

WHAT BRINGS US TOGETHER?*

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A year of presidency is also an opportunity to gain a better understanding of the Society to which one belongs and I thought my farewell address would be the time to share with you some thoughts on who we are and what brings us together. The better we understand the demographics of our membership and the spectrum of our collective research experiences and aspirations, the easier it should be for our community to mesh and thrive. Also, a survey of the last decade's trends in our own scientific program and in the biomedical world at large should be of some help in planning for the future. Other presidents have chosen themes related to their own work as investigators or have given us an overview of progress in specific disease entities, but looking at the dense and rich scientific program before you I felt I should provide a little relief from serious research. Of course, the kind of analysis I am about to share with you lacks the scientific rigor we normally use as our yardstick and it necessarily entails some personal bias. I hope you will not feel compelled to personally verify my ballpark estimates and percentages. In return, I promise not to use this occasion for engaging in exhortations or handing down prescriptions; rather, I hope that my comments may ultimately prove useful to our membership and council in their future discussions and decisions. My theme takes on additional significance today since ours is a joint meeting with the American Society of Parasitologists, a sister society with which we share many members and interests, and with the American Society of Veterinary Tropical Medicine, which plans to continue meeting jointly with ASTMH in the future. To those in the audience who are not members or, more appropriately, have not yet become members, I apologize for the parochial aspects of my talk, but hope that you will find my message

congenial and will rush to join the ASTMH. Since you have already chosen to attend this meeting, it is clear that you need us and we need you.

The raw data for my analysis were culled from our Society directory, from Annual Reports, from the Meeting Programs and Abstracts for 1970 and 1985, and from other records freely available to all Society members. One might think that these documents can speak for themselves, but in preparing this talk, I was surprised to find how much information had skipped by me until my elective service forced me into the roles of sounding board, complaint collector, and occasional truce negotiator for various Society members and groups. I should emphasize, at the same time, that the directories and meeting programs from which I extracted my comparative data have significant gaps with respect to the organizational affiliations, academic titles, and scientific disciplines of our members which preclude any claim to numerical accuracy. It is therefore with some trepidation that I proceed to tell you of my results. First, some measures of size (Fig. 1):

Our active membership roster, after slowly inching upward during the decade, stands today at about 2,100, not all fully paid up yet, as you will shortly be reminded by Jack Scanlon. Our total membership including all categories approaches 2,400. Some of you may regard this size as ideal for a scientific society, neither too large nor too small. Others may view us as a splinter minority compared to the 32,000 membership of the Federation of Experimental Biological Sciences (FASEB), but note that each of the Federation's seven disciplinary units ranges from 2,300 to 6,800 members. In that light we can boast at least of significant splinter status. Our parasitologist peers with whom we are meeting this year number roughly 1,500.

Is there a threshold size beyond which a biomedical society is apt to lose its personal touch and to embark on a path of creeping institutionalization? Perhaps that point is reached when the annual meeting no longer fits into a single hotel,

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and members are asked to specify alternative lodging preferences. Another warning sign might be a rise of Society assets above the half million dollar mark, in 1986 dollars, with escalating expenses for office rental or real estate. If I correctly interpret our published budget, our Society's net worth today stands at less than \$220,000, representing an equity of about \$100 per active member. Therefore, if past trends continue, several more years will have to pass before the ASTMH membership reaches past the 3,000 mark and we must start worrying about becoming too big or too wealthy.

Is bigger necessarily better? To answer, let us look at some indicators of membership commitment to our Society's goals: First, about one-third of our members, 700 to 800 or so, return their annual ballots as an indication of interest in our governance. If attendance at our annual scientific meeting signifies commitment, this has averaged between 500 and 600 in recent years, about four-fifths of whom can be estimated to be ASTMH members. If one assumes that perhaps half of these roughly 400 people are repeaters or annual attenders, there should be between 200 and 250 folks you and I expect to see each time we prepare for our trips and to whom we might have said, "See you in Denver," if we talked on the phone. That contingent also faithfully attends the annual business meeting, serves on our local organizing committees, and patiently sits through the rituals of our annual banquet. In addition, most of our nominees for various Society offices, committees, and council derive from this committed nucleus. Most of the fuel they supply to keep our train chugging along takes the form of voluntary labor. While money contributions can also serve as a barometer of membership commitment, our fund raising initiatives are too recent to properly evaluate. I am told that the early response to our commemorative fund drive has been heartening, but not overwhelming.

At the other end of our membership spectrum are our nonattenders, known to us only by name. Several years ago, in surveying the vital statistics of recently elected members, Barney Cline had to confess that two of these persons were of unknown gender, a good illustration of the nebulous state of our knowledge of a substantial segment of our Society. Presumably, some of our non-attending members stay home because they are actually too busy practicing tropical medicine

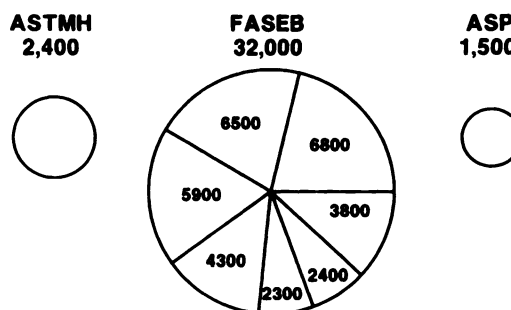


FIGURE 1. Membership totals.

and hygiene somewhere in the sticks or because they cannot tear themselves away from their productive laboratory bench; others may lack the necessary travel dollars or dollar-convertible currency; still others may merely be collectors of prestigious sounding society memberships. All we know is that our no-show members list us in their curricula and receive our *Journal* every two months, but not whether they actually read it or pile it on top of a stack meant to be perused in the dim future.

No statistical figure will ever reliably express membership enthusiasm, but let me guess here that roughly 20% of ASTMH members can be termed highly committed, a similar proportion are affiliated more or less symbolically, and the rest range somewhat in between. Let me also speculate that these proportions do not greatly differ from those of other scientific peer groups of comparable size. In any case, membership commitment is probably a function of the professional and social maturation of individual society members which moves them from the periphery to the center of group dynamics. As one nears retirement, the converse move should occur, if one has any good sense left by then. Neither process is easily modified or accelerated by design and I know of no data to show that overall growth in society membership results in a larger committed nucleus; rather, I doubt that it would.

Notwithstanding my earlier ruminations, there are signs that ASTMH is relatively fortunate in the loyalty of its members and, if I lacked this belief, I might have chosen a different subject to talk about today. Officials of other societies with whom I have compared notes have shaken their heads in disbelief when I told them that, up to this year, our Society has conducted all of its business virtually on a shoestring, has run its secretariat and its fine *Journal* essentially through

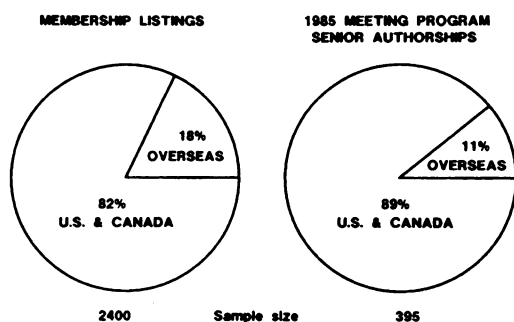


FIGURE 2. Geographic distribution.

voluntary labor with only minimal paid clerical assistance and, up to recently, had never hired professional managers or organizers. Their reactions reminded me of the comments of summer people vacationing in New England about the quaint and charming local institution of town meeting government. The townies, on the other hand, if you can really get them to talk, will give you to understand, paraphrasing Winston Churchill's famous quote, that "Town Meeting is the worst form of government except for any other form." I wonder whether there is a lesson for us in that quote.

Turning to another subject, let me now survey what is known about the professional and institutional affiliations of ASTMH as recorded in our directories and meeting programs. First, some geographic data (Fig. 2):

Besides our Canadian and U.S. members, we are blessed with a substantial contingent from all points of the globe amounting to about 18% of our total membership. This gives us a strong international flavor compared to other domestic biomedical societies. For instance, foreign members of the Federation (FASEB) make up less than 5% of its active roster. Most of our overseas members are affiliated with academic and research institutions or with government. Among them are some of our most distinguished members: heads of university departments, government ministers, senior public health or WHO officials but, thus far, no chiefs of state. Based on senior authorship, our overseas attenders contributed only 11% of papers programmed in 1985, but were also listed as coauthors in an additional 9% of papers credited to Canadian or U.S. authors. Conversely, many of the abstracts from overseas involved collaborations with American colleagues or their overseas activities. Therefore, while fewer of our international contributors at-

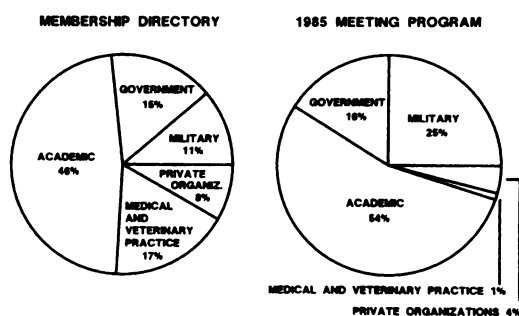


FIGURE 3. Affiliations/occupations.

tended the 1985 annual meeting than one might have wished, their scientific contributions exceeded the expected volume. This is heartening, if one considers the travel and currency restrictions which handicap many of our overseas members, especially those working in third world countries. Our commemorative fund now makes it possible to recruit at least one keynote lecturer from abroad, surely a step in the right direction. To be instructed about research progress in the real world of the tropics is as essential to us as learning about the latest advances of domestic laboratory science. These two facets, joined together like the ivory and ebony of Stevie Wonder's keyboard, should complement and enhance each other and should generate some "good vibes" that continue resonating long after our meeting is over.

To analyze the professional orientations and affiliations of our North American membership pool, I have arbitrarily chosen five categories (Fig. 3):

The "academic" designation covers ASTMH members affiliated with universities and colleges, their research institutes, hospitals, and field stations. The "government" sector includes the nonmilitary activities of federal, state or local governments, such as the CDC, NIH, and the Department of State. The "military" designation comprises domestic as well as overseas posts, such as WRAIR, NAMRI, Ft. Detrick, AF-RIMS, and the NAMRUs, etc. "Private enterprise" stands mainly for biotechnological and pharmaceutical firms plus a few charitable foundations. The "private practice" label is self-explanatory, but I should mention that few of our listings indicated veterinary practice. Veterinary careers were probably more substantially represented among the "academic" sector. In these figures, membership percentages in each category

are compared with the annual meeting composition, but let me emphasize that both sets of numbers are based on incomplete information, especially with respect to our members in private practice. Also, retired members were not included in this analysis.

It would appear from this inquiry that the general tone of our Society and of its annual meetings is set by academic traditions. Not only is our "academic" membership sector the largest, but all ASTMH members regardless of current affiliation have breathed campus air during their training and come to our meetings in a spirit of scholarship and of free inquiry and communication, the same principles that guide our *Journal*. I should add that of our 14 current ASTMH officers and councilors, 10 are university professors versus three in active or past government service and one, our President Elect, Joe Cook, in private philanthropy. Similar affiliations characterize our 10 most recent presidents.

In comparing directory and program listings, it seems clear that our members in private practice contribute very few meeting abstracts, resulting in a shift of authorship toward the academic and military sectors. One would therefore surmise that private medical or veterinary practitioners who attend our annual meeting, and I have no way of estimating their numbers, do so mainly for the purpose of continuing education. In recent years, ASTMH and its CME Committee and clinical groups have responded to this concern and have organized clinical symposia and workshops during and after the main meeting, with good attendance and success. These efforts have come to fruition at a time when the teaching of clinical tropical medicine is becoming a vanishing art even while the need for it continues to increase yearly. We can therefore point to our CME program in tropical medicine as tangible evidence of the usefulness of our annual meetings, should there be any doubt.

With respect to our government and military affiliates, their attendance and intellectual contributions to our annual meetings have always been strong and valuable, especially in the areas of vector entomology, arbovirology, and malariaology. It would seem that our meetings have a special attraction for government and military people who are stationed in remote overseas locations, and their annual attendance in goodly numbers suggests that their efforts to fund their travels are meeting with some success. The im-

portance of the contributions to ASTMH by major federally sponsored laboratories, such as CDC, NIH, and WRAIR, should be evident to anyone perusing the pages of our *Journal* or our meeting programs. Fluctuations between recent grant funding years that wreaked havoc in many other institutions have not affected their steady flow of scientific progress.

My figures dealing with private enterprise do not fully reflect its increasing role in our scientific output which becomes more evident as one wanders through the abstract listings of 1985 and 1986 one by one, looking for biotechnological sources. Current research investment in tropical medicine by for-profit firms may be lagging behind that in other bioscience fields, but a beachhead has been established and will hopefully lead to increasing private participation in the development of new diagnostic and therapeutic modalities from their discovery to their application. If present trends in research funding persist, venture capital is bound to become an increasingly important source of research support for us and it will be up to our Society members to channel it toward the purposes we deem to be worthy.

In sum, while our Society could conceivably function solely on an academic basis, as do some other biomedical groups, our members in the other career sectors I have outlined each have unique contributions to make and our program would be severely impoverished if we were to lose their interest and stimulus.

Next, a look at our directory records regarding the academic degrees of our members. Again, I must warn you that these records are incomplete (Fig. 4):

First, the vast majority of listed degrees are doctorates. Second, there is an impressive amount of overlap between doctorates in philosophy, medicine, and public health, and a substantial number of double or hybrid degrees such as M.D./Ph.D., or Ph.D./M.P.H. Third, if that overlap is discounted, the ratio of degrees in philosophy and science, versus human and veterinary medicine, versus public health and hygiene turns out to be about 50/36/14. Therefore, ASTMH as it stands today, has laboratory science as its single largest component, but the combined weight of medicine and public health is about the same as that of basic bioscience. As we shall see later, a similar ratio is derived when the subject matters composing our scientific program are classified and tabulated. Therefore, ASTMH would appear

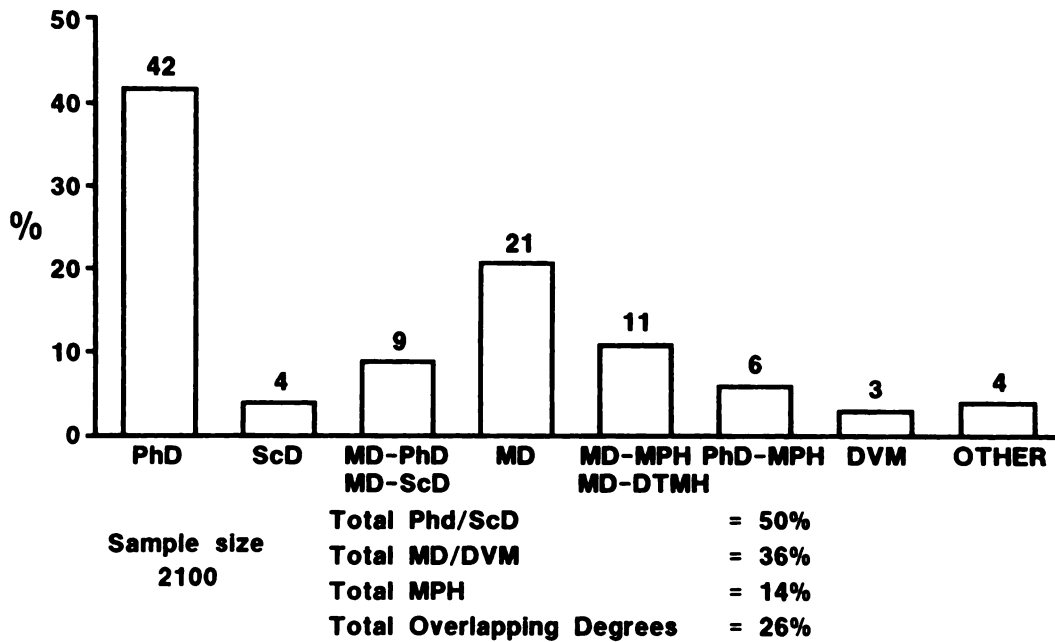


FIGURE 4. Academic degrees of ASTMH members.

to be a melting pot for a variety of degree holders rather than a preserve for any specific professional interests. Although selected academic degrees are listed in our directory upon request, both our *Journal* and our program abstracts omit these as irrelevant, a practice with which I concur and, despite the complex thematic subdivisions of our meeting programs in recent years, most sessions are attended by a mix of laboratory, clinical, and epidemiologic people willing to listen to each other's messages, whether dealing with mosquito biting habits or with the sequencing of genetic probes.

Now, a look at our program content. First, it will come as no surprise to you that from 1970 to 1985 our meeting programs have undergone a striking growth (Fig. 5).

In 1970 there were three symposia and six general sessions, only two of which were concurrent. There were no posters. In 1985 there were six symposia and six workshops, two poster and 23 general sessions, only two of which were plenary. The number of titles has surged from 91 to 395. This 15-year information explosion, paralleled by increases in the page numbers of our *Journal*, represents a general trend we share with other bioscientific societies in which the pace of program expansion has surpassed that of

membership growth, but it may well be that ASTMH has been especially permissive with regard to program volume and has made a conscious effort to provide as many contributors as is decently possible with a forum by using the poster format and by scheduling concurrent sessions. This means that reports in each and every subject category have increased in terms of real numbers, even in those disciplines which have shown a relative decline in our program compared to others, as will be shown soon. Also, it is my impression, reinforced by that of many colleagues, that not only the volume but also the scientific merit of our papers has greatly risen over the years. Once again this year my perusal of our abstracts made me look forward with anticipation and my hopes have not been disappointed. Our contributors and our program committee, headed by Don Krogstad, truly deserve our heartfelt gratitude.

For a more detailed portrait of the diversity that characterizes the ASTMH, I have categorized the titles and abstracts that appear in the annual meetings of 1970 and 1985, respectively, into four broad thematic divisions designed to discern any major trends of change in our scientific program. Before discussing these results, let me emphasize that our authorship listings do

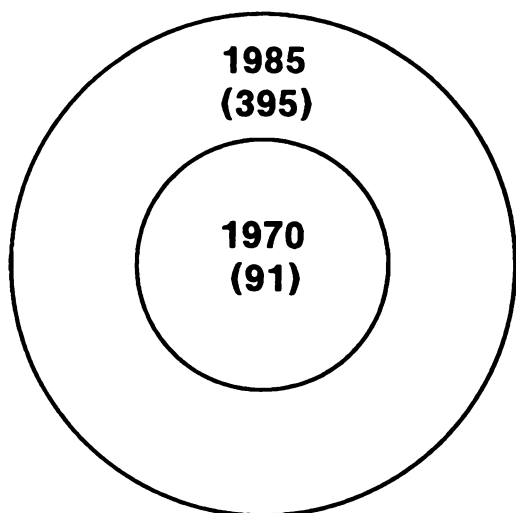


FIGURE 5. Number of papers presented.

not discriminate between ASTMH members and nonmembers and thus do not directly reflect society interests. Also, given the multidisciplinary nature of these reports, the classifying criteria I used cannot be deemed unfailingly accurate.

Both in 1970 and 1985, our papers covered an extremely wide range of subjects; ranging from molecular biology to public health administration (Fig. 6).

Studies in Category 1 dealt mainly with the biology of infectious agents and their vectors and included cytogenetics, molecular biology, microbiology, virology, parasitology, entomology, and malacology at various levels of methodological sophistication. Category 2 covers mainly experimental studies of host/parasite interactions: that is, immunology, pathogenesis, pathophysiology, biochemical pharmacology, etc. Together, these two categories make up the basic science and experimental laboratory segments of our program. Category 3 deals with studies of natural human or animal disease in terms of its pathology, pathophysiology, laboratory diagnosis, pharmacotherapy, and clinical management. Finally, Category 4 is population-oriented, and includes ecology, epidemiology, disease transmission, social and economic aspects, sanitary engineering, and public health administration.

In relative terms, papers in the two laboratory science categories rose from an aggregate 53% in 1970 to 62% in 1985, attributable mostly to the surge of molecular genetics, from 0% to 11% of our total program content; there was also a sustained boom in immunological studies, rising from 10% to roughly 20% of the titles surveyed. Relative decreases occurred in reports dealing with the morphology and taxonomy of parasites and viruses.

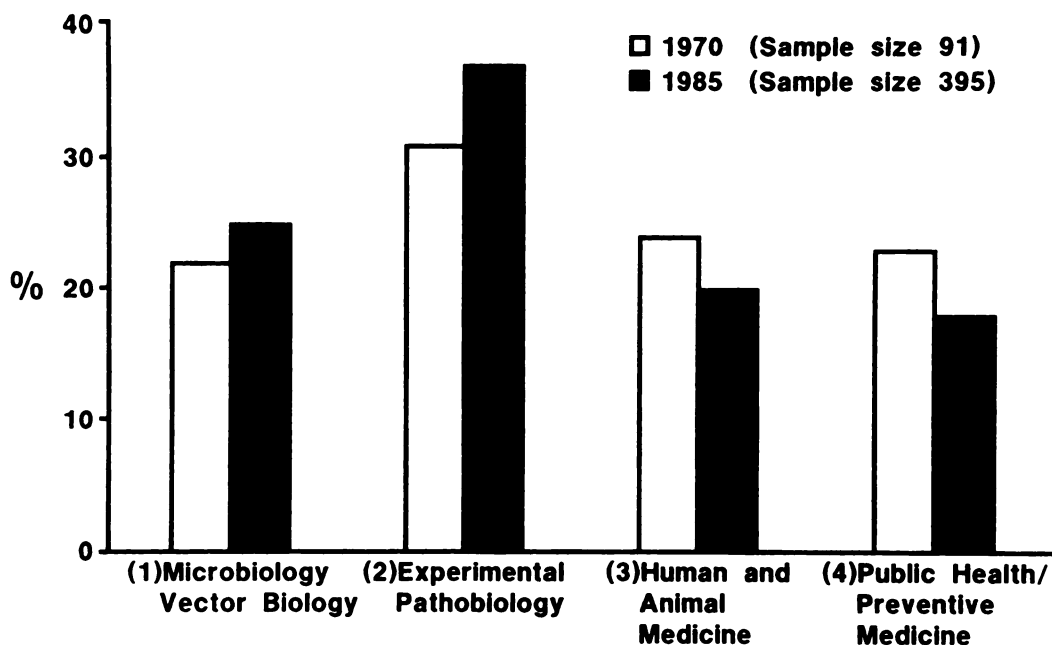


FIGURE 6. Topics covered by presented papers.

Studies on natural human or animal diseases (Category 3), although increasingly numerous in absolute terms, saw themselves relatively displaced by the surge in laboratory sciences. In this category, papers on immunodiagnosis climbed upward in number while those on pharmacotherapy dropped somewhat in proportion.

In the population-related Category 4, absolute numbers have remained somewhat static, but epidemiology, sometimes said to be the stepchild of ASTMH, not only experienced healthy growth, but actually maintained its relative program emphasis at 9%–10% of the total spectrum.

In sum, there has been no real decrease of information on the subjects which are part of our traditional spectrum of research; rather, as biomedical methodology has progressed, its newer tools have become part of the armamentarium of our membership, and papers in the developing disciplines, such as molecular biology and cellular immunology, have been incrementally added to our core subjects, resulting in a richer and more diverse bill of fare, slightly shifted toward the basic sciences. In this way, our evolution not only mirrors a general trend in the biosciences, but places the ASTMH abreast with recent progress; indeed, some of the most notable developments of the new biology have taken place in studies on hemoflagellates, plasmodia, arboviruses, and other pathogens which have long been subjects of our concern. I would therefore dismiss the criticism sometimes uttered that ASTMH is fast becoming the "American Society of Molecular Hygiene." Rather, it is satisfying to know that our Society is marking the pace of discovery for other workers and that our programs now take cognizance even of late-breaking developments in molecular science; on the other hand, we should also ask ourselves how faithfully our programs reflect the health problems which prevail in the real world of tropical countries.

Since we call ourselves a Society of Tropical Medicine and Hygiene, we can hardly afford to ignore the grim realities of hunger, poverty, infant mortality, diarrhea, pneumonia, tuberculosis, violent death, and other causes of widespread suffering in third world countries, even though it is clear that science can only play a limited role in extirpating the socioeconomic roots of these gigantic problems. Granted these limitations, there still are several subjects that merit our research attention and that seem to be underrepresented in our meetings, e.g., the nu-

tritional disorders, fungal and mycobacterial diseases, and the common enteric and nonenteric bacterial infections of the tropics. Most of these problems are amply discussed in other societies' scientific programs, but not in the same context that we would provide, and the view that we can safely delegate these subjects to others seems erroneous to me. The same considerations apply to retroviral infections, including AIDS. Breaking momentarily with my declared intention to refrain from advocacy, I would strongly suggest that ASTMH has much to gain from attracting individual scientists in these various fields to its membership and from organizing joint meetings or symposia with specialty groups of nutritionists, leprologists, mycologists, rickettsiologists, and others whose research impinges on the subjects we already successfully cover. We have done this already several times in the past, and a joint meeting with a rickettsiology group is now in the works for 1989, so my suggestion to intensify these efforts can hardly be termed revolutionary.

To sum up this part of my analysis: There will undoubtedly be a time lag before the fruits of molecular- and immunobiology ripen to the point of their applicability to human and animal health, but our multidisciplinary membership seems well qualified for bridging that gap and for transferring the new biotechnologies from the "bench" to the "bush." To achieve this we must resolve to stay together and to resist all temptation to erect barriers between our basic and applied workers or to form self-contained special interest groups. We must also continue to widen our horizons in new directions.

This takes me to the last part of my address and back to the question, "What brings us together?" Every part of our scrutiny thus far has documented that ASTMH is a strikingly heterogeneous body but facts and figures alone still fail to convey the full picture of our diversity, which is better perceived as one peruses the pages of our *Journal* or the individual abstracts of our meeting programs. The picture that emerges is one of a loose coalition of multiple discrete disciplinary groups, each of which has a potential claim to autonomy. If we were to pin labels on all of our members, we would end up with a veritable alphabet soup, including entomologists, malacologists, and invertebrate zoologists; microbiologists, virologists, and parasitologists; cellular and molecular biologists, geneticists, biochemists, immunochemists, immunologists,

and pathologists; clinical pathologists, pharmacologists, specialists in internal and infectious disease medicine and in veterinary medicine; ecologists, epidemiologists, and experts in economics, anthropology, and public health administration. There would also be several unclassifiable individuals who cross the lines between these disciplines or fall outside their limits. Big chunks of our turf are held, respectively, by arbovirologists, parasitologists, and medical specialists.

The point I want to make here is that most of our members with defined disciplinary identifications are, in fact, already card-carrying members of other societies of their peers, and that not a few of us have multiple society allegiances. For instance, many present in this audience have their names listed in both the ASTMH and the ASP directories; others belong to one of the seven societies of the Federation; still others hold memberships in sections of the ASM, especially its virology group. Additional groups with claims on our members are entomological and veterinary societies and miscellaneous medical societies, including the American College of Physicians, and I could go on with this recital ad nauseam. For those of our members who hold double citizenships, their peer associations may represent their guild interests and their specialty bonds, while the ASTMH serves only as their "second home," providing extra comfort and enjoyment. This may be part of the magic that underlies our membership's loyal allegiance, but to my mind there must be even stronger reasons for people to choose our *Journal* and come to annual meetings as the highlight of their year in preference to their other options. In brief, how have we managed to become, as stated on every nickel, "E pluribus unum"?

One reason is the very diversity of our membership, which exposes everyone to multidisciplinary audiences and to different points of view. For instance, an immunologist in search of practical applications and a field worker in search of new diagnostic modalities can find each other here, and together can germinate a joint project. Or a biochemist, discussing parasite metabolism may inspire a pharmacotherapist to experiment with a new class of parasitocidal compounds. This type of multidisciplinary interaction has been going on in the ASTMH for many years. As a corollary, our assemblies have always attracted a rich array of versatile, multifaceted individuals.

I am constantly amazed at the breadth of expertise assembled at our meetings; few subjects, no matter how exotic, seem to be unfamiliar to at least one of us, whether it be the taxonomy of bot flies, the folklore of northern rural Brazil, or the water walking habits of Panamanian lizards; it is a bit like the *National Geographic* come to life. There are few parts of the globe our members have not lived in, partaking of the local food and lifestyle. That cosmopolitan background makes for an air of mutual respect and tolerance in our discussions often missing in other societies. Altogether, if for no other reason, one finds oneself looking forward to the ASTMH annual meeting simply because of the people one is likely to find there. To paraphrase a popular TV commercial: "Where else could you find so many fabulous characters?" True, some of our finest originals have retired or died and we mourn the departure of people like the Clark Read or Elvio Sadun or, most recently, the great Harry Hoogstraal, but their spirit and their alumni have stayed with us.

But there is an even more fundamental reason that holds us together, namely, the purpose for which our Society stands. That final subject of my talk is difficult to approach succinctly without embarrassing platitudes and I have therefore put it in the form of rhyme, hoping for your tolerance with my stumbling versification.

What Brings Us Together?

As I survey our friendly crew
I realize what I always knew
That we are birds of many-a-feather
Who, once a year, shall flock together
Only to scatter through all nations
To many kinds of occupations

Some toil in labs, some in the wild
To stalk a germ or heal a child
Some may examine Western blots
While others sample chamber pots
Some may watch B-cells forming caps
While others set mosquito traps

Some don white coats, some riding leather
One wonders: What brings us together?
Is there a principle we share,
That animates our search and care?
Is there a goal we all can see
Amidst our annual bonhomie?

I think, when all is said and done
Our answer is a simple one:
Whether we work the bush or bench
The same big fires we hope to quench
It's hunger, poverty, disease
That keeps the third world on its knees

Can science help? Oh, yes, it can
It wiped pox off the face of man
But science can create no wealth
Without the help of Public Health
And those who suffer in far lands
Still need physicians' healing hands

So, clearly, it is our role
To set a noble, triple goal:
To learn from Science better skills
For ridding mankind of its ills
Hygiene and Medicine and Science
Must thus command our joint compliance

Our meeting is the focal point
Where all these disciplines are joined
And then can freely interact
To judge what's fiction and what's fact
And where, as long as there's a quorum
All members can address our forum

There must result, for all to see
A journey of discovery
The molecules defined today
Tomorrow may our practice sway
And, where the need for help is marked
New research ideas may be sparked

Despite our willing contribution
Some ills may have no prompt solution
But, if our bonds stay close and strong
We cannot stray or err too long
As long as mankind's plagues may rage
We'll pledge ourselves to ASTMH.