

REPORT ON THE XI INTERNATIONAL LEPROSY CONGRESS BY THE
SECRETARY-GENERAL OF THE INTERNATIONAL LEPROSY ASSOCIATION

Stanely G. Browne

I have been asked to address you on "Highlights of the Congress." Many of you are still doubtless questioning the value of such an international Congress, bringing together at great expense and trouble such diverse elements for a week of intensive activity and discussion. During these over-full days, we have had numerous opportunities of meeting together, of rubbing shoulders one with another, of sharing experiences and insights. We might misquote and adapt the ancient observation of a very wise man: "Of the making of congresses there is no end, and much listening is a weariness to the flesh." Therefore, why go to the expense of organizing such a Congress? Why go to the trouble, especially in these days of economic restraints and uncertainty? Is it worth it? Your presence here is the answer. Has anything very dramatic happened since the Bergen Congress five years ago? Are there really any highlights to this Congress to which I should draw your attention? Is there anything that stands out in scintillating brilliance - ephemeral or persistent - in this Congress? Is the whole thing just a "flash in the pan," or will it prove to be a steady source of illumination in the future?

We all know that the obvious may not be the most important, and the supposedly dramatic "breakthrough"—a term beloved by journalists but eschewed by the sober scientist—may not prove to be significant. As we have seen time and time again, a better way to produce results of worthwhile significance is the slow build-up of knowledge, its critical evaluation and assessment—and its distillation into quanta of seminal stimulating value for future investigations and research.

Another vast field of critical appraisal and opportunity is the application of what is already known, or should be known, to the problems of today and tomorrow. Perhaps it is here that we are failing most obviously and most patently as we face the leprosy problem in the world.

The papers and discussions on the whole

subject of epidemiology and transmission of leprosy revealed the areas of ignorance rather than the acquisition of new knowledge. Data from different countries may not be complete or comparable, and further field work is essential if the problems of transmission in the home and of persistence in the community are to be solved. While it is now, at long last, generally accepted that droplet infection from the heavily bacillated nasal mucosa may account for the great bulk of exit of viable bacilli, some workers are reluctant to abandon the cherished articles of faith of some transcutaneous passage through hairy or sweaty skin. Some work was reported on early initial lesions in the nasal mucosa, suggesting that this may be the portal of entry. The possible role of biting arthropods in mechanically transferring viable bacilli from an untreated patient to a susceptible contact is now admitted, but the importance of this mode of transmission in any given situation is still open to debate.

The work reported on the genetics of leprosy did not, unhappily, provide the definite and precise answers that many were hoping to hear. Hereditary predisposition, family clustering, the relative insusceptibility of spouses of known patients, were all reconsidered in the light of HLA-complex antigenic patterns. Just as blood groups and genetic markers in general have failed to provide generally accepted positive indications, in the same way much further work among different races is needed before any precise conclusions can be drawn.

We must arrange for new inputs into the epidemiometric model which will bring up-to-date the value of this instrument for investigation and prediction, and confirm the need for caution and sobriety in considering the various kinds of leprosy control programs now in operation. Computerized records may provide easily accessible data, but value depends on accuracy of input.

Several contributors voiced the need, pending the development and widespread application of a more specific vaccine, for a return to the undramatic and unspectacular methods of early detection and adequately controlled treatment.

My thanks are due particularly to the Rapporteurs of the Pre-Congress Workshops and of the Scientific Sessions for their reports, and to the authors of abstracts.

Several papers reported work going on in preparing the groundwork for the production of specific skin tests and a specific vaccine. A possibly fruitful suggestion was that a modification of, or addition to, one or other strains of BCG might provide the quasi-specific antigenic stimulating factor needed. Since the tuberculinogenicity of BCG strains may vary, it was suggested that the leprominogenicity might vary likewise. We look to the work now being undertaken under the aegis of the WHO cooperative IMMLEP program to produce the answers, or at least suggest the right questions upon which the right answers will depend.

The most important facet of leprosy treatment, that is sulfone resistance, received a good share of attention. Its recognition and treatment poses problems in the practical world of today, with its inadequate resources for multidrug therapy, low standards of clinical and laboratory care, and poor patient compliance.

The specter of primary resistant leprosy is already with us, and an urgent note of warning was sounded. We have had a wonderful effective and cheap drug in dapsone, but are now paying the price of prolonged monotherapy for a curious mycobacterial disease.

The changing pattern of the leprosy endemic in countries like India was emphasized by several contributors. In well-defined communities, as in Malta, Cuba, and the islands of Melanesia, control of the disease by rapidly reducing to zero the infectivity of all possible index cases, or of all cases of leprosy, by mycobactericidal drugs singly or in combination, may be practicable and effective. It would be idle or naive to expect that early cases of multibacillary disease, or unreported infectious cases would by this means be included in a mass treatment program: hence, new infections are almost certain to declare themselves in the coming years. But a less costly method must be sought for the teeming urban populations of India and Southeast Asia and South America. Case detection involves new methodology and intensive continual evaluation as in Thailand.

Now that the range of susceptible animal models is becoming more extensive, as with the mouse, armadillo, nude mouse, hedgehog, and the Korean chipmunk, experimental leprosy is enticing many workers from related fields. The immunological configuration of

various small animals is proving to be fascinating.

The revival of interest in the pathogenesis of nerve damage in leprosy is to be welcomed, especially the possibility that breakdown products of nerve tissue, together with products of mycobacterial disintegration, may play a crucial role in the production of nerve damage in leprosy. This multifactorial medley gives promise of more revelations as the experimentalist connives with the histopathologist to elucidate the factors concerned in the neuropathy of leprosy, which is of crucial interest to the poor patient as well as to the research worker. The weighting to be accorded to such possible factors as temperature, trauma, entrapment, intraneural pressure, lymphocytic infiltration and immune complexes, was discussed at length and most workers now have a more open mind on the whole question of the pathogenesis of nerve damage.

It would be invidious and possibly misleading for a nonspecialist to attempt to identify the highlights in the session on immunology — the most rapidly growing area of leprosy research, or to try to summarize a plethora of good papers.

The techniques now available of crossed immunoelectrophoresis and radio-immuno assay are being used in several laboratories to investigate the antigenic pattern of *M. leprae* and related mycobacteria. The lymphocyte transformation test now indicates that leprosy is more highly infectious than was previously realized, but not very pathogenic. Household exposure is the most significant factor in many communities.

Many reports were studied of the relation between skin tests with various antigens and past infection with leprosy, with active or quiescent disease, and with disease characterized by different degrees or complete absence of cell-mediated immunity. The search for the specific immune defect in patients with lepromatous leprosy continues.

The availability of armadillo lepromin is providing a stimulus to many researches, and now comparative studies are being made between armadillo-derived lepromin and human lepromin, and between human lepromin and lepromin made from mycobacterial candidates for the distinction of being possible cultivated *M. leprae*. The specificity of skin testing is being questioned and even rejected in some studies. A practical aspect of

these studies is the light they may shed on the variable results of adequately controlled BCG prophylaxis programs; it may be that previous exposure to opportunist mycobacteria may explain the difference in protection rates afforded in the well-known trials. Now that sensitization to environmental (non-pathogenic) opportunist mycobacteria has been shown to be a factor perhaps, in some situations, an important factor in determining the degree of skin sensitization to PPD extracts from a variety of closely-related mycobacteria; it is possible that BCG vaccination may produce not only such sensitization, but a degree of nonspecific immunization.

With the stimulus and encouragement afforded by the WHO through its IMMLEP program, much work on the microbiology of *M. leprae* and related organisms is being reported.

Controversial issues abound. Some are in process of being resolved.

Others seem as far from solution as ever. The highlights are difficult to detect amid the general brightness and the dazzle of well-publicized issues.

Has *M. leprae* been grown in culture media, with the addition of hyaluronic acid or not?

What are the criteria for successful cultivation, are we any further on from those laid down in the working group at Bergen five years ago?

What is the extent of a spontaneously occurring leprosy-like infection in wild armadillos? And more important, what is the origin, and the spread, and the significance to exposed human beings of such an endemic disease of armadillos?

What is the precise biochemical process behind the gradual development of acid-fastness in slowly multiplying organisms resembling *M. leprae* in some way?

Are we dealing with a pleomorphic organism, capable of passing through various phases dependent on different environmental factors, or have we a host of closely-related saprophytes of human and mouse tissue, perhaps producing mycobactins and facilitating the multiplication of each other? The whole field is vastly more complex than we imagined a few years ago. There is some light, but it is more diffuse and more intriguing than it was. No highlights yet.

The clinical aspects of leprosy received due attention, with a much-appreciated visual

correlation between the patient and his tissue response to infection. In the "home" of Lucio leprosy, the curious localized skin gangrene was demonstrated to the satisfaction of all concerned.

The detection and appraisal of early leprosy are matters of great importance to the patient and the community, and the spontaneous resolution of early forms in highly endemic areas has implications for statistics of prevalence, as well as for the action of antileprotics. The problem of differentiating between the incipient forms of child leprosy that are potentially malign, and those with adequate potential or established cell-mediated immunity, remains. The effect of leprosy infection in the pregnant woman and on her unborn child is now known to be of significance.

Inflammatory arthropathy is an interesting aspect of the reactional episodes of lepromatous leprosy, and the sterile joint exudate and inflammation of the synovial membrane have long-standing deleterious results on the functioning of the larger joints.

The continuing debate on the influence of antileprotics in precipitating reversal reactions continues to excite interest; much more work should be done in communities of differing skin pigmentation, different lepromatous/tuberculoid ratios, and diverse genetic make-up, so as to make possible general recommendations for prevention and treatment, supplementing the Fifth WHO Report on Leprosy.

The treatment of leprosy is now dominated by the specter of drug resistance, and the prevention of the emergence of dapsone resistant bacilli lies at the basis of much thinking and practice in the therapy of leprosy today. Yet all is far from dark and the excellent results achieved by good programs conscientiously carried out by competent supervised auxiliary workers, have been demonstrated in several countries. Now that primary sulfone resistance has been shown to occur, the need for training of all health workers (including doctors) in the early recognition and adequate treatment of primary sulfone-resistant leprosy must be a priority.

Various drug regimens, especially multi-drug regimens, are still under trial. But the stark economic restraints that preclude the application of ideal regimens became apparent in papers and discussions. We know — or we think we know — what we ought to do, but

we cannot afford to do it. Rifampicin is wonderful but what is the best, most effective, and cheapest way to use this valuable drug? How can we make it available for the individual patient and help him, and at the same time reduce the mycobacterial threat to his community?

We do need better and more tools to do the work, but the present indications are not too promising that we shall get them, or be able to afford to use them if we get them, or have a sufficiently competent medical infrastructure to use them effectively and without danger to the individual patient or threat to the leprosy program.

Novel accessions to our therapeutic armamentarium were reported; transfer factor and levamisole give equivocal results, and no one pattern of treatment is yet emerging from small and inadequate trials. Reversal reaction may be precipitated by transfer factor. The role of dapsone in precipitating reversal reaction is still a matter of controversy, and the controlled trials in some countries appear to be challenged by the clinical experiences in others.

Acedapsone has its advocates, both as therapy and prophylaxis, but no great enthusiasm is being shown for its wider use, particularly as the low sulfone blood levels would seem to favor the emergence of sulfone-resistant bacilli unless the spaced injections are supplemented by oral dapsone, and in the case of multibacillary disease, by another drug of dissimilar chemical composition.

An upsurge of interest in nerve damage is evident in many quarters. The pathophysiologists are now in broad agreement concerning the main features of nerve function and malfunction in leprosy. The pathogenesis and the triggering mechanisms are now better understood, though everything is far from clear. The relative importance of the various factors known to be operative in individual patients merits much more investigation; in fact, the suggestion was made that the question of nerve damage requires a full session at the next congress. The experimentalists are doing their best to help, and the infected mouse is proving a useful model.

However, controversial issues remain, such as the precise role of the small blood vessels (micro-angiopathy) in the access of *M. leprae* to nerves, and that of venous obstruction.

Obviously much more work needs doing in these two matters. Now that precise methods exist for the quantitative assessment of nerve damage, it is to be hoped that reliable and comparable observations will accumulate during the next five years.

One point comes out clearly — the fundamental importance of damage to the nerves in all varieties of leprosy except the early and self-healing forms. Very extensive damage may be present though quite unsuspected clinically, and the demyelination of fibers can be shown by the electron microscope.

One encouraging feature is early recognition of incipient damage (especially during reactional episodes) and early treatment of the patient by an experienced staff at a central hospital, will prevent much (if not most) nerve damage. It is here that the immunologists and the therapists can be mutually helpful. The training of all auxiliary workers in the routine examination of the peripheral nerves of patients and in an awareness of any indications of departure from the normal, is obviously of the greatest importance. The role of surgery in the relief of pain and the prevention of further nerve damage was studied. But surgery should be practiced by medically-minded surgeons; the dabbling physician should not actually hold the scalpel unless he is sufficiently trained and competent, and maintains his expertise and delicacy of touch by constant practice. Very convincing results of decompression of nerves are now becoming accepted; here again, better evaluation studies, with quantitative assessment and precise series as comparable as can be made, are obviously necessary. We need a new positive index of nerve damage, objective and measurable. Again and again, the ideal of team work by physicians and surgeons, physiotherapists and social workers, the peripheral worker and the central hospital physician, was stressed.

Another aspect of the problem of nerve damage in leprosy impinged upon another controversial area, that of integration. The ideal was stressed that no discrimination should be exercised against the patient whose nerves have been damaged as the result of leprosy, as against the victims of polio, tuberculosis or accident. Yet reconstructive surgery demands a high degree of expert knowledge and judgement. Sometimes a nonphysician technician could do a surgical job better than a dabbling physician, but there are legal and

professional difficulties in advocating this innovation.

Rehabilitation of the leprosy patient received attention in more than one session. Much depends on patient motivation, and just as much on the attitude of medical and auxiliary staff. Health information and health education could prevent much tissue damage and maintain the capacity of the patient to earn a living, but the economic environment is often as inimical to progress as the attitude of society in general to the leprosy sufferer. As we stand back and stare, we can perhaps see eye to eye with the medical historians and the sociologists who detect a waning of the leprosy endemic consequent upon the interplay of sweeping social changes.

The social aspects of leprosy came into their own at this Congress. There was a Pre-Congress Working Group, which produced a good report and well-attended sessions in the Congress itself. I pass on some of the topics considered.

The dilemma: the better the leprosy service the greater the stigma and the more likely the perpetuation of the notion of leprosy as a disease apart.

Precipitate dismantling of a working separate service may lead to disruption of treatment, with all that that will entail. The socio-medical as well as the socio-cultural setting must be studied and allowed for.

The two most important — but perhaps unrecognized — factors in the success or failure of a leprosy control program lie in failure to recognize the importance of human relations, and society's ingrained historic attitude to leprosy and its victims.

Creative and remunerative employment for the leprosy patient, especially if deformed, is difficult of achievement. The relevant factors were analyzed: unreasonable fear of leprosy, association of an image of deformity as an essential and inevitable feature of the disease. The complex psychological interaction of patient and community was at the base of all attempts at rehabilitation and reintegration of the patient into the family, the farm and the social milieu. The vicious circle of fear, stigma, and prejudice can be interrupted only by effective health education. The importance of health education was stressed, beginning with diagnosis made in the home; this would improve regularity of attendance, ease of

examination of contacts, prevention of deformity.

The word "leprosy" and its derivatives came in for some critical examination. The crux of the matter is that in most cultures and linguistic groups, the real sting of leprosy resides in the disease and not in the name applied to it. Let us face the ugly fact of leprosy fairly and squarely, and rehabilitate the word, the disease and its victim. The stigma of leprosy will remain as long as patients are not treated adequately, economically and sympathetically, and as long as the old attitudes of over-protection and coercive segregation persist in the mind of the public and officialdom, and in the mind of the patients as well. A note of forward-looking hope was expressed that some lingering old-style hospitals might be utilized for the care of those disabled from whatever cause; integration might well begin here. Nonmedical factors, like motivation and a caring concern, were emphasized as crucial in any leprosy control program.

When it comes to control, where are we? Are we failing? Are all the goodwill and all the effort to be wasted? Must we resign ourselves to despair? Have doctors contributed little to leprosy control? What would Ivan Illick say?

Many factors may affect the results of a leprosy control program, such as: migration, with the production of urban slums; the elimination of risk factors by more adequate housing, the wearing of clothing, the diminution of close contacts; living conditions; the criteria of discharge from treatment may vary and thus incorrectly reflect the results of treatment; the definitions of "active leprosy" and "inactive leprosy still requiring treatment" may affect the overall results expressed in figures. Two conclusions emerge: first, statistics do not accurately reflect the extent and gravity of the leprosy endemic; and second, non-therapeutic measures may in the long run prove more effective in controlling leprosy than drugs.

Integration is still a controversial issue in most countries. The situation varies enormously from one country to another, and also within a country: prevalence rates, social attitudes, hierarchical structure, availability of health services (specific and general), economic level, nutrition and housing. The integration of leprosy programs into general health programs is a subject that frequently generates much heat but little light — cer-

tainly nothing that can by any stretch of the imagination be termed a highlight came from Mexico. In theory, it is desirable and even essential in the long run; in practice, its application must be subject to a diversity of local conditions and to local constraints.

Well so much for a superficial and rapid survey of aspects of the week's work.

Where do we go from here?

I detect a note of sober, even somber, realism in the papers and sessions. We are learning more of the complexity of the leprosy organism and of the immune response to challenge. And the twin specters of drug resistance and persistently viable organisms dominate much of our thinking today. But I can also discern an excitement, an enthusiasm, as unforeseen and unimagined vistas of research are opening up to the research immunologist and microbiologist.

Coupled with the realism and excitement, can we not all see and welcome the increasing interest in the whole social environment of the sufferer from leprosy? He is a fellow human

being, a man (or woman) like unto ourselves, with hopes and frustrations, with family contacts, with needs for food, housing and employment, and the simple joys of life.

In this Congress, we met each other, and appreciated each other's work. And we are coming to realize, whatever our particular field of activity, that we need each other more than ever before as we face the common foe.

Highlights? Yes, a few. More importantly, a general intense glow of interest and cooperative effort, a warmth of mutual appreciation and understanding, and a realization of our interdependency in the One World, the global community. Coupled with all this, is the working together of the research scientist, the concerned therapist, and those deeply moved by the human plight of the sufferer from leprosy.

This spirit augurs well for the future — whatever the serious problems we may have to face. Let us put into practice what we already know, and strive after new knowledge that will help solve this intractable and challenging problem.