NEWSLETTER

SOCIETY FOR TECHNOLOGY IN ANESTHESIA

P.O. Box 382
Hastings, Michigan 49058
(800) 552-9229

VOLUME 1 NO. 1

Newsletter Begins

No doubt you are wondering why yet another newsletter is stuffed into the mailbox along with the other items you do not have time to read. If, however, you have read this far, your interest in technology is more than passing and this publication will serve you well. This issue initiates the official newsletter of the Society for Technology in Anesthesia. The newsletter will be published quarterly and is intended to serve several purposes for the STA.

Advances in technology for clinical medicine are occurring at a rapid pace. Three upcoming international meetings on technology in medicine in the United States, Austria and Japan highlight the need for international communication. This newsletter is dedicated to facilitating such communication. International contacts have been identified who will provide translations and information from meetings around the world. Quarterly publication will expedite communication of meeting highlights for those who were unable to attend.

The STA members bring a rich diversity of experience to the society. This diversity will be used to provide critical reviews of technology by experts in the field. With this in mind, two columns have been established. The Devil's Advocate column is intended to provide an opportunity for members to critically assess technological developments in anesthesia. Contributions to the Devils's Advocate can be anonymous and controversy is welcome. "Perspectives on Technology" will assess technological advances not yet generally accepted into clinical practice from both the industrial and clinical perspectives. This column will allow for a dialogue between the two groups of STA members - developers of technology and the users of that technology.

Another important newsletter goal is to keep the membership informed of upcoming events. A calendar will be included in each issue of the newsletter.

I hope you will find that this is not "just another newsletter" and that you will enjoy receiving current information on technological developments from around the world. Your comments are always welcome.

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ONE YEAR FREE MEMBERSHIP IN THE STA

The STA newsletter is in need of a catchy and tasteful title. Your suggestions are encouraged! Whoever supplies the name that is selected will receive a one year membership in the Society for Technology in Anesthesia and, have the distinction of leaving a personal mark on a widely read international publication. Send suggestions to the editor.

PRESIDENT'S MESSAGE

Welcome to the Newsletter of the Society for Technology in Anesthesia (STA). It has been our goal since the inception of the STA to publish a newsletter as a companion to the more formal Journal of Clinical Monitoring. This newsletter will allow members to exchange information quickly and informally. Furthermore, it will foster communication between STA and other technically oriented societies around the world. For these reasons, I am particularly excited to introduce this issue.

STA is a new society and is still growing. Thus, its goals will remain flexible for the next few years and, members can help direct the course of STA. For example, we need people to serve on STA Committees. A listing of the committees and their chairmen is included in this newsletter. Please contact a member of the Board of Directors or the committee chairman if you have a special interest in serving.

Members can also help STA grow. In fact, you may be the best couriers for STA. The old saying, "Tell your friends," may sound low tech, but it is still very effective. (You may use high tech methods to spread the word about STA, however.

> ■ *"Membership is not restricted to those in anesthesia, nor is STA's focus confined to monitoring technology alone."*

For example, feel free to post anything from this Newsletter onto an electronic bulletin board; just give STA the credit and please give a contact name for further information, preferably our administrative office in Hastings, Michigan.) Please let us know what you like and what you do not like about STA. Perhaps more importantly, what directions would you like to see STA take? Any of the Board of Directors will be delighted to talk with you in person at a meeting or by mail - electronic or paper.

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Who Is STA?

The members of any society determine its character, and the STA membership offers a particularly rich diversity of talents and interests from around the world. At the time of this writing there are 287 members although it is growing so rapidly that there are no doubt many more by now. The majority of the members (253) are practicing clinicians, while the remainder (34) are employed in the various industries that develop technology for the practitioner. Nineteen countries are represented by the membership with at least one member on every continent around the globe.

The STA leadership is listed below for reference. The current board of directors consists of individuals who have dedicated their careers to advancing the application of technology to clinical practice. The committee chairmen are working diligently to improve the society and would welcome assistance from interested members. Industrial interest in the STA has done a great deal to enhance the society. The STA '91 meeting is being sponsored jointly by several companies whose contributions are greatly appreciated.

Board of Directors

President: N. Ty Smith, MD
Professor of Anesthesiology
University of California at San Diego

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Jerry M. Calkins, PhD, MD
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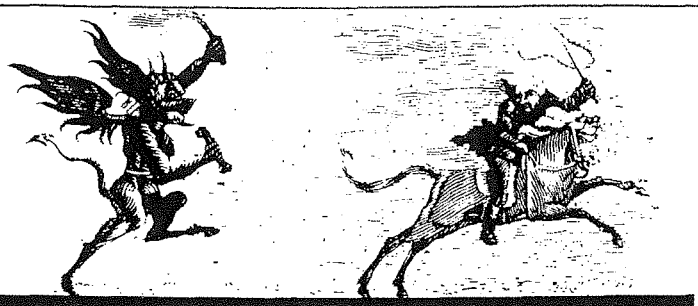
for other directors see page 7



The Devil's Advocate

This column is intended to provide a springboard for lively discussion on issues and controversies relating to the application of technology to the practice of medicine. Opinions expressed by contributors to this column should not be construed as reflecting the views of the column editor, the STA Board of Directors, nor of the organization's membership. On the contrary, the opinions expressed are intended to be challenging and provocative, and should stimulate vigorous, reasoned correspondence. To preserve the uninhibited character of the column, the editor reserves the right to maintain the anonymity of contributors if requested. Correspondence and manuscript contributions should be directed to the *Editor*, ***The Devil's Advocate***, *The Society for Technology in Anesthesia, PO Box 382, Hastings, MI 49058.*

Agent ID:
Another advertising gimmick.

Currently a number of medical monitoring companies are touting the desirability of medical gas analyzers that are able to identify the specific potent anesthetic agent which is in use (Halothane, Enflurane, or Isoflurane). These devices are attempting to compete with the conventional monochromatic analyzers for which the user must specify the agent in use.

The argument that supports the use of these newer devices is that a dangerous error could occur from the wrong agent in a vaporizer, or from a mixture of agents in a vaporizer. Such episodes could (and did) occur from Methoxyflurane in a Halothane vaporizer, but this author is not aware of any patient injury or death from a wrong agent or a mixture of agents in a modern vaporizer. Indeed this writer has solicited both companies promoting these agent-specific analyzers and audiences at major meetings to supply such a case and to date, no cases have appeared. Thus, I suspect that no such case exists. To be sure, anesthetic overdose is a problem, but it is readily detected with a non-agent-specific analyzer.

Agent errors or mixtures should not occur with the "recommended" keyed-filler devices for vaporizers. Even if errors do occur, an overdose is unlikely with today's agents that have similar vapor pressures and potencies. And, in the further unlikely event that an overdose did occur, it is probable that the cardiovascular depression would be promptly recognized and promptly treated - by turning the offending vaporizer down or off.

The worst-case example might be an Enflurane vaporizer filled with Halothane. A dial setting of 1.5% Enflurane would deliver about 2% Halothane. A monochromatic infrared analyzer set to Enflurane would indicate about 0.4% Enflurane (because the absorption of Halothane is only about 1/5 that of Enflurane). What would happen next? The promoters of the agent-specific analyzers would have us believe that the anesthesiologist would turn the vaporizer up to try to get the monitor to read 1.5% Enflurane. This writer disagrees. Instead the anesthesiologist would be mindful of the patient's vital signs. The likely cardiac depression of 2% Halothane would be noted and dealt with by turning the vaporizer down. And with the

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PERSPECTIVES ON TECHNOLOGY

Since the STA membership is comprised of both users and developers of technology, it is essential that the newsletter foster communication between these two groups. This column was therefore created to offer an opportunity for a member of each group to comment upon newer technologies not yet generally accepted into clinical practice. Subsequent columns will deal with specific monitoring methods. The topic for this month is new technology in general. Each contributor was asked to elucidate their perspective on new technology in general. Both contributors emphasized a need for noninvasive devices and attention to the human interface. This agreement has not occurred by chance and, is a testament to the leaders in this field that have fostered communication for many years.

TOPIC: NEW TECHNOLOGY

"The ideal monitor should not put the patient at risk for injury. It should be automated and provide continuous measurements. A final comment: Please, no more alarms!"

The User's Perspective

Frank E. Block, Jr., M.D.
Associate Professor of Anesthesiology
Ohio State University, Columbus, Ohio

Introduction

An anesthesiologist who visits the commercial exhibits at the American Society of Anesthesiologists Annual Meeting is confronted by an overwhelming array of medical monitoring devices. The large number of devices and lack of standardization makes meaningful comparisons nearly impossible. How, then, can the user make a rational choice? How can a manufacturer develop a successful product? The following is one user's perspective on the requirements for future monitoring technology.

Kinds of medical products

As a user, I perceive medical monitoring products to fall into one of four categories. The first category comprises those monitors that solve a clinical problem in an obvious way. Little effort is required to market a product of this sort. The prototypical example of this category is the pulse oximeter because a salesperson can readily demonstrate both the function of the device and the need for the device.

The second category includes the "me too" monitors. These are clones, sometimes subtle, sometimes not so subtle, of existing products. No obvious attempt is made to build a "better" product than the one being imitated. Many pulse oximeters also fall into this category as manufacturers have decided that "Everyone else is building pulse oximeters and we want a piece of that market." The only advantages to these products may be price and a few gimmicks. They may not work very well, and the company may not survive. The truly sad thing about this category is that the user gains nothing from the development of this sort of product.

A third category consists of those products which are technologies

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"We do see an emphasis on two goals of new product development... an increasing focus on becoming less invasive... and an increased emphasis on the human interface."

The Industrial Perspective

Glenn Pelikan, PhD
Vice President, Advanced Product Development
SpaceLabs, Redmond, WA

Introducing new technology into patient care is not a well-defined process. The preparation for market introduction and the successful adoption of new products and technologies are accomplished in many different ways on many different time scales, and with varying degrees of effort and success. A good comparison of differences is found in the development of clinical oximetry. Mixed venous oxygen saturation, as measured by a pulmonary artery catheter, has been available since the mid 1970s and today is a widely adopted measurement. The market leaders pioneered this new measurement although early sales required missionary effort. Sales have increased over the years to a significant level but not without considerable marketing and user education. When this user acceptance profile is compared with that of pulse oximetry, dramatic differences are apparent. While the market leaders may indeed feel they pioneered pulse oximetry, the missionary work was short lived. Since this measurement was easy to use, readily understood and noninvasive, it gained user acceptance at a phenomenally high rate.

As a patient monitoring supplier, we cannot deny that many of us keep hoping to find the next "Pulse Oximetry"—a new measurement of obvious benefit to the patient, the care provider and the equipment supplier. The fact that this type of success does not happen on a frequent basis has not discouraged industry. Many new products and technologies have been brought to the patient in the last two decades. We see no reason why this will not continue, since most manufacturers appear to be maintaining their level of Research and Development expenditure.

We do see an emphasis on two goals of new product development. The first goal is an increasing focus on becoming less invasive

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THE USER'S PERSPECTIVE *continued from page 3*

in search of a problem to solve. I pity the salesperson who must sell both the concept of a monitor and the monitor itself. A classic example is EEG monitoring. The EEG has been used in the operating theatre at least since the 1940s but has yet to be adopted as a standard part of anesthetic care. The reason for this phenomenon is that the EEG does not solve any problems in the care of the average patient.

The final category is the incremental improvement category. Unlike the second category, these products are truly improved. Upgrading an earlier product is usually possible, and indeed progress is normally made in small steps rather than in giant leaps. Most of the products that are marketed today fall into this final category. At the same time, it is this group which is most difficult for the user to assess. Competing products have different features, advantages and disadvantages, and the user is left with the task of trying to sort them all out.

What do anesthesiologists want?

It can be difficult for a manufacturer to decide what type of monitor to develop. Some firms spend a lot of money on surveys and questionnaires only to find that there are as many different answers as there are anesthesiologists surveyed! Another problem is that what anesthesiologists say they want, and what they are willing to buy and use, are two entirely different things. Anesthesiologists are not trying to be deceitful, but often fail to understand the engineering and marketing decisions that will be necessary in order to turn what they think they want into commercial reality. A better question (but more difficult to answer) is, what do anesthesiologists need? Technological developments that become the standard of care in years to come will likely need to satisfy several requirements. The ideal monitor should be non-invasive and not put the patient at risk for injury. It should provide continuous, rather than discrete readings. It should be easy and fast to set up, automated and maintenance free. (Specifically it should not require calibration by the user, adjustment of probes or knobs, typing in numbers, changing membranes and gels, etc.)

A final comment on the sorts of new monitors that will be needed: Please, no more alarms! No anesthesiologist has ever complained about too few alarms in the operating room, or requested that industry build monitors with more alarms. Indeed, we need devices with better alarms to decrease the number of alarms which distract the clinician in the operating room.

The future of monitoring

I believe that manufacturers should try to solve the known problems first. There are too many technologies in search of problems to solve, and there is too little research to find solutions for existing problems. Only recently have engineers begun to spend substantial time in the operating room to understand clinical monitoring problems. Communication of data to the anesthesiologist and handling of alarms are important problems to be solved in the future.

The future of monitoring in the next few years will be very exciting. For the manufacturers, medical cost constraints, competition for a small market, and the need to show a profit will be important challenges. It will be much more fun to watch these developments from the users' side rather than from the manufacturers.

THE INDUSTRIAL PERSPECTIVE

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in monitoring, diagnosis and therapy. The second goal is increased emphasis on the man-machine or human interface. Ease of use is paramount in assisting good patient care, and this need is becoming greater as more technology surrounds the patient. This trend will spawn the need for integrated human interfaces comprising many devices and other sources of information. Today we call this integration "Clinical Information Systems," a product in evolution. It will find its proper role in clinical support in the 1990s. The patient care equipment providers' job is primarily to help the clinician, not to replace him. There is no substitute for human diligence.

The Devil's Advocate

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monitor reading 0.4% Enflurane at a dial setting of 1.5%, the anesthesiologist would conclude - correctly - that "something must be wrong with the vaporizer." No, this writer does not agree that an Enflurane vaporizer filled with Halothane is going to kill someone. The range of physiological responses among different patients encompasses the magnitude of the cardiovascular depression to be expected in this worst-case illustration.

A final problem is that of future anesthetic agents. Some observers believe that Desflurane will reach the US market in 1992 or 1993. A purchaser of an agent analyzer should certainly consider whether the analyzer will be outdated in 1993. Will the newer agent-specific analyzers be able to solve "four equations in four unknowns" to distinguish Desflurane as well? What sorts of hardware and software changes, in the field or at the factory, will be required for each kind of analyzer to make it compatible with Desflurane? On the other hand, the non-agent specific analyzers will be readily compatible with Desflurane, with simple calibration and software scaling procedures.

For the time being, this author will remain quite content with the non-agent specific analyzers. Their simplicity, generally lower cost, and freedom from false alarms proclaiming "agent errors" when none exist will keep this writer happy for quite awhile. And certainly this author does not believe that his patients are dying for lack of "agent ID".

UPCOMING EVENTS

♦ **1st ESCTAIC Meeting:**
First meeting of the European Society for Computing and Technology in Anesthesia and Intensive Care.
October 24 through 27, 1990.
Goldegg Castle, Salzberg, Austria.
Contact:

Dr. Leo Moser
Anaesthesiologie
Landeskrankenhaus Salzburg
Müllner Hauptstraße 48
A-5020 Salzburg
Tel 0662/31581-2701.

♦ **APSF Meeting:**
Anesthesia Patient Safety Foundation Meeting. "Problems and Promises, A Dialogue between Industry and Users." Immediately precedes STA '91.
January 16-17, 1990
Grosvenor Resort Hotel, Orlando, Florida.
Contact:

Ms. Gerri Kuzava
PO Box 382
Hastings, MI 49058
Tel (616) 945-5110, or
1-800-552-9229

♦ **STA '91:**
First annual meeting of the Society for Technology in Anesthesia.
January 18-20, 1990
Grosvenor Resort Hotel,
Orlando, Florida.
Contact:

Ms. Gerri Kuzava
PO Box 382
Hastings, MI 49058
Tel (616) 945-5110, or
1-800-552-9229

♦ **Sixth ISCAIC Meeting:**
Sixth International Symposium on Computing in Anesthesia and Intensive Care.
April 15-19, 1990
Hamamatsu, Japan.
Contact:

Secretariat of the Sixth ISCAIC
Dept. of Anesthesiology
Hamamatsu University School of Medicine
3600, Handa-cho
Hamamatsu 431-31, Japan
Tel: 81-534-35-2284,
FAX: 81-534-35-2738

for more information see page 6

STA Contributes to ASA Annual Meeting

There will be two STA-sponsored panels at the American Society of Anesthesiologists Annual Meeting at Las Vegas, in October. The first, on Saturday, October 20, will be sponsored jointly by STA, AAMI, and the APSF. The panel, to be held at the Flamingo Hilton, will be preceded by a no-host reception at 6:30 PM and a no-host dinner at 7:00, with the panel at 8:00. Because of time constraints, please arrive promptly for the functions that you wish to attend. Those who wish to pay in advance at a reduced price, please contact Ms. Gerri Kuzava at the numbers listed below. The topic of the Panel will be Alarm Sounds: What Can We Do About Them?, and will include an outstanding group of innovators, manufacturers, and users: Frank Block, Mike Quinn, Matt Weinger, Dwayne Westenskow, Dan Pettus (Diatek), Christopher Goodrich (Ohmeda), Sandy Eames (Datascope), and Carl Pantiskas (SpaceLabs). There will be several demonstrations of alarm sounds, so be sure to attend this fascinating panel.

The official STA function at the ASA will be its Breakfast Panel on Tuesday, October 23. This year's topic will be How Can Technology Help Me with Quality Assurance? Anything that can make life easier and fairer in this difficult area will be welcome, and the group of outstanding panelists promises to do just that. The panel will be moderated by Dr. John Eichhorn, and will include Drs. Jerry Cohen and Terry Vitez.

European Society (ESCTAIC) to hold First Annual Meeting

Immediately after the ASA, the first Meeting of the European Society for Computing and Technology in Anesthesia and Intensive Care will be held in the stunning Goldegg Castle, near Salzburg, Austria. The meeting, which takes place October 24-27, will feature 80 scientific presentations, as well as six plenary lectures on the general topic of managing all the data that are being presented to us before, during, and after anesthesia. The specific lectures include Alastair Lack: "Long term data storage in anaesthesia - What and Why?" P. M. Osswald: "The future of the anaesthesia record," Alex Zbinden: "Information system for management of operations," Wolfgang Friesdorf: "Patient-related data processing in the ICU," and Ty Smith: "Patient- related data processing in the perioperative period."

APSF Meeting to Precede STA Annual Meeting

We have been announcing STA 91 in all sorts of venues for quite some time. Recently, however, there has been an important development. The APSF will host a meeting to be held just before the STA Meeting in the same hotel. The topic will be "Problems and Promises: A dialogue between industry and users." The topics and speakers are Information: J. S. Gravenstein and Gabriella Radlascu; Diagnostic Devices: Allen Ream and Glenn Pelikan; Machines and Equipment: E. S. Siker; Supplies: David Paulus and Sean Murphy; Drugs: Paul White and George Griffith. The moderators are E. C. Pierce, Jr. and Dekle Rountree.

The dates for the APSF Meeting will be January 16-17, and for the STA Meeting January 18-20, both at the Grosvenor Resort Hotel, near Epcot Center and Disney World, Florida.

STA '91:
First Annual STA Meeting

The STA Meeting will feature almost 50 scientific presentations, three tutorial sessions, and a distinguished lecture. Both oral and poster presentations will be presented, and there will be many scientific demonstrations of equipment, software, etc. The topic for the first set of tutorials is "What's Next in Monitoring." During this session, Michael Cahalan will speak on Echo, Doppler, and TEE; Ira Rampil on CNS Monitoring; and Stephen Barker on Intravascular Blood Gas Electrodes. On the following day, there will be a tutorial panel, entitled "The Uncertainty Surrounding Clinical Measurements," chaired by J. S. Gravenstein. The major questions asked will be How accurate can we hope to be with our monitoring? and How accurate do we need to be? The speakers will be Allen Ream, Blood Pressure; John Severinghaus, Pulse Oximetry; David Swedlow, Respiratory Gases and Inhaled Agents; and Terry Vitez, Electrolytes. A third tutorial will be run by CLASS and will address the question, How Can Technology Help Me Give Anesthesia Via a Closed Circuit? Drs. Jerry Calkins, Alan Grogono, Gilbert Ritchie, and Dwayne Westenskow will be in charge of this section of the meeting. The SpaceLabs Distinguished Lecturer will be Dr. Richard Kitz, who will discuss the subject, Does a Technological Education During Medical School Make Better Doctors?" Dr. Kitz will talk about his long experience with the combined MIT-Harvard Medical School program, concentrating on how the graduates have performed.

STA is making every effort to make its resources available to its members, as well as to those interested in its goals. This philosophy is reflected in STA 91. We want to make it financially as easy as possible to attend. For example, registration fees are only $150 for members and $250 for nonmembers. In both cases, registration includes a reception, most meals, coffee breaks, registration materials, and the meeting itself. Nonmember registration includes a year's membership; the $25 application fee is waived. In addition, the Grosvenor Hotel provides a frequent shuttle service to the major attractions of the area: Epcot Center, Disney World, and the MGM theme park. Thus, participants need not rent a car.

For those who wish to attend the APSF Meeting, the fee is $250. There will be a reduction for those attending both meetings: $350 for STA members and $450 for nonmembers.

A special inexpensive, but exciting, tour is scheduled for the day before and the day after the STA meeting (Thursday, January 17 and Monday, January 21). We have arranged for a "behind-the scenes" tour of the Kennedy Space Center, including, the computers, animal facility, and laboratories. The trip on Thursday will begin immediately following the APSF Meeting.

Special thanks are due to the sponsors that have made STA '91 possible. DIATEK Patient Management Systems, Inc. (founding sponsor), SpaceLabs (corporate sponsor), Ohmeda, Puritan Bennett, Anaquest, Datex, IVAC, Kendall, Medasonics, Nellcor, North American Draeger, Organon, and VIA Medical Corp.

Sixth Annual ISCAIC Meeting to be held in Japan

The culmination of this series of meetings is the 6th ISCAIC, to be held in Hamamatsu, Japan, April 15-18, 1991. The topics are State of the Art Technology in Patient Monitoring, Patient Data Management, Automated Control, Computer Aided Decision Making, Networking, Education and Teaching, People and Machine Interface, Quality Assurance, and Patient Safety. Japan will be beautiful that time of year, with the cherry blossoms in bloom. Hamamatsu has a climate similar to that of San Diego, is surrounded by considerable natural beauty, and is the home of Honda, Suzuki, Yamaha, Kawai, and Photonics. The organizers have also kept expenses down, and hotels are available for rates less than most American and European meetings. Those of us who have visited Japan know that the Japanese people are fantastically gracious hosts; the meeting promises to be the highlight of a lifetime.

Who is STA

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Directors (cont.)

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Associate Director, BOC Group

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Education: Alan Grogono, MD
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DEADLINE

for Submissions to the

January Issue

of the STA Newsletter

is November 15, 1990

PRESIDENT'S MESSAGE

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Who Should Join?

A few weeks ago, I received a letter from an obstetrician who wondered if he could join STA. It turns out that he is interested in clinical monitoring technology. Of course he can join! Although the word "anesthesia" is part of the name of the Society, it was not the intention of the founders to be restrictive. Thus, membership is not restricted to those in anesthesia, nor is STA's focus confined to monitoring technology alone.

Noblesse Oblige

I'd like to share a thought about one of the responsibilities of STA members. Noblesse oblige is a French phrase that, as with any other phrase to be translated, can have many meanings. Literally, it means "Nobility obligates," and refers to the obligation of honorable, generous, and responsible behavior associated with high rank or birth. It also means that if we have more than our share, we are obliged to share with those who are less fortunate.

Health care providers in many countries, for example, do not have access to the technology that we take for granted in the so-called developed countries. In addition, if suddenly handed the "best" of technology, they could well encounter great difficulties in using it. If we believe that technology has made patient care safer and better, both in anesthesia and critical care, then we are obliged to help others to obtain and properly use that technology.

> *"If we believe that technology has made patient care safer, then we are obliged to help others to obtain and properly use that technology."*

It's a Small World

Until recently, it has been easy to ignore the needs of other health professionals because they have been politically isolated. With the recent rapid changes in Eastern Europe, however, we can no longer make excuses. A few people, have had long-term contacts with our colleagues in the Eastern block countries and have tried to help with needs. Recently, Ronald Katz has sponsored 10 memberships to STA, each going to a colleague in Eastern Europe, including the Soviet Union. We are, of course, deeply grateful for Dr. Katz's generous contribution, and hope that the memberships will help our friends adapt even more quickly to the sudden changes that are being thrust upon them. If nothing else, STA can help them contact people who are willing and able to provide assistance. With that in mind, STA will include in its membership survey questions that will identify members who are willing to share their expertise.

If anyone or any corporation wishes to sponsor memberships to STA, please contact the STA office. Those who wish to share their time and expertise, please contact Dr. Jerry Calkins.

It has been a goal from the outset for STA to develop close ties with other societies. Towards that end, discussions are taking place with several groups around the world to determine in what ways cooperation can be increased among the societies interested in medical technology. Members of STA who belong to other societies can help the process of cooperation by encouraging these societies to consider a liaison with STA. In addition, if you know of a society that might be interested in cooperating with STA, please contact any one of the directors.

Pack Your Bags!

The major theme for this issues is Meetings. Within the next six months, five STA-related meetings will take place. Although this may seem like a large number of meetings, they are scattered in various locations, half-way around the globe, so that at least one meeting is available reasonably close to every person interested in these topics. And for those interested in combining an excellent educational experience with a vacation in a far away place, the meetings usually take place in beautiful, relaxing venues.

Look for descriptions of the meetings and registration information in this newsletter and plan now to attend.

And plan to participate in the life of STA.

Best wishes,

Ty