

PRESIDENTIAL ADDRESS
THE AMERICAN SOCIETY OF TROPICAL MEDICINE AND HYGIENE IN THE LAST
HALF CENTURY: FROM APPARENT ANACHRONISM TO INTERNATIONAL
LEADER AND INNOVATOR*

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Fellow members of the American Society of Tropical Medicine and Hygiene (ASTMH), distinguished guests, and friends: In considering what I would say today, I thought back over the 23 years that I have been a member of our Society. During that period I have lived and worked in many different parts of the world, have worn many different professional hats, and participated in the meetings of many different societies, but there has only been one society's annual meeting that I have never missed in my entire professional career, the meeting of the ASTMH. I have to tell you that I tried these first few lines out on my wife, Kim Lee Sim, a few days ago, and her response was, big deal, I'm a lot younger than you are and I've been at the last 17 consecutive meetings! In fact I am certain that there are many here today who have both of us beaten in terms of attendance records. The ASTMH has been a home and huge extended family for me, and it has been incredibly enriching and fulfilling to be able to be part of such a group. There are few, if any, other societies of which such a high percentage of the members have dedicated their professional careers to improving the health of the least served residents of our planet.

Tropical medicine has been the integrating force and constant in a career that has taken me from civilian life in a Tropical Medicine and Traveler's Clinic at the University of California at San Diego into the United States Navy, and 21 years later back into civilian life at Celera Genomics; from clinical medicine into clinical investigation, clinical epidemiology, immunology, vaccinology, genomics, and now proteomics, and from South America to Southeast Asia and Oceania to Africa, and now to Rockville, Maryland. It has been a career that brought me my wife and wonderful friends from all over the world, many of whom are here today. A career that allowed me in 1980 to walk into a hospital in Jakarta, Indonesia in which 15% of all patients admitted with typhoid fever died, and leave four and a half years later knowing that the work of my colleagues, especially Dr. Narain Punjabi who is here today, and I had led to a reduction of that case fatality rate to 1%.¹

Twenty-three years ago, listening to Irv Kagan give the presidential address² at my first ASTMH meeting in Chicago, it was beyond my imagination that I would someday be standing before you giving a presidential address. I cannot begin to describe what an incredible honor it has been for me to have had the opportunity to serve our Society as president during the past year, and the depth of emotions I feel standing up here addressing you today. I thank you from the bottom of my heart for allowing me to do so.

Before moving into the substance of my talk, I want to

mention one regret that I have today. On all previous occasions that I have addressed our Society I have proudly worn the uniform of the United States Navy. As a recent retiree, I do not have that privilege. At a time when so many in the United States and around the world are recognizing the importance of service to their countries, I am saddened that I am not wearing my uniform. However, I must point out how many of us in this room are or were members of the uniformed services of our country. I am certain that no other non-military biomedical society of our size in the world has such a high percentage of its membership drawn from the active uniformed services. The impact during the last 100 years of scientists and physicians from the United States uniformed services on the health of underserved people in the tropics has been enormous, is unprecedented elsewhere in the world, and a concrete example of the outward looking, generous nature of the United States.

Paul Russell, an eminent malariologist, who was the president of the ASTMH 50 years ago when the American Malaria Society and the American Society of Tropical Hygiene merged to form the ASTMH, used his presidential address to speak entirely about the importance of population control in the developing world,³ not about research or control measures in tropical infectious diseases. Professor Russell died in 1983, so I wasn't able to ask him why he spoke about population control instead of the area that he devoted his life's work to, malaria. However, I suspect that to some degree, it was because, like so many before and so many since, he had underestimated how difficult it was to actually deal effectively and sustainably with tropical infectious diseases. At that time DDT was being introduced to reduce the longevity of *Anopheles* mosquitoes, and chloroquine, one of the best anti-malarials ever developed, was being introduced to treat and prevent infections with all four species of *Plasmodium* that were known to cause disease in humans. The stage was set for an ambitious international campaign to eradicate malaria. In fact, in 1955 Dr. Russell published a book entitled *Man's Mastery of Malaria*,⁴ and by 1962 the United States had issued a stamp and envelope celebrating the international malaria eradication program (Figure 1). This campaign was extremely effective in North America and Europe, and initially incredibly effective in Latin America and south Asia. However, it has often been stated that in a number of developing countries the early success of the malaria eradication programs led to the eradication of malariologists not eradication of the disease. Dr. Russell wrote in the preface of his 1955 book:

"While keeping in mind the realities one can nevertheless be confident that malaria is well on its way toward oblivion. Already as a malariologist, I feel premonitory twinges of lonesomeness, and in my own organization I am now a sort of 'last survivor'."⁴

In fact I have been told by numerous individuals that dur-

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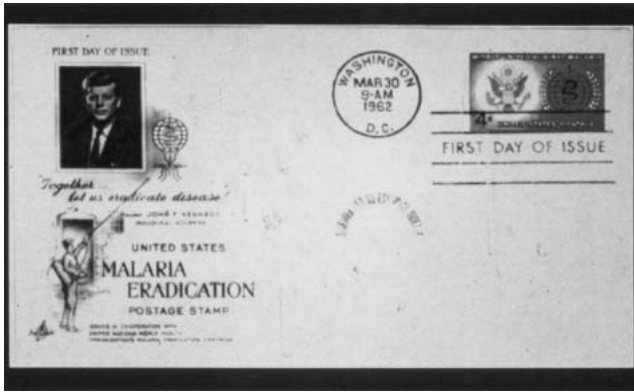


FIGURE 1. Stamp and envelope issued in 1962 to mark the United States' contribution and commitment to the international malaria eradication program, an effort that was successful in the United States.

ing the 1950s and 1960s promising young physicians and scientists were encouraged not to go into tropical medicine, either at the scientific or clinical level, because “these diseases” were on their way to eradication, and therefore one would have a short career. When I told friends and colleagues that I was going into tropical medicine many questioned my rationality indicating that they thought there was already a malaria vaccine, many of the diseases were under control, and most importantly it was a backwater field that was not on the cutting edge of modern science and clinical medicine.

If malaria was well on its way to oblivion in 1955, I am not sure where it is going today, but with an estimated 300–500 million new infections and 1–3 million deaths annually, it doesn't look like it is going away too fast. One has only to look at the program book of this year's meeting⁵ to realize that 25 or 50 years later none of the statements I mentioned regarding tropical medicine approach the truth, and in fact did not back then. It was from this perspective that I chose the title for my address, “The American Society of Tropical Medicine and Hygiene in the Last Half Century: From Apparent Anachronism to International Leader and Innovator.”

To illustrate the point raised in the title, I will speak about our Society's position and challenges in four areas:

- 1) Clinical tropical medicine and travelers health,
- 2) Basic and applied science, especially molecular- and immuno-parasitology,
- 3) Biological warfare and bioterrorism defense,
- 4) Recruitment and nurturing of the next generations of members of the ASTMH.

CLINICAL TROPICAL MEDICINE AND TRAVELERS HEALTH

When I joined the ASTMH in 1978 there was a small group of clinicians who put some chairs in a circle in a room in the evening to discuss clinical cases; a group called the clinicians club. Since I was dedicated to pursuing a career in clinical tropical medicine, these were incredibly exciting meetings for me. I joined the United States Navy two years later specifically to go to the tropics, in my case Indonesia, to conduct clinical research on tropical diseases. In late April of 1980 I

arrived at the Naval Medical Research Unit No. 2 in Jakarta, Indonesia, and two days later I began seeing patients with typhoid fever at the Infectious Diseases Hospital of Jakarta. I went on rounds on that Monday morning with Dr. Asril Moechtar, who was the director of the hospital. He took me in to see a 23-year-old man, whom he had admitted the night before. He told me that the man had typhoid fever, he thought he would die, and asked me what I recommended. Having only cared for one case of typhoid in my life, my own in Cuenca, Ecuador, eight years previously, I was appropriately speechless. The patient did die, and over the course of the next 2.5 months, my colleague, Dr. Narain Punjabi and I learned why Dr. Asril had turned so hopefully to me, a young, physician, hoping for a better way to treat a patient whom he knew would die. During that short period we saw 70 more patients with typhoid, and 18% of them died, something that wasn't supposed to happen. I had been taught at the London School of Hygiene and Tropical Medicine that since the introduction of chloramphenicol for treating typhoid fever, by Dr. Ted Woodward in 1948,⁶ the mortality rate for typhoid had been dropped to less than 1%, and I was appropriately horrified, wondering what we were doing wrong. It was clear that there was a major disconnect between what I had been taught about treatment of typhoid, what I as a modern, well trained physician could do for a patient with severe typhoid, and the outcome for 100s of patients in that hospital.

In November of 1980 the ASTMH annual meeting was here in Atlanta, and I still vividly recall the evening that I presented for the first time, my 70 cases to the 30 or so members of the clinician's club, many of whom are at the meeting here in Atlanta, and the insight I gained from that experience. With the help of the same Dr. Woodward who had discovered chloramphenicol for the treatment of typhoid fever 32 years earlier, Dr. Punjabi and I went on to solve that problem. However, to do so, we essentially spent 15 months, 24 hours a day, living and working with our Indonesian colleagues in the Infectious Diseases Hospital of Jakarta. When I wrote this speech I didn't realize that I would be kept honest by others who were there during those 15 months. I would like Dr. Punjabi, Dr. Nono Sukri, and Dr. Iwa Wiady to all stand. Many of you know Narain, but I would like to introduce you all to Dr. Sukri and Dr. Wiady. I learned yesterday to my delight, that Nono and Iwa made the trip from Indonesia to attend this meeting. The four of us worked together daily from 1980 through 1985 conducting clinical trials with mortality as the primary outcome variable on patients with severe typhoid fever in Jakarta, and patients with severe malaria in Jayapura, Irian Jaya now called Papua, 2000 miles away. Our efforts led to a remarkable reduction in mortality on typhoid,¹ but had no impact on the case fatality rate of cerebral malaria.⁷

In retrospect, it is hard to believe that 21 years ago, the entire extent of clinical tropical medicine and travelers health at our meeting, the principal venue for tropical medicine in the United States, was perhaps one session devoted to clinical tropical medicine and travelers health, and an evening meeting of the clinicians club. At this meeting there are three scientific sessions, four symposia, a late breakers session, and a meet the professors session all devoted specifically to clinical tropical medicine or travelers health. This did not happen by chance. A dedicated group of clinicians recognizing the importance of this field and supported by the ASTMH mem-

bership and Council have systematically built the infrastructure that has provided the foundation for a renaissance as compared to 20 years ago of clinical tropical medicine in North America. The effort was solidified with the founding of the American Committee for Clinical Tropical Medicine and Travelers Health (ACCTMTH), a subgroup of the ASTMH, in 1988, a group that now has more than 600 members, and of which I am proud to say I was president for two years. The next step was the initiation of the Certification Program in Clinical Tropical Medicine and Travelers Health. Before our annual meeting in New Orleans in 1991 Michele Barry, our president-elect today, approached me about meeting with representatives of the American Board of Preventive Medicine about developing a certification program. We had a very positive meeting, and a few months later at an ASTMH retreat, the Society committed itself to that program. The program was to be dedicated to improving education in and practice of clinical tropical medicine and traveler's health. A certification process was established and an examination prepared, with Jamie Maguire, as the director of the examination preparation committee. As you know on Sunday, Jamie received our Society's Benjamin H. Kean medal for excellence in teaching of clinical tropical medicine. To date, 610 physicians have taken the examination with an overall pass rate (first time and repeat takers) of about 64%. All applicants for the examination are required to demonstrate education in tropical medicine. Beginning with this year's examination (2001), the education component requires taking a formal "diploma" course in tropical medicine at an ASTMH-approved site. There are now 12 sites worldwide, including seven in the United States. To be awarded the Certificate, an applicant must also demonstrate experience in the field: two months cumulative clinical work in a tropical medicine setting. Our Society has played a fundamental leadership role in changing education and training in clinical tropical medicine and travelers health, and in enhancing recognition of this field. This is a fabulous accomplishment.⁸

We have come a long way in the past 20 years, but in essence we have only laid the foundation, and still have many challenges for the future. I would like to discuss three challenges.

One of the most important challenges is educating all physicians, not just those who take our courses. The majority of deaths from malaria in the United States still occur in individuals who are not optimally diagnosed and treated; in many cases the deaths would have been prevented had appropriate treatment been initiated when the patient first visited a health care provider. I was asked to consult on the following sad case of severe malaria a number of years ago. It is illustrative of many other cases, and in fact I was asked to consult on two similar cases of mismanagement, both with fatal outcomes, during the past year.

Fifteen days prior to admission (PTA) a 55-year-old man spent one night in a game park in Kenya, and did not take malaria chemoprophylaxis.

Three days PTA at midnight he went to the emergency room of an excellent suburban hospital with complaints of two days of fever, headache, and malaise, and told the emergency room physician that he had malaria. Results of a complete blood count (CBC) and chemistries were within normal limits, and the malaria smear was read as negative (in retrospect, the parasitemia was less than 100 parasites/ μ L of

blood). He was diagnosed as having a viral syndrome, treated with an antipyretic, and told to follow-up with a physician if he didn't improve during the next few days.

One day PTA he had persistent fever, diarrhea, and intermittent hallucinations (he had cerebral malaria).

On the day of admission he presented to the same emergency room with fever and bloody diarrhea and was admitted with the diagnosis of gastroenteritis, probably caused by *Shigella* or *Salmonella*. No malaria smear was ordered, but the hematology technician noted malaria parasites on the thin blood film done for the CBC (in retrospect, 35% of erythrocytes were parasitized with *Plasmodium falciparum*; he had hyperparasitemia). He was treated with oral chloroquine. When I was asked to see him 72 hours later he had coma, renal failure requiring hemodialysis, adult respiratory distress syndrome, pneumonia requiring tracheal intubation and respirator support, gram-negative sepsis requiring antibiotics, jaundice with elevated levels of hepatic transaminases, and hypotension requiring dopamine, and had been receiving intravenous quinine for 12 hours.

His pulmonary, hepatic, and renal dysfunction returned to normal during several months. He remained comatose for six weeks, and gradually began to respond to deep pain and speech. He was able to sit in a chair 4.5 months after admission, but did not speak and respond purposefully to verbal stimuli. He died several months later.

We live in a world in which globalization is a reality. However, the curricula of our medical schools, training programs, and continuing medical education programs have not kept pace with globalization. We need to do better in educating the next generation of medical students, and all practicing health care providers regarding international and tropical medicine. The seven ASTMH-certified diploma courses in medical schools in the United States and five overseas are a start, but they are not enough.

A second challenge is to conduct clinical research that leads to improved methods of treating severe tropical infectious diseases. This is a child (Figure 2) hospitalized with cerebral malaria in a primary care hospital in Papua on the Indonesian half of the island of New Guinea. If that child were hospitalized in any of the best hospitals in the developed world, his mortality rate with all that modern critical care medicine can



FIGURE 2. A child comatose with cerebral malaria in a hospital in Jayapura, Papua (Indonesian west New Guinea, formerly called Irian Jaya), Indonesia.

offer, would be 10–15%. In primary care hospitals in the developing world, his mortality rate often exceeds 30%. Despite numerous articles in the most prestigious medical journals on the pathogenesis, diagnosis, and treatment of severe malaria, and the pharmacokinetics of antimalarials in severe malaria, during the past 60 years, we have not been able to develop a single, simple, specific ancillary intervention that has reduced the mortality of severe malaria a single percentage point in primary care hospitals in the developing world. It is almost inconceivable that this is the case, but it is.

There is no question that interventions which reduce contact between infected mosquitoes and humans will reduce malaria mortality, and that vaccines hold great promise for the future, but many children will not be saved by intervention campaigns like Roll Back Malaria during the next five years, and it is unlikely that any will be saved by malaria vaccines during that period. Even if we develop a successful malaria vaccine, it will take considerable time to effectively deploy such a vaccine. Children deserve better ways of treating their serious infections now. We need to do better in conducting research to understand the pathogenesis of severe tropical diseases, and to develop cost effective, easily implemented treatments for reducing mortality among individuals with life-threatening illness. This will require focus and commitment, and many more clinical researchers spending extended periods of time working with colleagues in hospitals in the developing world, and caring for patients with life threatening illness.

A third challenge is to work with colleagues in the developing world to provide them the most up to date training on the practice of medicine, and the rigor required to practice medicine most effectively. We have much to learn from our colleagues in the developing world regarding the clinical presentation of tropical diseases, and tricks of the trade regarding management of serious tropical diseases. However, I believe we have much to offer regarding an approach to practicing medicine. This will also require working together with our colleagues in the developing world to care for the patients who need us most.

BASIC AND APPLIED SCIENCE, ESPECIALLY MOLECULAR- AND IMMUNO-PARASITOLOGY

The ASTMH is home to scientists working in many disciplines, and has multiple subgroups. In addition to the ACCTMTH, two are in fact formalized, the American Committee on Arbovirology and the American Committee on Medical Entomology. They are the scientific homes for many of the world's leaders in these fields, and through their scientific and business meetings at the annual ASTMH meeting, provide a scientific, professional, and social forum and center of gravity for their members, as the American Committee of Clinical Tropical Medicine and Traveler's Health does for its membership.

I, like many of our members have conducted research on many topics in tropical medicine, including viral and bacterial disease, and the basic reproduction rate of *Anopheles* mosquitoes, but have spent the past 15 years work primarily on a genus of parasites called *Plasmodia*. Much of that work has used immunology, molecular biology, and genomics to try to develop malaria vaccines. With apologies to colleagues work-

ing in other areas, I will focus my remarks on the fields of molecular- and immuno-parasitology, because I know these fields best. The contributions of members of the ASTMH to the fields of molecular and immuno-parasitology have been enormous, and have in many cases been on the cutting edge of the general fields of molecular biology and immunology. Work on RNA editing in trypanosomes, the Th1 and Th2 paradigm in *Leishmania*, transfection in *Toxoplasma gondii* and genomics, population genetics, T cell epitope delineation, and DNA vaccinology in *Plasmodia* have been at the absolute forefront of the general fields.

Three members of the ASTMH, Dyann Wirth, Jeff Ravetch, and Lex Van der Ploeg founded the Wood's Hole Meeting on Molecular Parasitology in 1988, and Alan Sher, Phil Scott, Ed Pearce, and I founded the Wood's Hole Meeting on Immunoparasitology, affectionately called, WHIP in 1996. Both meetings are now often oversubscribed and have grown to be the premier meetings in their fields in the world. Thus, basic and applied science is alive and well in parasitology. At this meeting, there are at least 11 scientific sessions, six symposia, two plenary sessions, and one late breaker session devoted to molecular- or immuno-parasitology.

However, many molecular parasitologists and immuno-parasitologists choose to attend the Wood's Hole meetings as opposed to the ASTMH meeting. Quite frankly they feel that there is a greater breadth and depth of information presented, and junior scientists have a better chance of presenting, and many feel more comfortable at these meetings than at a larger meeting such as the ASTMH's. I believe that this drawing away from the ASTMH meeting is fundamentally dangerous for our field.

I contend that essentially every investigator who has ever written a grant on the molecular biology or immunology of a parasitic disease has some version of the following sentence in the introduction to their grant proposal:

"There are > 300 million infections and 1–3 million deaths per year caused by malaria parasites. New methods for diagnosis, treatment, and prevention are desperately needed. The work proposed in this grant will lead to more rapid development of interventions for reducing global morbidity, mortality, and suffering caused by malaria."

How can laboratory scientists honestly make such statements regarding morbidity, mortality, and suffering caused by the parasites they are studying, if they don't attend meetings with colleagues who actually study the disease, not the parasite or the host's response to the parasite in a model system? Reducing the burden of disease caused by parasites has been incredibly difficult. Success in the future will almost certainly require an integrated multidisciplinary approach to problem solving.

The annual meeting of the ASTMH is one of the only meetings where the world's most accomplished scientist in the molecular biology or immunology of a specific parasite is likely to meet the most accomplished epidemiologist or clinician in the world working on the disease caused by that parasite. The Wood's Hole and similar types of meetings are important, but they cannot substitute for the type of experience to be gained at the ASTMH meeting.

I offer a challenge to those of us in this field; form the American Committee on Molecular-, Biochemical- and Immuno-Parasitology, or some variation on that name. Make the ASTMH and its annual meeting a forum for solidifying

and enlarging these fields, and making sure that the most junior of scientists in these fields has the opportunity of interacting with the epidemiologists and clinicians who are seeing the disease in the field. Create programs that insure that the best and the brightest solidify their commitment to the field by living and working with colleagues in the developing world, where the diseases are present, so that every day they do a transfection, sequencing reaction, or interferon-gamma ELISpot assay they remember the major reason why they are being funded to do that work.

BIOLOGICAL WARFARE AND BIOTERRORISM DEFENSE

Having been in the military for the past 21 years I was well aware of our country's efforts in this area, participated as a member in steering committee meetings on vaccine development, and collaborated on work to develop a DNA vaccine against anthrax. However, until the current crisis, I was not aware of the fact that so many of our country's senior scientific and medical leadership in biological warfare defense were active members of the ASTMH. Many of the leaders at the Centers for Disease Control and Prevention and National Institutes of Health, in the Army and the Navy, at the newly founded United States Office of Public Health Preparedness, and in the private sector producing preventatives such as the smallpox vaccine are members of our society. On Sunday we had a pre-meeting course on Bioterrorism, which had been planned before September 11. Tomorrow from 11:45 AM to 1:00 PM I have the honor of co-chairing a session entitled, "Update on Anthrax and Smallpox Preparedness," which will be one of the first scientific forums in the world that bring us up to date on the facts of the current anthrax events, and our country's plans for preparing for other eventualities, such as smallpox. Because of the expertise of so many of our members in regard to the infectious agents and diseases considered potential bioterrorism threats (anthrax, smallpox, plague, tularemia, botulism, brucellosis, cholera, Q fever, glanders, and hemorrhagic fevers), it is not difficult to understand why our members are among the leaders in current efforts.

We cannot know where the current state of affairs will take us, but we can be certain that our complacency regarding biological terrorism defense has ended, and that we must come up with new tools for diagnosing, tracking, characterizing, treating, and preventing disease caused by biological warfare/terrorism agents. The ASTMH is the natural home to scientists engaged in this pursuit, which will involve genomics; functional genomics; proteomics; molecular, field, and clinical epidemiology; clinical medicine; pathogenesis; drug development and vaccinology. Our meeting and journal should reflect this in the future, much more so than it has in the past. We should be in the forefront of the critical effort to strengthen our public health infrastructure, and expand efforts like the geosentinal surveillance system that a number of our members, including Marty Cetron, David Freedman, and Phyllis Kozarsky, have successfully set up for tracking travel associated diseases; a system that could serve as a model for a much expanded system aimed at rapidly detecting bioterrorism events. I challenge the members of the ASTMH to formalize and expand our efforts in this critical area.

RECRUITMENT AND NURTURING OF THE NEXT GENERATIONS OF MEMBERS OF THE ASTMH

The future of our Society is dependent on the recruitment and nurturing of the next generations of basic and applied scientists, epidemiologists, clinicians, and sanitarians who devote their careers to tropical medicine. Many of us are here today in large part because of a specific course, individual, or experience that influenced us early in our careers. One of the most important has been the experience of spending time in the tropics working on a specific project with colleagues. I am standing here today because Cornell University Medical College had a required, 60 contact-hour course in tropical medicine during my second year of medical school, a course that was organized by Ben Kean. The experience of that course led me to immediately apply for a fellowship to spend the next summer studying lactase deficiency in malnourished infants in Bogota, Colombia. I ended up staying in South America for a year, and returned from that year in South America dedicated to pursuing a career in tropical medicine.

The ASTMH has recognized this fact for years, and has been working to create such opportunities. Most of the effort thus far has been in the area of short-term opportunities for North American medical students, residents, and infectious disease fellows. One of the most successful has been the Benjamin H. Kean Traveling Fellowship for medical students and residents. This fellowship has been funding students and residents for 4 years. We now have an endowment of \$144,000, which has come from funds transferred by the ASTMH and ACCTMTH, fund raising, and \$5 of the \$20 dues of members of the ACCTMTH. With these funds we have been able to send 4–8 fellows overseas for an average of 2–3 months for about \$2,000–\$2,500 per individual. This year we had 88 applicants, the top 30 of whom were unbelievable in terms of their proposals, academic records, and already established track record of interest in tropical medicine. We received numerous phenomenal letters of reference for the applicants, like the two below, from faculty members at two prestigious medical institutions.

"I see almost half of the third year class as they rotate onto the wards. ____ is the best I have seen this year, and within the top 1% of all students I have seen . . . I shall end my remarks by noting that there are times when you come across someone so special, so talented, that you wish you could take stock in their life, for you are sure that they will be a success. Someday, Dr. ____ will sit at the top of her field; this much we can count on. From what I know of ____, I also believe that we can be sure that the world will be a better place because of her success."

"In my 20 years on the faculty I have been closely involved with some 1,500 internal medicine residents, and I can say with conviction that ____ is truly the *crème de la crème*. I do not write letters with this level of enthusiasm often."

The best and the brightest are interested during their formative professional years, but we don't have the funds to provide them the opportunities that will solidify their interest. In order to award five \$2,000 fellowships per year without reducing the principal, we need to have an endowment for the Benjamin H. Kean Fellowship of \$1,000,000 and we need your help to get there.

The Benjamin H. Kean Fellowship is aimed at medical students, residents, and fellows. We have established a second

TABLE 1
Focus areas and challenges for the American Society of Tropical Medicine and Hygiene (ASTMH)

Clinical tropical medicine and travelers' health	
1)	Educate all health care providers, not just those who take our courses.
2)	Conduct clinical and pathogenesis research that leads to simple, practical, improved methods of treating severe tropical infectious diseases.
3)	Work with colleagues in the developing world to provide them the most up to date training on the practice of medicine, and the rigor required to practice medicine most effectively.
Basic and applied science, especially molecular- and immuno-parasitology	
1)	Form the American Committee on Molecular-, Biochemical-, and Immunoparasitology, or some variation on that name, and make it a vibrant subgroup of the ASTMH.
Biological warfare and bioterrorism defense	
1)	Formalize and expand our efforts in bioterrorism defense.
Recruitment and nurturing of the next generations of members of our Society	
1)	Create more short- and long-term opportunities for students, residents, and clinical and laboratory fellows to spend time doing practice and research with colleagues in the developing world, and raise the funds to support such programs.

fellowship, called the Centennial Fellowship, which is aimed at senior undergraduate and graduate students in laboratory sciences and epidemiology. The goal is the same; provide these individuals with an excellent experience working with colleagues in the developing world on the problems that they are pursuing in their laboratories at home. We have raised \$80,000 thus far for this fellowship program \$30,000 from the ASTMH and \$50,000 from the pharmaceutical company Pfizer. We need an endowment for the Centennial Fellowship of at least \$1,000,000. We plan to award the first 10 fellowships during our Centennial year, 2003, and we need your help to achieve our goals.

We have a third program which is called the ASTMH/Burroughs Wellcome Fund Fellowship. It is specifically aimed at infectious disease fellows during their subspecialty training, and provides them with \$50,000 to pursue an overseas project. We had nine excellent applicants for this program this year and three have been selected.

A fourth program is the Gorgas Memorial Institute Research Award. This is an ASTMH award, but the funds are administered by the Gorgas Memorial Institute, which is located at the University of Alabama. The award was established to fund collaborative research between Central American and Panamanian scientists and North American scientists, and has been expanded to fund collaborative work between scientists throughout Latin America and the Caribbean, and North American scientists. It began about 8-10 years ago with the modest goal of awarding 1-2 \$5,000 grants per year, and this year is awarding four \$25,000 grants to Latin American scientists. This program is extremely healthy.

In the interest of time I have not mentioned support of long-term training opportunities, like those described by our past president, Duane Gubler, in his presidential address last year,⁹ and I haven't mentioned the ASTMH establishing programs to expand opportunities for our colleagues from the developing world. Both are of course enormously important, both types of opportunities are supported in part by the NIH and a number of foundations, and both are the focus of our Society's lobbying efforts.

I believe that we must focus on optimizing the programs that we have in place. The executive committee and council have made fund raising for these programs a major priority for the coming year. If any of you would like to participate in that effort, have ideas about how it should be organized or most immediately would consider sending year-end charitable donations to these funds, please let us know.

The mission of the ASTMH is to "Promote world health by prevention and control of tropical diseases through research and education." We are certainly not an anachronism and are doing extremely well in achieving that mission through our leadership, innovation, and hard work, but can do much more. I have highlighted a number of areas that I think deserve focus (Table 1), and challenges in each of these areas for all of us (Table 1).

I have not mentioned the important work of our legislative initiative committee that annually testifies in Congress on behalf of all tropical medicine research funding, and have undoubtedly missed many areas that are important to our members. However, I believe that each of us should be able to find a challenge on the list that is important to us. The accomplishments of the ASTMH that I have outlined have come as the result of incredible foresight, commitment and hard work of our members. I implore all of you to look at this list, take up the challenge, and begin to contribute to strengthening our position as international leaders and innovators so as to improve the health of the least served people on earth. The executive committee and the councilors are listed in the program and in the journal, please contact any one of us with your ideas and commitment.

In some respects, this 18th century characterization of a malaria (ague) paroxysm (Figure 3) depicts some of what I have experienced during the last year as your president.

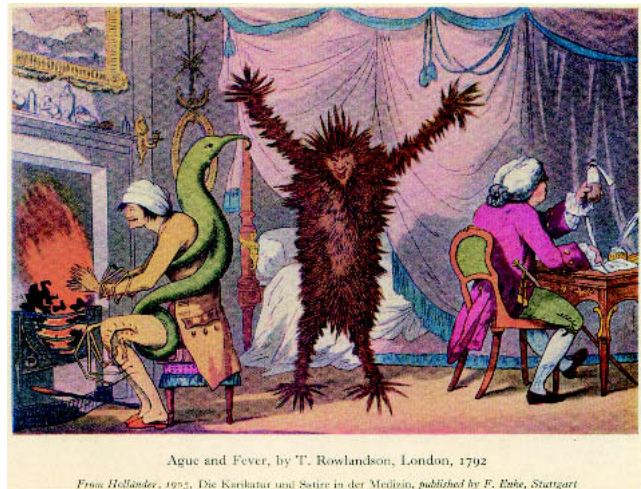


FIGURE 3. A malaria paroxysm.

Whether it was being so hot that I wanted to jump out of my skin, so cold and shivering that I thought I would turn into a block of ice, or so calm and collected that I knew this state couldn't last long, I have enjoyed every moment. I thank you all for bestowing upon me the honor of being your president.

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