

## “ . . . AND HYGIENE?” OUR ONCE AND FUTURE MISSION

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Nearly forty years ago, the American Society of Tropical Medicine and Hygiene (ASTMH) was formed from its parent societies, The American Society of Tropical Medicine (ASTM) and the National Malaria Society (NMS). The Tropical Medicine Society was itself nearly 50 years old, having been founded in 1903 by several clinical faculty members of Philadelphia medical schools who wished to learn and teach more about the diseases of the tropics and to stimulate research on them.<sup>1</sup> It may surprise some to learn that our American Society is four years older than its British counterpart, the Society of Tropical Medicine and Hygiene, which was instantly larger than our fledgling Society and has been under royal patronage since 1921.<sup>2</sup>

At the dawn of what some would call “The American Century,” there is little reason to doubt that our Philadelphia founding fathers were influenced by the recent successful conclusion of the Spanish-American War and the US acquisition of and responsibility for new territorial possessions in the Caribbean and the Far East. Furthermore, they were aware of Patrick Manson’s creation of tropical medicine as a clinical discipline and a field of study in the 1870s, and the founding of the London School of Tropical Medicine in 1898. Exciting recent discoveries had identified insects as vectors of malaria, filariasis, and Texas cattle fever, thus dispelling once and for all the paralyzing, time-immemorial mystery that had surrounded disease transmission and causation. Even more exciting had been the inspiring American triumphs in Cuba, with solid evidence for mosquito transmission of yellow fever, clinical and epidemiologic identification of the intrinsic and extrinsic incubation periods, the establishment of a sub-bacterial entity as the etiologic agent of yellow fever, and the nearly miraculous eradication in 1901 of urban yellow

fever from Havana, a city that had experienced outbreaks of this disease for more than 300 years. Heady times indeed.

Our other parental line, the National Malaria Society, was so-named in 1941 out of the growing realization that continuing endemic malaria in the southern United States was not in the natural order of things, that its eradication was possible.<sup>3</sup> Work along this line had been started by the National Malaria Committee, initiated following speeches by Dr. Frederick Hoffman at the 1916 annual meeting of the American Society of Tropical Medicine and the Fourth Pan American Congress of Tropical Medicine in the same year.<sup>4</sup> The National Malaria Committee met with the Southern Medical Society beginning in 1919, drawing its inspiration in part on the successes of William Gorgas, a former President of our Society, and his associate in Panama, Augustine LePrince, who employed a multi-disciplinary approach to achieve the remarkable control of malaria which permitted the successful construction of the Panama Canal. By 1952, the control-oriented and experienced men and women of the National Malaria Society had largely achieved their goal and voted to join forces with a scientific group that still faced many daunting challenges.<sup>4</sup>

Why did our predecessors add the two words “. . . and Hygiene” to the American Society of Tropical Medicine as a way to describe the strength brought by the National Malaria Society to the union? An early suggestion by the National Malaria Society’s Committee on Policy was to name the joined societies the American Federated Societies of Tropical Diseases and Sanitation.<sup>4</sup> But why ultimately did Hygiene win out? The historical record is strangely silent. From conversations with Martin Young, a member of the two-man committee who made the decision, it seems clear that the name was selected partly to accede to precedence (I have cited the well-established Royal Society of Tropical Medicine and Hygiene), and partly to capture the control-oriented, pragmatic elements in both societies, elements populated by administrators, sanitary

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engineers and biologists who had actually themselves conquered urban yellow fever, orchestrated successful campaigns against hookworm in the southern United States and around the world, virtually eliminated the war-time scourge of louse-borne typhus, and made major inroads against the largest killer of them all, malaria. From the perspective of the early 20th century, the conquest of these plagues had been a foremost objective and by mid-century, major conquests had been achieved. Hygiene, with the action it implied, captured these successful efforts of the first half century.

Where does this word “hygiene” come from, and by 1952, what had it come to mean? Hygiene derives from Hygeia, the Greek goddess of health and daughter of Asclepius, the Greek god of medicine and healing. Hygiene, or the preservation of health—preventive medicine, if you will—was born in the work and writings of physicians and social thinkers beginning in the 18th century. Long before diseases were understood as a physiological disturbance often caused by environmentally acquired microorganisms, empirical thinkers, philosophers, and utopians recognized the social basis of disease—poverty, illiteracy, lack of political power, crowded living conditions, lack of fresh food, clean air, and clean water.<sup>5</sup>

One such thinker, the Franco-German physician Johann Peter Frank (1745–1821), as father of medical jurisprudence, espoused the preservation of health through laws that were to be enforced by “medical police.”<sup>6, 7</sup> The role of social organizations in preserving health was championed by Frank’s English contemporary, Jeremy Bentham (1748–1832), author of utilitarianism. In the United States, similar social and legal policies were proposed by Lemuel Shattuck (1793–1859), Boston businessman and bookseller, whose descendant, George C. Shattuck IV, was President of our parental Society in 1926!

Two distinguished German scientists had a major influence in the evolution of hygiene—Rudolf Virchow (1821–1902), father of cellular pathology and Max Von Pettenkofer.<sup>5–9</sup> Virchow, a complete scientist who made major contributions in basic research and social medicine, asserted that medicine was a branch of politics and was committed to the idea that the poor and oppressed should not have to wait for heaven to obtain their rewards; a healthful existence should be the right of citizenship in this life. He rejected

unicausal etiology and asserted that medicine should become part of the political process of change and transition to a fully democratic welfare-based society.

Von Pettenkofer (1818–1901) was the founder of experimental hygiene for whom the first Institute of Hygiene was built in Munich in 1865.<sup>9</sup> At Von Pettenkofer’s time, hygiene covered the fields that today we recognize as occupational health, industrial hazards, environmental sanitation, and medical jurisprudence. Prior to Pasteur, Pettenkofer’s Institute was largely chemical, but the next great Institute of Hygiene built in 1885 for Robert Koch, focused on microbiology. William Guy, of London, was appointed to the first chair of Hygiene at King’s College School of Medicine in 1870 and thereafter, most major medical schools appointed chairs of Hygiene.

Another Briton, Edwin Chadwick (1800–1890), lawyer and disciple of Jeremy Bentham, was author of the “sanitary idea.” In contrast to Virchow, Chadwick believed that the science of engineering rather than medicine should play a critical role in sanitary reform. Chadwick in 1839 issued an influential report on the health of the working classes in England, recommending new standards of environmental and personal cleanliness, which resulted in the establishment of a Board of Health for Great Britain, the first of its kind, and an inspection system carried out by medical officers of health.<sup>5, 7</sup>

The Johns Hopkins School of Hygiene and Public Health is probably responsible for the American emphasis on hygiene and the name linkage that our Society has inherited. An entirely new idea, this first school of public health was born of the fertile mind of Wickliffe Rose, a little known figure, who had an enormous impact on the fields of public health and tropical medicine.<sup>10</sup> Rose, an authority on Kant and Hegel, was Chairman of the Philosophy Department and Dean at Peabody College in Nashville, Tennessee, when he was selected in 1909 to be the first director of The Rockefeller Sanitary Commission. The Commission’s task was to implement the program for hookworm control in the southern United States suggested by Charles Wardell Stiles (who was elected Honorary member of the American Society of Tropical Medicine in 1904). In turn, Rose became Director of the International Health Division of The Rockefeller Foundation. In this capacity, he planned and implemented the program for global control

of hookworm disease and recruited Surgeon General William Gorgas (President, ASTM, 1909–1910) to design a Foundation program for the control of urban yellow fever.

If the hookworm eradication program was to succeed, training would be required. The provision of appropriately prepared professionals to cope with this and related public health programs was not just an American problem, it was a global problem. The emphasis would be on sanitation. In 1914, Rose assigned Abraham Flexner, Secretary of The Rockefeller General Education Board—then immersed in revolutionizing medical education in the United States—to search for possible sites to endow an institution to train health officers as leaders in the new and vital science of hygiene. Finally, under the leadership of William Welch, founding Dean of the Johns Hopkins School of Medicine—incidentally a former student of Von Pettenkofer—, the Johns Hopkins School of Hygiene and Public Health opened its doors in 1918.<sup>11</sup> You will recognize that many of the most important members of our parental societies were trained by or served on the faculty of the Johns Hopkins School of Hygiene and Public Health.

Again, with the leadership of Rose and funding from the Rockefeller Foundation, Manson's London School of Tropical Medicine and the University College Medical School's Department of Hygiene were merged in 1924 to form the London School of Hygiene and Tropical Medicine. In this way, the science of hygiene became linked with the science of tropical medicine, the former encompassing the disciplines necessary to the prevention and control of diseases, while the latter included basic, field, and clinical research on the natural history of tropical diseases—mainly parasitic, bacteriologic, and virologic. And the founders of our new Society in 1952 made room in it for sanitarians, but sadly, just before sanitarians made their permanent departure from our midst.

A funny thing happened to the holistic approach of the 19th century hygienists who emphasized improvement of living and working conditions. Holism changed to disease-based vertical programs of control of infectious diseases, one-by-one. What is more, the brilliant laboratory research of Pasteur, Koch, Claude Bernard, and others has worked its way into the heart and soul of the strategies and values involved in the approach to disease control.<sup>12, 13</sup>

The values and reward system today generally are determined by “reductionists,” whose results have dominated in the selection process of that motivator without peer—the Nobel Prize. While in no way undervaluing the importance of the basic research that reductionism has increasingly implied, room must be made to recognize the value of applied research. How many individuals have had a greater impact on the well-being of mankind than William Gorgas, victor in battles against yellow fever and malaria, Fred Soper, who eradicated *Anopheles gambia* from Brazil and *Aedes aegypti* from much of Latin America, or D. A. Henderson, leader of that ultimate conquest, the global eradication of smallpox. When it comes to their names, the roll call in Stockholm is strangely silent.

Can it be that the American Society of Tropical Medicine and Hygiene bought the research role, but has forgotten its roots and its mission to achieve disease control?

One of the wonderful surprises of being President of this Society comes from seeking answers to the haunting question, “was it all said before?” In search of that answer, I have read the 71 published remarks of the 83 Presidents of this and the parent American Society of Tropical Medicine, the five published addresses of the 10 Presidents of the National Malaria Society, and a number of thoughtful speeches prepared by Presidents of the American Academy of Tropical Medicine, a much missed societal innovation of the 1930s. I, too, have discovered that our Society's first venture in scientific publication, beginning in July 1913, was named The American Journal of Tropical Diseases and Preventive Medicine.<sup>14</sup> Through this search, I have come to know a group of remarkable minds, whose life experiences were indeed rich and who were articulate proponents of many suggestions to broaden the activities and responsibilities of our Society.

The surprise is the consistency with which these leaders have called upon our Society to rise above the comfortable pathway of limiting ourselves to the study of tropical diseases rather than committing our energy, our leadership, and through our Society, our nation to efforts that can effect change and improvement. In short, to the control of the diseases of the tropics.

Listen to their voices.

Joseph Cook (President in 1987): “I am suggesting that research on tropical infectious dis-

eases can best be advanced, and the mission of the Society fulfilled, by linking our work more closely to actual control projects.”<sup>15</sup>

Lloyd Rozeboom (1974): “Future members of this Society. . . will turn quickly to achieving their own goals in ridding the world of unnecessary diseases and in creating an environment in which mankind can enjoy life to the fullest. . . .” Then he went on to lament that “. . . We seem to have lost the traditional alliance between physician, biologist and engineer which characterized one of our parental organizations, the National Malaria Society.”<sup>16</sup>

Wilfred Bailey (1977): “This brings me back to the point at which I began: the urgency of U.S. involvement in meaningful international health programs. . . I hope I have made a convincing case for a more holistic approach for such programs than has characterized our past efforts. . . .”<sup>17</sup>

Philip Russell (1983): “In the future, though, I think we will have the opportunity to be proactive rather than reactive and do more than just defend the status quo. . . I believe that the members of this Society, collectively and as individuals, will have an opportunity to develop the plans for a national effort in tropical medicine that will exploit the opportunities made available for research and to put in the field some really effective new weapons in the war on infectious diseases.”<sup>18</sup>

Ernest Carrol Faust (1942): “It is not beyond expectation that American Tropical Medicine will be the guiding force in the prevention of tropical diseases in the new world order that is to come.”<sup>19</sup> Faust (1942): “. . . but (we) must put knowledge into action by bringing these diseases one by one under control.”<sup>1</sup>

How is it possible that the voices of these leaders are not mirrored in the actions of Society? Do we have two Societies, one for Presidents and the other for members? How is it, for example, that our Society did not study or contribute to planning for a policy on that greatest of tropical health problems, the 20th century population explosion?

We were challenged to do so. Listen to Paul Russell, President in 1951: “We face a problem. . . not a choice between two evils—high birth rates or high death rates—but on the contrary a task well within the scope of man’s intelligence and technological potentialities. . . as physicians

and sanitarians, our task is to expand our practice and organize teamwork with other scientists and educators in tropical areas that we may devise and operate logical population practice. . . The world needs today not more disease but more vision!”<sup>20</sup>

More than a decade later, the same theme was explored by President Thomas Weller (1964) who asked us to remember our “continuing obligation to prevent premature death, to reduce morbidity, to control birth and alleviate misery. . . the membership of the American Society of Tropical Medicine and Hygiene has a designated responsibility. . . in the welfare of some two billion people now living in the tropical and sub-tropical regions of the world. . . because of the exponential nature of population growth, the fate of future generations resides in our hands. . . in essence, this is the major task now facing mankind, one that is an intellectual challenge of the highest order. . . .”<sup>21</sup>

While fertility control is critical to the health of the populations in developing countries, just as important to the control of diseases we study is educational attainment, particularly of girls who become mothers and the protectors for health maintenance in their families. Figure 1 shows the close positive correlation that exists between a mother’s educational attainment as expressed by literacy and the survival of her infants.<sup>22</sup>

When have we discussed these issues? Where are the appropriate policy recommendations to national and international bodies? Where is the interdisciplinary research that links the control of parasitic diseases to women’s educational or political status? Where in our Society are the managers of international health disease control programs? Where are the economists, social scientists, educationalists, indeed, the sanitary engineers? They are in some other society—not this one.

To put it boldly, are we truly the American Society of Tropical Medicine *and Hygiene*? Clearly, we are not, although we have been asked repeatedly to take up that challenge. I agree with my predecessors that we should accept the mandate and broaden our mission to firmly embrace International Health, a term I prefer to Tropical Hygiene.

Let me tell you why. First, on the eve of the 500th anniversary of the discovery of America, the long era of European colonial conquest has

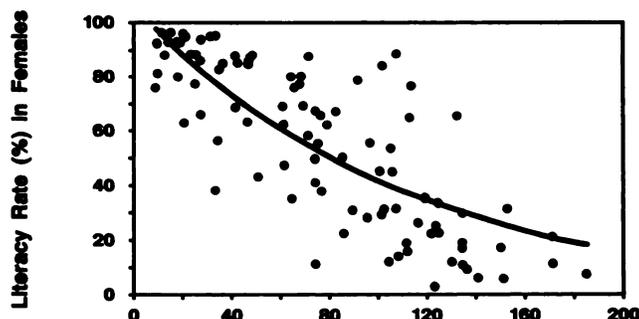


FIGURE 1. Relationship between literacy rate in females and infant mortality rate for 95 countries. (Adapted, with permission, from *Proceedings, Protecting the World's Children: A Call for Action, 1990, The Task Force for Child Survival and Development.*)

ended, indeed the very concept of expansion and conquest by force may have ended—witness the collapse of the Soviet empire.

Second, democratization, a new pragmatism and market economies are in the air. The European Community is showing the way, healing more than two thousand years of ethnic strife by forming a common economy and a common striving for personal and economic freedom.

Third, at the end of the Cold War and from the perspective of four and a half decades of shared nuclear terror, we have seen the future—and it works. It rests in valuing human rights and liberties, in balancing communal and individual freedoms, in constructive diversity while working toward common goals, in governance by democratic institutions, and carrying on commerce in ways that motivate rather than constrain people.

What have these historical forces got to do with our Society? Everything, I believe. In the aftermath of the collapse of the Soviet empire, and after a probable short delay caused by the diversion of resources to newly freed, needy countries, a global consensus almost certainly will emerge that will accelerate the process of the transfer of wealth and technology to developing countries. The process may be hindered by tribalism, national antagonisms, and new forms of aggression, but will not be exploited by the ideological and great power polarizations of the past 500 years. In short, as the 21st century dawns, a new millennium in human affairs is at hand.

A new and major growth in international trade and development looms.

We, the largest Society of its kind in the United States, whose members are citizens of the most influential nation on earth; we, the only American scientific society that declares the health of the whole developing world to be in our sphere of interest, stand to gain from this sea change. But, we will only gain if we accept the challenge and build an organization dedicated equally to science and to its applications, that is, to disease prevention and control, “hygiene” defined in its broadest sense.

If we accept the challenge, one other decision is essential. We must restructure our Society to permit it to attract and expand our membership to become a forum for discussion of international health policy and planning issues and a voice in the decisions taken.

Inspired by Karl Johnson, our Society has just gone through a spurt in growth and development.<sup>23</sup> We now have a professional executive office, a conference organizer, and a Washington lobbyist. Under John David and Stephanie Sagebiel, we are taking steps to protect the research funding of our members and the interests of the institutions to which our members belong.

A Society with a mission needs institutional memory and a strategy for leadership continuity. At a minimum, this requires at least one elected leader with a respectable term of office. One possibility is to invigorate the office of Secretary-Treasurer with the best person we can find who

would be elected to an extended term. The Presidency would continue to honor accomplishment and maturity. The President would continue to contribute importantly to strengthen the Society and articulate its goals, but within an agreed framework, organized by the Secretary-Treasurer and empowered by the Council. The office of Secretary-Treasurer should be highly desirable and sought after. Vision, leadership, and energy should characterize its occupants.

A Society with a mission must define itself. At the very least, we can do this through the scientists, international health leaders, and public figures we recognize with awards, lectureships, and memberships. Tropical medicine and tropical hygiene are global endeavors. Americans are not alone in these fields. As is always the case, many of the most important leaders and achievements in the field are not restricted to the laboratory sciences. We can and should make the recognition of achievement by this Society a truly esteemed honor.

Therefore, colleagues, let us broaden our mission to include prevention and control of diseases in developing countries. But let us not define disease too narrowly. The tropical world of tomorrow will be one in which over half of its inhabitants will live in cities whose occupants will increasingly suffer from chronic diseases and trauma caused in large measure by dietary, environmental, and occupational factors. Next, let us establish the gold standard of performance and achievement in the fields of research, prevention, and control of diseases of developing countries.

For our Society to broaden its mission I have two suggestions. First, let us elect a Secretary-Treasurer who will serve for five years and occupy this position having articulated a set of goals for the approval of the membership. Second, make better use of the talent around us. I propose that the Council should appoint a Committee on Policy selected to represent outstanding leaders in present areas of tropical medicine research, but also in research areas not incorporated in our Society, such as diarrhea, acute respiratory illness, mycobacterial diseases, and immunizable diseases. Let us also include leading thinkers and workers from the fields of policy-making, prevention, control, and management of the major health problems in developing countries, including fertility control. Such a Committee could also consider options and strategies to broaden our

Society and to solve the problem of leadership continuity.

Let us be a society that accepts the challenge of seeking to achieve one uniform, global standard of health. That is the mission of the science of Hygiene.

There is another option. We can again become the American Society of Tropical Medicine. Is excellence in research enough? The choice is ours.

I cannot end this talk without a note of thanks to the members of this Society who have been colleagues in this, my main scientific home for the past 34 years. I cannot forget either, the debt I owe to the US Army, which swept me out of New York to an unimagined career in virology and tropical medicine. In this century, the military has played a major role in US tropical medicine, but those of us lucky enough to have been in military medical research after World War II have had an exciting life and an unparalleled career experience. I am also grateful for friends in Thailand, at Yale, and in Hawaii who empathized with my imaginings and were colleagues in many, many research efforts. The Rockefeller Foundation permitted me to travel to the other side of international health programming, allowing an opportunity to cradle new institutions and create new programs of disease control that now exist in the real world. Finally, I want to acknowledge and thank my wife, Tot, for her career-long support for a largely absentee husband, and thank my parents for their love and support over a life-time.

The honor accorded me by this Society in permitting me to serve as President is one which I will long cherish. Thank you.

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