begin to tap clinical engineering expertise when crafting regulations was clearly identified.

Elliot Sloane, Vice President of MediqPRN, addressed international issues and described the great number of opportunities awaiting clinical engineers. Elliot described the work of Operation SMILE, CareLift International and ORBIS International, three of the hundreds of non-governmental organizations (NGO) utilizing clinical engineering expertise. In developing countries, biomedical engineering education and training remain high priorities as does the donation of medical devices.

Larry Hertzler, BGC Health Systems, St. Louis, Missouri, presented a case study entitled

Outsourcing to the Inside. He explained how his department successfully responded to his hospital's Request for Proposals (RFP) for service and turned the outsourcing efforts to the inside. His successful bid did not carry the lowest cost but it did demonstrate customer focus, clinical engineering talent, research, and commitment to best value. He urged others faced with the same situation to concentrate on marketing, abandon paradigms, and demonstrate and prove best value.

Dave Dickey in his talk entitled *Comprehensive Service Cost Analysis* related another success story in which he presented cost-saving data obtained through effective service management at Washington Hospital Center.

Terry Clemans of St. Margaret Hospital in Hammond, Indiana, reported on a successful Joint Commission on the Accreditation of Healthcare Organizations (JCAHO) inspection. Inspectors focused upon analysis of trended data used to improve equipment utilization. Meticulous examination was made of service histories of selected devices (anesthesia machine, defibrillator, and physiological monitors). Equipment replacement methodology, management of service contracts, and integration with the hospital's safety program were examined.

The next meeting will be held on June 6, 1997, in Washington, DC. For further information, please contact Mike Argentieri at 1-610-825-6000 or MannyFurst at 1-602-745-0765 and efurst@pobox.com.

World Wide Market Industry Survival Issues Over the Next 5 Years

Alfred Jakniunas

On June 4 at the Annual AAMI meeting, I chaired a roundtable on *World Wide Market Industry Survival Issues Over the Next 5 Years*. With downsizing of health care facilities and consolidations in the US, medical equipment manufacturers and service support organizations will be experiencing tremendous changes in the next five years. The papers presented addressed the medical device industry, service organizations and clinical engineering sectors in the US and in developing countries. Issues concerned the use of used equipment, training requirements and clinical engineering demands.

Speakers included ACCE members Binseng Wang, Antonio Hernandez, Andrei Issakov, and David Harrington and Edward McDonald. Dr. Wang of MediqPRN spoke on exporting used medical equipment. Harrington, Executive Director

of the American Medical Resource Foundation gave practical advice based on years of experience on the international scene. Hernandez, Pan American Health Organization (PAHO) Regional Advisor for Health Services Engineering and Maintenance, described the health care facilities in Latin America. McDonald, Hewlett-Packard's Director of International Programs, gave the manufacturer's perspective. Issakov, World Health Organization Acting Programme Manager for Health Systems Resources, described medical technology developments on the international scale.

Today, the United States, Western Europe, and Japan dominate the medical equipment industry. The 1992 global shipments of medical equipment amounted to an estimated \$18 billion of which the United States had a 44% share, Western Europe 31%, and Japan 13%.

The United States medical industry is well respected worldwide for its technological advances in medical equipment, supplies and services. International demand for US medical equipment and supplies is expected to grow significantly producing trade surpluses over the next five years from \$9.2 billion in 1994 to \$18 billion by year 2000. While Europe and Japan will continue to be the largest markets, a new group of nations for US medical exports will be emerging. The big emerging markets are Argentina, China, Hong Kong, Taiwan, India, Indonesia, Mexico, Poland, South Africa, South Korea, and Turkey.

The US medical equipment and supplies industry can be divided into five sectors:

1. medical and surgical instruments
2. surgical appliances and supplies
3. dental equipment and supplies
4. x-ray apparatus including tubes and imaging equipment and supplies
5. electromedical equipment

The medical device industry faces major critical issues such as inconsistencies between US and foreign regulations, US regulatory requirements, escalating costs incurred by liability suits, and pressure to curtail rising health care costs.

The lack of global harmonization of standards and regulations has resulted in repetitive testing, requiring double approval for US medical equipment. In view of these restrictions some US firms have resorted to doing research and development in other developed countries to increase efficiency in reaching these markets.

Although the FDA has made great progress in streamlining its procedures by cutting the export processing time, it is not clear how much the new amendments to the Safe Medical Devices Act of

1990 will affect medical equipment exports.

Clearly, emerging opportunities for clinical engineering are in service support, training, planning and technology management. Networking with clinical engineers at the international level and access to accurate information are prerequisites for success in the international arena.

Editors Note: Al Jakniunas is a member of the ACCE International Committee as are Wang and Harrington.



ACCE pre-Annual Meeting Social

Ira Tackel hosted a reception for ACCE members and guests at Thomas Jefferson University. A picture is worth a thousand words. So, rather than describe the social gathering any more, I would encourage the reader to look at the pictures snapped by your editor (see page 8).

ACCE Annual Meeting Highlights

Seventy members and guests attended the ACCE General Meeting on June 4, 1996, in Philadelphia. After a congenial hour of conversation over snacks and beverages, Tom Bauld called the meeting to order.

The President, Treasurer and Secretary reports were followed by reports of the committees. The slate of candidates for the board was presented. Proposed bylaws changes were discussed.

Membership Committee Chairman, Binseng Wang announced the first ACCE Fellow, George Johnston, who received a standing ovation. Advocacy Committee Chairman Johnston then presented the advocacy awards to Lúcio Flavio Brito and Dave Dickey. See story on page 13.

Andrei Issakov of the World Health Organization appealed for inclusion of non-US clinical engineers in ACCE activities. Dyro recognized International Committee efforts to promote clinical engineering worldwide and gave special mention to Bryanne Patail for his outstanding presentations at the last International Clinical Engineering Conference in Merano, Italy, last October.

Webmaster, Bruce Morgan described the ACCE Homepage and plans for its future development.

Tom Bauld was honored with a plaque memorializing his outstanding leadership as President.

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ACCE Thanks Tom for a Job Well Done!

Bauld reported that ACCE continues to be an FDA MedWatch partner. He also urged members to comment on the proposed FDA new telemetry frequency bandwidth regulations. Bauld announced the availability of a set of slides describing ACCE. Slides can be purchased at cost by contacting him. Inter-Society Committee Chairman, Yadin David welcomed ACCE member Joe McLain, President of the ASHE clinical engineering group. McLain urged members to attend the Medical Technology Management conference in December.

Tom Judd and Mo Kasti presented the Vision 2000 Strategic Planning Recommendations. See story on page 13. See page 9 for photos of the Annual Meeting..

ACCE Board Highlights

June 4, 1996

Marvin Shepherd

President Bauld called the meeting to order. The minutes of the April 17, 1996, Board meeting were approved.

Bauld discussed ACCE-ASHE collaboration and the upcoming Management of Medical Technology conference in Chicago (see story on page 15). Agreement was reached on procedures to review ACCE products sold by Morse Medical.

Vice President Tom Judd presented the case for a second VP to facilitate implementation of Vision 2000 objectives. Agreement of the Board led to a bylaw change proposal for presentation to the general membership.

Secretary Marvin Shepherd reported the establishment of a WWW Page Committee consisting of Bruce Morgan, Alan Pacela and Shepherd.

Treasurer Ira Tackel described a solid financial position with a \$5000 reserve. Dues will remain at \$50/year throughout 1996. The success of Morse

Medical in selling ACCE products has increased revenues to ACCE through its marketing agreement with the company.

Nominating Committee Chair, Joseph Dyro in presenting the slate for unanimous Board approval recognized the efforts of Committee members Jerry Anderson, John Hughes, Elliot Sloane and John Smith.

Membership Chairman, Binseng Wang reported a 10% increase in members in 1996. Education Chairman, James Wear reported that the audio conference program was doing quite well. See story on page 14. Advocacy Chairman, George Johnston presented the recommendations for this year's awards (story on page 13). International Committee Chair, Joseph Dyro said his nine-member Committee is prioritizing seven projects among which are collaborating with the IFMBE CED in producing a Handbook of Clinical Engineering and developing guidelines for service contract management. Mo Kasti presented the Vision 2000 Strategic Plan. Slight modification by the Board cleared its release to the general membership at the Annual Meeting. See story on page 13.

Finally, Yadin David led a discussion on peer review of CE departments.



Election Results

It is official. All returns are in. By mail ballot the membership approved of the following new officers and members-at-large. They began their terms on August 1, 1996.

- | | |
|-------------------|------------------|
| • President | Frank R. Painter |
| • Vice President | Ira Tackel |
| • Secretary | Jennifer C. Ott |
| • Treasurer | Bryanne Patail |
| • Member-at-large | Denver Lodge |
| • Member-at-large | Binseng Wang |

The bylaws change, also on the ballot, was approved. The change adds a second Vice President to the Board. This change will enable ACCE to move forward to meet the objectives of Vision 2000. On another issue, most members polled preferred to have their e-mail addresses placed on the ACCE homepage on the internet.

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AIMBE News

The American Institute of Medical and Biological Engineering (AIMBE) Council of Societies of which ACCE is a member holds its Summit Meeting on October 11-13, 1996, in Minneapolis, Minnesota. The meeting's theme will be *Communication, Building a Future for Medical and Biological Engineering*. ACCE will benefit from the action items identified and initiated at the Summit. Among the goals of the Summit are increasing each member society's role in AIMBE, expanding federal funding for MBE research and generating public support for medical and biological engineers and the industry.

Following up on a meeting with Speaker Newt Gingrich held in Marietta, GA in September 1995, AIMBE has communicated to the Speaker a proposed set of principles on which to base fundamental, long-term reform for medical device regulation. At the September 1995 meeting, Gingrich asked then AIMBE Past-President Pierre Galletti for AIMBE's views on fundamental reform for medical device regulation. Subsequently, Galletti was named by then-AIMBE President Jerome Schultz to chair a special committee on securing medical innovation in the public interest. The subject was discussed at a forum at AIMBE's most recent Annual Event, as well as at meetings of AIMBE's Board of Directors in March and May of this year. In a letter transmitting the document to Speaker Gingrich, AIMBE President Winfred Phillips said *"AIMBE believes three principles should guide Congress in addressing fundamental reform of medical device regulation: (1) U.S. citizens deserve an entirely new model of device evaluation and regulation, formulated without reference to the drug regulation model. (2) For medical devices, the public health challenge is safety, performance, and availability, rather than safety and efficacy, as is the case for drugs. (3) The present model of Class I, Class II and Class III devices, and the system of Phase I, Phase II and Phase III clinical trials, which attempt to separate the evaluation of safety, efficacy, and effectiveness, when applied to devices is obsolete. It should be*

replaced by a model that protects patients' interests, sustains innovation, and reduces the costs and time delays that currently burden the introduction of new technologies."

IFMBE CED News

Joseph F. Dyro

Joseph F. Dyro and Csaba Nagy will co-chair the session on *Clinical Engineering: Current Trends Worldwide* at the 2nd International Conference on Clinical Engineering at BUDAMED '96 in Budapest, Hungary, August 25, 1996. The Clinical Engineering Division (CED) of the International Federation of Medical and Biological Engineering (IFMBE) of which ACCE is a member organization is a supporter of the meeting. Papers will be presented by speakers from Canada (ACCE-member, John Smith), Sweden, USA, Mexico, South Africa, Greece and Australia.



Clinical Engineering in Canada

John Smith

Clinical Engineering continues to be active in Canada, despite significant pressures upon the Health Care system. The report that follows outlines recent activities and initiatives.

Standards of Practice

The *Clinical Engineering Standards of Practice* document has been under development for two years under the sponsorship of the Professional Affairs Committee of the Canadian Medical and Biological Engineering Society (CMBES). At the recent CMBES conference, a number of outstanding issues were resolved; and the revised document will be submitted to a vote shortly. Follow-up work will involve the development of a peer review mechanism under which conformity to the standards will be evaluated.

Report from the annual meeting of the CMBES

The meeting was held in Charlottetown, Prince Edward Island, from June 26 to 29, 1996. The plenary session provided thought-provoking presentations on Healthcare Funding, the Ethics of Human Experimentation, and Biotechnology. Sessions of clinical engineering interest included presentations on interactive education-based programs, reuse of cardiac catheters, recommendations for electromagnetic compatibility in health care, surgical instrument staining, and automated power

article continued on page 10

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receptacle testing.

A workshop urging cooperative efforts between health care professionals and the Bureau of Medical Devices (the Canadian regulatory agency for medical devices) resulted in a decision to establish a list server, where it will be possible to post messages and questions. The Bureau of Medical Devices will reply as required. This initiative will facilitate communication between the Bureau and Clinical Engineers in areas of mutual interest.

A Clinical Engineering discussion group discussed a range of issues, including the impact of changes in the Health Care System, extended roles for clinical engineers, and developing trends in medical equipment maintenance.

The financially motivated downsizing of the system continues, and this provides both opportunities and challenges for clinical engineers. Trends in outsourcing as part of restructuring and re-engineering are forcing in-house services to be competitive and to identify areas where added value is provided. The improving reliability of traditional medical devices, and subassembly replacement, with subsequent off-line repair, in order to preserve uptime, means that less time is required for maintenance activities.

Appropriate life cycle management of medical device technology provides added value to health care organizations and is an area where clinical engineers need to develop appropriate skills in order to succeed in a competitive environment. Clinical engineers should be comfortable in managing outsourcing of traditional in-house activities where this is in the best interests of the organization.

A larger proportion of capital expenditures are being directed to information systems, including clinical information systems, which provides opportunities for participation by clinical engineers in conjunction with information technology personnel.

It was concluded that clinical engineers should not exclude any "non traditional" tasks or roles, and should be prepared to objectively analyze the risks and benefits of any new initiatives, and finally to make decisions in the best interests of the organization.

The Professional Affairs Committee of the CMBES reported on continuing participation in the CSA Health Care Technology Program, the development of Canadian Regulations Respecting Medical Devices, and the National Health Organizations meetings of the Canadian Council for Health Facilities Accreditation.

Formation of the CMEPP

The Canadian Medical Protection Plan (CMEPP) is now in operation. The plan was developed to

provide hospitals with an alternative for protecting medical equipment maintenance costs, and is based upon the principle of risk-sharing across institutions. The plan is administered by the Hospital Insurance Reciprocal of Canada (HIROC) which has successfully covered liability risks in Canadian hospitals for a number of years.

1996/97 Telemedicine program

The program for the Biomedical Telemedicine series beginning in September has now been finalized. Nine sessions have been planned, and topics covered include a summary of the Clinical Engineering Discussion Group at the recent CMBES conference, standards of practice, electromagnetic compatibility, clinical information systems, health care standards, clinical laboratories, and the business of clinical engineering. Further information may be obtained from Telemedicine Canada, 416-599-1234.

Standardization of Infant Transport in Ontario

Incompatibilities between infant transport incubators and the ambulance transport system have been a long standing issue in Ontario. An initiative, involving the Ministry of Health, Emergency Health Services Branch, clinical personnel, and clinical engineers, designed to address this problem, is well under way. The objective is to provide an infant transport system which meets both clinical and transport requirements and allows for easy transfer among land ambulances, helicopters, fixed-wing aircraft and health care institutions throughout the province. The system involves a deck which is compatible with stretcher systems used for adult transport. The patient support systems are configured on the deck, and manufacturers are being given the opportunity to respond to these requirements.

Further information, or direction to appropriate sources, on the items in this report may also be obtained from the CMBES Secretariat, 837 Eastvale Drive, Gloucester, Ontario, Canada. K1J 7T5. Tel: 613-993-1686.

Reflections

The Road to Arvecheer

Robert L. Morris

In July of 1995, I was in Mongolia as a consultant for the Ulan Bator Foundation to perform a technology needs assessment at the Maternal & Child Research Centre. I asked my Mongolian friends if I could visit a hospital away from the capital of Ulan Bator. I wanted to observe health care in the provinces to see how it compared with

that in the capital. A trip was arranged to go to Arvecheer, a provincial capital about 350 miles from Ulan Bator. Since it was a paved road all the way, I was told that it would only take 16 hours or so. That meant that our average speed would be about 35 Kilometers per hour (22 mph). We would go by Russian army jeep. The party consisted of a driver, two anesthesiologists, one surgeon and myself.

One of the anesthesiologists, was going as guide and translator. The surgeon and the other anesthesiologist were going to Arvecheer to do surgery on an 11-year-old boy. The surgeon in Arvecheer had asked for assistance on a complex case.

In Mongolia even the paved roads have potholes that can hide a vehicle. It makes driving a real challenge. Since every driver wants to go as fast as possible but does not want to lose the vehicle's undercarriage, one drives to avoid potholes rather than the more prosaic task of staying on one side of the highway. This entails weaving back and forth with sudden short turns and with attention focused on the road surface. When meeting another vehicle, the technique is to continue as fast as possible dodging potholes until at the last second one of the drivers will suddenly hit the brakes and dive into a pothole letting the other have the smooth portion of the highway. In this Mongolian version as in the traditional American game of chicken, I could never determine who would give way.

About 90 kilometers out of Ulan Bator, we came across a highway accident that had occurred about 20 or 30 minutes before our arrival. A truck carrying people and sheep had collided head-on with a mini-van filled with people. The van was demolished. The truck had rolled completely over and the cab was smashed flat.

There were dead sheep, suitcases, belongings and people scattered all over. Of course we stopped to see what we could do. There were eight people dead at the scene, including two children. Survivors had been taken by passersby to the next town, Lün, about 20 kilometers on down the road. We got back in the Jeep and took off. Lün was a small town. It did not have a hospital but did have a medical dispensary, staffed by a midwife, a medic (no doctor) and a couple of other health workers. Sanitation facilities consisted of a pit toilet out back.

Fifteen injured people had been brought in. They were lying about on the floor as there were only four beds. One person had died shortly after being brought in. Things were pretty hectic as the three doctors assisted in treating all of the injured. These included children as well as adults. There

was only one stethoscope in the place, no x-ray or lab facilities and no anesthetics. Fortunately, one of the doctors had brought her surgical instruments with her.

The buckets of blood and waste were taken out back and dumped into the pit toilet. The toilet had no seat, just a board missing in the floor that you straddled. I held the arm of a 10-year-old boy out straight with tension while the doctor took some wooden sticks and made a splint after stitching and wrapping where the bone had protruded. The child cried but stopped as soon as we were done. It was amazing. There were groans and moans but no screaming or hysterics.

One lady had a broken pelvis, both legs with multiple fractures and undetermined internal injuries. Every few minutes we would straighten her out a bit, blocking with small rolled rugs. She was in great pain so we could only straighten her incrementally. There was one telephone at the town post office and a call was made to Ulan Bator for medical assistance which would not arrive for many hours.

It took about four and one half hours to take care of everyone. Of the 15 people brought in, one died, 11 were very seriously injured and three had minor injuries (they could still stand or walk.). That meant that in the one accident the toll was nine dead, 11 seriously injured and three with relatively minor injuries: a terrible, tragic accident. Some of the injured were from Arvecheer or nearby. We took their names so we could pass on word of the accident to family and friends.

After finishing caring for the injured, we had a late, quick lunch and headed out again for Arvecheer. Several days later as we were returning to Ulan Bator, we stopped in Lün to find out what had happened. All 11 of the seriously injured had been transported to hospitals in Ulan Bator where they were recovering. No one else had died. Considering this non-statistical sample, the US rule for serious trauma survival, that says if you survive the first two hours your chances of ultimate survival are good, held true in Mongolia under very primitive circumstances.

The rest of the trip to Arvecheer and return included many other adventures but none that so showed the resourcefulness, resilience and strength of the Mongolian character.

Profiles in Clinical Engineering

George Johnston

My entry into the field of clinical engineering came shortly after graduation from high school in 1948 when I gained employment as a medical

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electronics technician at the Johns Hopkins School of Medicine. Perhaps it was fortuitous that I was unable to afford full-time college tuition and scholarships which at the time were reserved for returning World War II veterans. Thus, I plugged away part-time at night school in electrical engineering at Johns Hopkins for eight years until I graduated in June of 1955. Although electronics had been my interest since the age of 12, the Hopkins electrical engineering curriculum at that time, like that of most colleges, was power-oriented. Only two courses even touched on electronics. What electronics I did learn was learned on the job at the Medical School. Life sciences knowledge was similarly obtained on the job. The EE curriculum included a wide range of non-EE courses like thermodynamics, statics, dynamics and strength of materials. These were not my favorite courses and my grades showed it. However, I have since found every subject useful in my biomedical engineering design work.

After eight years at the Medical School, I knew I wanted to stay in academia, but following graduation I still had to satisfy my two-year military obligation. Again I was fortunate. Knowing that time in the Public Health Commissioned Corps would satisfy my military obligation, with my experience and new BSEE, I landed a job as Biomedical Engineer in the Corps at the Instrument Section of the National Institutes of Health. My colleagues predicted I would become a permanent government employee, but I knew that after two years I would seek a university position.

At NIH I authored my first publication and presented at two engineering conferences. After two years and nine months, more excellent on-the-job training, and design experience, I left to start my own biomedical engineering support department at the University of Oregon Medical School (now Oregon Health Sciences University).

I modeled my department, which I named Research Instrument Service, after the NIH's Instrument Section and JHU's School of Medicine shops where I had obtained my early experience. Mine was one of probably less than a dozen such departments in the country at that time. We provided design, fabrication and maintenance of both research and clinical equipment. Because many scientific instrument companies had yet to develop extensive maintenance service, we became contract Pacific Northwest maintenance providers for several of them. My maintenance experience by this time had convinced me that no engineer should be turned loose to design anything until he or she had served a full maintenance apprenticeship,

something I still believe.

As research grant money became increasingly available during the '60s, our design and fabrication activities grew correspondingly and we added a glassblowing section to our department and later a computer section, the University's first computer service. During this time we developed several instruments of commercial worth, obtained one patent, and published or presented more than twenty technical papers on our activities.

In 1967 three of us, Jay Yowell, Bob Morris (who I hired in 1964 to become my assistant director and who was the major contributor to our technical successes) and I presented papers at the 7th International Conference of Medical and Biological Engineering in Stockholm, Sweden. At the meeting I met Torsten Rudjord, a Norwegian biomedical engineer from the University of Oslo's Neurophysiological Institute. Encouraged by Torsten I applied for a fellowship from the Royal Norwegian Council for Scientific and Industrial Research. Successful, I spent a sabbatical year at the Neurophysiological Institute during 1970-71. My first international experience and a glorious one at that!

During the 1970s Federal emphasis turned from the research arena to the clinical arena. The government wanted all those marvelous devices developed with research dollars to be translated into clinical devices providing better patient care. My department, like many such departments, experienced a significant shift in customer base from research institution to hospital. Within ten years we became a hospital department and changed our name to Clinical Engineering, to reflect our current activities. About that time, through Bob Morris, I learned about Project HOPE and filed a CV with them. I heard nothing from them for several years until June of 1983, when I received a call asking if I could help teach medical equipment maintenance in Jamaica. My wife and I spent our month's summer vacation in Kingston where I was able to "kluge" together a semblance of a maintenance shop in the HOPE warehouse and put six of the first biomed graduates from the College of Arts and Sciences to work on repairing an enormous backlog of equipment. My relationship with HOPE prospered and the following year I spent a month putting in a maintenance shop at the Cornwall Hospital in Montego Bay, Jamaica. The next year, it was a month in Krakow, Poland reviewing the maintenance facility at the Children's Hospital. Then on a University contract with the U.S. Treasury Department, I spent a month in 1988 at the King Abdul Aziz Medical School in Jeddah, Saudi

Arabia designing a medical equipment support facility.

The overseas experiences were both trying and a delight for my wife and myself, so much so that I retired from the University at the end of 1988 after thirty years and took a long-term (one-year) assignment with Project HOPE in China setting up clinical engineering education and training programs. A recount of our experiences there appeared in the *Journal of Clinical Engineering*, Vol. 17, No. 6, 1992. That experience was followed by a similar, although not nearly as productive a year with another organization training nine BMET's and setting up a maintenance facility in Guyana, South America. The disasters associated with that program are alluded to in another *Journal* article, Problems, Perils, Precautions and Rewards in Overseas Clinical Engineering Training, Vol. 21, No. 1, 1996. Since then the variety of overseas consulting activities has expanded. I spent two six-week periods in Cairo, Egypt for EduSystems helping to develop electrical and electronic instrumentation maintenance courses for water and wastewater treatment plant engineers and technicians. Most recently I put on a three-day course on Logical Troubleshooting for engineers and technicians in Kuala Lumpur, Malaysia for Management Engineering Associates. That was so successful that I have been invited to repeat it in the fall. Lately, despite my being approached on a number of overseas possibilities, nothing seems to have materialized. However, I am able to keep busy on some domestic consulting. People keep asking me when I intend to retire. I answer, "I would rather wear out than rust out."

Editor's Note: George was honored at the Annual Meeting with the ACCE Fellow designation, the first so designated. With such a broad range of international experience, he agreed with my request for the above story of his career. I congratulate George and thank him for his story and for the encouragement he has given me and others to pursue clinical engineering with vigor wherever you practice it.



Vision 2000

ACCE Strategic Planning Prioritized Recommendations Step 1 were presented at the Annual Meeting June 4, 1996, by Tom Judd and Mo Kasti. Members coordinating the four strategic

initiative areas explained their initiative area and presented its prioritized objectives. Initiatives, coordinator, and top objective are presented below:

1. Marketing/Public Relations -- David Dickey

Advocate and continue to promote Clinical Engineering through key Clinical Engineering practices adding to them technology management business practices.

Top Objective: Increase membership by at least 10% per year.

2. Education -- Brian Porras

Become an organization which serves its members by offering one stop shopping for information and education services related to clinical engineering.

Top Objective: Develop a formal educational conference to roll out in June 1997; Advanced Clinical Engineering-type Workshop to be held in USA either in June or in the fall open to any CE.

3. Unification / Strategic Alliances --Yadin David

Create strategic alliances to be able to provide access to various services for its membership.

Top objective: Inventory of available member resources.

4. Member Services -- Greg Davis

Demonstrate value to the existing members and potential members.

Top objective: Develop the communication links (Internet) to provide services such as employment, reference library, education information, group/issue discussion, UserNets, parts sources, equipment availability, and device problems.



1996 ACCE ADVOCACY AWARDS

George I. Johnston

The ACCE Board of Directors approved a maximum of five awards in the Professional Development and Professional Achievement categories for 1996. This year, due to budget constraints, the awards consisted of plaques only - no money! The ACCE Advocacy Committee received four excellent award nominations, three for Professional Development and one for Professional

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Achievement. The following judges assured that the nominations were of suitable quality and met the awards criteria: Dennis Autio, John Hughes, Eben Kermit, Allan Pacela and Fred Wainwright. Although all nominations were considered of excellent quality, one, by a three-to-two vote, was rejected as not adequately meeting the awards criteria requiring use of the term *clinical engineering* in the title and throughout the body of the paper. The winning nominations were:

Professional Achievement Award



Lucio Flavio Brito

for his book, *Seguranca No Ambiente Hospitalar*

Professional Development Award

Lucio Flavio Brito for his publications, *Exposaúde '95* and *Guia de Fornecedores Hospitalares*

Professional Development Award

David Dickey

for his publication, *Clinical Engineering Helps Reduce Equipment Costs*



Gregg Nighswonger, Executive Editor of the *Journal of Clinical Engineering*, presented a one-year *Journal* subscription to the international winner. Nighswonger, in presenting the award at the Annual Meeting, said that the *Journal* intends to make such an award annually. Paulo Sergio Camargo accepted the award for his Brazilian colleague, Lúcio Flavio Brito, who was unable to attend the meeting.

During the AAMI meeting I talked to the fourth nominee and commiserated on the problem of his paper failing to include the term *clinical*

engineering and was surprised to learn that the original manuscript did include *clinical engineering* in the title and throughout the text. It seems that the editors of the nursing journal to which it was submitted, because of their unfamiliarity or lack of understanding of the term, edited it out! Doesn't that tell you what an uphill battle we have.

A reminder: we are now eight months into the year 1996. Awards nominations are made for articles published in the calendar year! So get busy. If you don't have someone to nominate, encourage someone to publish and nominate them. Better yet; get busy and publish something yourself and **NOMINATE YOURSELF!** See the spring issue of the Newsletter, pages 13-15, for a partial list of journals we suggest you target. An application form can be found inserted in the current newsletter.

ACCE Teleconference Series

James O. Wear, Education Chairman

The 1996 series of ACCE teleconferences has gone very well with four remaining.

ACCE Teleconference Schedule

- **August 15**
Contract Management *Dave Simmons*
- **September 19**
Quality Improvement *Lana L. Berry*
- **October 17**
CE Involvement in Managed Care QI
Thomas M. Judd
- **November 21**
New Opportunities for CEs *Ira S. Tackel*

The cost for up to three ACCE members at a single site is \$100 per course or \$850 for the series. Additional attendees will be charged \$25 per course. ACCE will accept checks, credit cards, and purchase orders. POs can be sent by way of fax to me at 501-771-1775 or call me at 501-370-6618.

We would like to start planning the 1997 series of teleconferences and are interested in topics that the membership would like to have presented in this educational mode. The teleconferences are one-hour sessions each month with forty-five minutes of presentation and fifteen minutes of questions and answers. Almost any topic can be covered in this way. If you have any topics that you would like to have covered; and, especially, if there are speakers you would like to hear, fax this information to me at the above fax number. If you would like to discuss a program, please call me at the above number.

Web Trappings

B.J. Morgan, Webmaster

The ACCE World Wide Web site (<http://info.lu.farmingdale.edu/~acce>) continues to grow and develop. Two new features are the Message Center and the downloadable version of *ACCE News*. At present, the last three years of *ACCE News* are on-line and the last two issues are available for downloading and viewing off-line with an HTML viewer. It is anticipated that within two months all back issues will be available for reading on-line or for downloading.

The Message Center is a start on an open forum where members can post messages or reply to messages already posted. At present, it is a moderated forum where all messages must go through the systems operator. This has the advantage of eliminating flaming and other undesirable or inappropriate messages but has the disadvantage of slower response time. A message form is being prepared and should be up by the time you read this. This will make preparing and transmitting messages easier.

Developing and maintaining the web site is more time-consuming than most people probably realize. Fortunately, it also has an element of fun in it. Nevertheless, it would be greatly appreciated if someone would volunteer to assist in maintaining the Conferences and Meetings page. All that is necessary is to e-mail me (jmorgan@ibm.net) on a monthly basis a list of meetings not already posted.

Remember, the web site is a service to ACCE members and the entire clinical engineering community. You have probably read endless appeals from the *ACCE News* editors for letters, articles, or any pertinent input to be disseminated. I will add my appeal for similar material to be included on the ACCE web pages. Also, if there is something that you think should be included, but is not, please let me know. Finally, I do not have an independent proofreader; so I am sure some errors have crept into the pages. These are easy to correct and I would appreciate an e-mail when you notice one.

New Clinical Engineering Education Initiatives

B. J. Morgan

At the State University of New York College of Technology at Farmingdale, we are initiating a series of programs to serve the educational needs of the clinical engineering community.

These programs will comprise a number of different approaches, including both residence and

distance learning courses and workshops with the emphasis on distance learning. The initial target students are practicing clinical engineers and biomedical equipment technicians. Courses will range from freshman- to graduate-level and are expected to cover non-engineering topics such as management or economics as well as technical topics. Plans are to eventually combine these courses into degree offerings.

The goal is to fill what is perceived to be an educational void. There is no intent to duplicate what is presently available or to compete with existing programs. One service that is being investigated is to help students learn what existing courses are available and how to enroll. We would also like to work with the creators of existing courses, where appropriate, to help make those courses available to as many students as possible. In order to accomplish our objectives, it is essential that the materials offered respond to the actual needs of the clinical engineering community. Toward that end, we would like to solicit responses from all ACCE members with ideas or suggestions, or just comments. In particular we would like input on the following:

- What topics should be included, and in what priority?
- What courses or materials are presently available?
- What is the preferred method of instruction: workshops, video telecourses, audio telecourses, correspondence courses, internet courses, a combination, or other?

Comments should be sent to:

Prof. B. J. Morgan , Lupton Hall
SUNY College of Technology
Farmingdale NY 11735
Phone: (516) 420-2140 Fax: (516) 420-2194
E-mail: jmorgan@ibm.net



Medical Technology Management

Several ACCE members will speak at the ASHE MTM meeting in Chicago, December 2-5, 1996. The meeting's theme is *Technology Management in Health Care Facilities: Strategies for a Changing Environment*. Learn to expand your role through strategies for change, team building, partnering, future technologies, information systems, linking

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technology with strategic and financial planning, and developing management skills. Special tours have been arranged at the Radiological Society of North American (RSNA) exhibits. Discount rates for ACCE members.

For additional information contact: Pattie Costello, ASHE, AHA, One North Franklin, Chicago, IL 60606. Phone (312) 422-3807 or FAX (312) 422-4571.

Calendar of Events

- ◆ 6th Annual Florida International Medical Expo, August 21-22, 1996, Miami, FL. Call (813) or (941) 366-2554 or FAX (813) or (941) 366-9861.
- ◆ BUDAMED '96, 10th National Conference on Biomedical Engineering and 1st National Conference on Clinical Engineering with International Participation, August 23-26, 1996, Budapest, Hungary. Phone +(36-1)132-9571; FAX +(36-1)153-1406; E-mail: budamed @mmt.bme.hu.
- ◆ Fundamentals of Medical Device Sterilization, September 26-27, 1996, Chicago, Call HIMA at 202-434-7238.
- ◆ Annual Biomedical Engineering Society Meeting, October 3-6, 1996, University Park, PA, Call Rita Kline at 814-865-1407 or e-mail: rxkl@psu.edu.
- ◆ Seventh National Conference on Biomedical Physics and Engineering with International Participation, October 17-19, 1996, Sofia, Bulgaria. Contact Prof. Boris Gramatikov; e-mail: clbme@bgearn.bitnet.
- ◆ 18th Annual International IEEE/EMBS Conference, October 31 - November 3, 1996, Amsterdam, The Netherlands, FAX 216-459-4608; e-mail: mrn@po.cwru.edu.
- ◆ ASHE Medical Technology Management (MTM) Conference, December 2-5, 1996, Chicago, IL, Call 312-422-3807.

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