

SECRETARY'S REPORT OF THE XII INTERNATIONAL  
LEPROSY CONGRESS

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It is often said that the spectator sees most of the game. It is even truer that the television viewer in the comfort of his own home may see more of the game than the spectator, and certainly far more than those who actively participate in the hurly-burly of a hotly contested encounter on the sports-field.

I now invite you to join me and to imagine yourselves to be television viewers as you stand back and stare at the tightly packed proceedings of the past few days of this XII International Leprosy Congress. The reports of the workshops held last week and all of the 510 abstracts submitted will see the light of day in a special issue of the INTERNATIONAL JOURNAL OF LEPROSY.

As Secretary-General of the Congress, responsible for the scientific organization, I had the privilege of acknowledging and editing the abstracts. I have a feeling of long acquaintance—if not of real friendship—with the authors of these abstracts. Thank you, one and all.

I am indebted to the rapporteurs of the various sessions for their reports, which I will do my best to summarize during the next few minutes. I must apologize in advance for the cursory and superficial nature of this presentation: it is a selective and personal distillation of certain highlights and important features of the various sessions. It is obviously quite impossible for any who are so close in time to the plethora of communications by which they have been bombarded to single out the significant contributions that will eventually prove to be of seminal importance for the control of the historic disease that concerns us. Nevertheless, I invite you to stand back and stare, as we attempt to survey the week's work.

**Session I—Clinical Aspects**

The clinicians are still keeping their eyes open as they endeavor to detect early signs of leprosy, especially in children. They are not sure if the initial or sole lesion (which

may be lepromatous) is the site of inoculation.

Increased clinical awareness was reported in some leprosy control programs, with a welcome reduction in the proportion of patients presenting with some degree of deformity—an index of successful case-finding activities and control measures.

Some very practical observations were submitted on the incubation or silent period preceding relapse in multibacillary and paucibacillary leprosy. About 50% of patients who relapse after apparently adequate treatment do so within three years.

Reactions in leprosy continue to excite interest, especially when occurring during and immediately after pregnancy; the third trimester of pregnancy is the crucial period. The influence of such factors as undernutrition, intercurrent disease, viral infections, and psychological stress was discussed and debated.

The observation was made that the wider the clinical experience and the greater the knowledge of locally prevalent dermatoses, the more accurate is the diagnosis and classification of leprosy—and the more interesting the work becomes.

The importance of damage to the walls of blood vessels in Lucio's phenomenon provided a good starting point for pathological and immunological discussion.

**Session II—Immunology A, B & C**

As was to be expected, and as the large number of abstracts testified, the sessions on immunology attracted a great deal of concentrated attention. Far from being the interest of only the chosen few among research workers, the general run of leprologists now see that immunology already provides many of the keys that unlock the doors of resistance and susceptibility to leprosy, of acute exacerbation and of damage to target tissues.

The scene was set in *Session A* by a summary of the IMMLEP program of the WHO.

After this paper, there was a succession of important contributions of highly original work, ranging from the utilization of recently available techniques for the antigenic analysis of *Mycobacterium leprae*, and the isolation and characterization of a specific phenolic glycolipid, to the production of monoclonal antibodies to *M. leprae*. Work is proceeding in many laboratories in Europe, U.S.A., Australia, and Japan, with a view to the discovery of a simple and dependable skin test that would be of great use in the screening of contacts and whole populations.

The search for a vaccine attracts many research workers. At present, (live) BCG forms an essential ingredient, with the addition of whole extracts or moieties derived from *M. vaccae*, *M. leprae*, *M. avium-intracellulare* complex, and some newcomers like *M. deo*, *M. w.* and the ICRC bacillus.

In *Session B*, the earlier papers emphasized the benefits accruing from the availability of quantities of *M. leprae* from the tissues of experimentally infected armadillos, such as the production of monoclonal antibodies and skin-test antigens. The use of the T cell cloning technique makes it possible to identify *M. leprae*-specific determinants that are recognized by T cells.

The still unresolved question of the relevance of lepromin conversion to protection against infection evoked stimulating discussion. It is becoming clear that a mixture of BCG and killed *M. leprae* is more potent in inducing conversion than BCG alone.

New work was reported on investigations into the HLA histo-compatibility genes; although the discrepancies in earlier work are not yet completely resolved, some genes are now regarded as operative in determining the type of leprosy from which the patient is suffering, but play no part in susceptibility to the disease itself.

In *Session C*, the functions of the varieties of T lymphocytes that have been identified by different workers indicate the rather bewildering complexities of the immune response: helper cells, suppressor cells, cytotoxic cells, and doubtless others all apparently play their part in the defense against *M. leprae*. The role of the macrophage is seen to be increasingly important: in fact, macrophages from patients with lep-

romatous leprosy appear to synthesize a suppressor factor when exposed to viable *M. leprae*. Helper/suppressor T cell ratios were decreased in patients with untreated lepromatous leprosy but increased in such patients undergoing an ENL episode. It was reported that leprosy sera contain a factor, possibly an IgG, that inhibits the response of lymphocytes to phytohemagglutinin.

Patients with dermal ENL have circulating immune complexes that contain IgG and C3, and in those with type 2 reactions manifesting as arthritis, the complexes also contain IgM and rheumatoid factor.

With the increasing complexity of these diverse components of the immune response, there is need for clarification if theorists and practicing leprologists are not to be overwhelmed by the obfuscation of the new knowledge.

### Sessions III A & B—Treatment

Nothing very new was reported in the two sessions on treatment. A valuable review was presented of the THELEP program of the WHO. Secondary dapsone resistance is being reported from many countries: in some well-investigated programs, the truly frightening figures of up to 10% of newly diagnosed patients had been infected with bacilli that were partly or completely resistant to standard doses of the drug, and some degree of primary resistance had been found in up to 30% of wild strains of *M. leprae*.

Careful work reported from Carville, Louisiana, showed that, in spite of the above and similar reports, dapsone was still a wonderfully effective drug, with a huge difference between the toxic dose and the minimal inhibitory concentration. Given regularly in full doses, uninterruptedly, it still had an important role to play in the treatment of leprosy.

It was to be expected that sulfone resistance would provide a major talking point at these sessions. Wherever it is looked for, it is found—in the U.S.A., India, the Philippines, in South Korea. We now know what it is and the threat it poses to leprosy control programs everywhere. What should be done about it?

Bacillary persistence was also discussed, but the old problem of poor compliance, like the poor, is ever with us. We need to use available drugs better: this continuing

problem is more important than the discovery of new drugs.

Clofazimine is assured of a place in treatment: its use among the lighter-skinned Mongolian peoples was said to be acceptable, particularly if a dose of 50 mg daily was administered. The question of the advisability of giving a loading dose was debated. The toxic side effects of prolonged high dosage were underlined: intestinal stasis, ichthyosis, and unacceptable degrees of pigmentation.

Recent research into the possible use in leprosy of good tuberculostatic drugs had on the whole proved disappointing.

The Malta project was reported and reviewed, but questions were raised about the hepatotoxicity of the prothionamide component of the therapeutic cocktail and the applicability of the regimen in other situations.

Various schemes for multidrug therapy were examined and debated. If valid conclusions are to be drawn, then impeccable records must be kept, and the protocol strictly adhered to. There should be no "changing of horses in midstream". Reports from Senegal, India, Bhutan, China, Guyana, the U.S.S.R., and elsewhere were evidence of good programs conscientiously pursued and supervised.

The place of rifampin in the chemotherapy of leprosy was assessed. Daily rifampin is too costly for most countries; comparable clinical and bacteriological results are achieved with once-monthly administration. In one series, 13% of patients with multibacillary leprosy experienced some degree of liver damage attributable to rifampin. The incidence of this unwelcome complication seems to depend on dosage, frequency of administration, and the age of the patient.

The well-worn phrase "cessation of activity" came in for some salutary criticism, and the difficulties of clinical definition were stressed, since tissue reaction to degenerating leprosy bacilli bore no correspondence with activity as defined in terms of bacillary viability and multiplication.

A word of warning against monotherapy came with the report that some patients gave evidence of infection with leprosy bacilli that were resistant to both dapsone and rifampin. One case of resistance to clofazimine

had been reported, but quite a number to rifampin. The only way to prevent the emergence of drug resistance on an unmanageable scale was to introduce multidrug regimens worldwide as soon as possible and to ensure that patients complied with the treatment advised.

Some very important work on immunotherapy was reported from Venezuela. This novel approach is based upon some old observations on the fact that single or repeated injections of lepromin are followed by Mitsuda conversion to positivity. These observations are coupled with suggestions that immunoprophylaxis (with BCG and moieties from *M. leprae*) may have a place in leprosy control.

The major part of the second session concentrated on the related themes of drug resistance and multidrug therapy. Secondary drug resistance (that is, sulfone resistance) is now a fact of life—serious, inescapable, and threatening the whole strategy and structure of leprosy control. Even more serious is the occurrence of primary sulfone-resistant leprosy, which is found wherever it is being sought and where facilities for its investigation exist. There were reports of its appearance in patients with paucibacillary forms of leprosy. Unfortunately, paramedical workers are not yet fully informed of the signs of relapse that indicate the appearance of drug resistance.

The only methods of effective control of the leprosy endemic are the rapid rendering of the patient with multibacillary leprosy noncontagious, so interrupting the cycle of transmission. In rifampin we have a wonderful mycobactericidal drug, but the 0.2% of bacilli that remain viable will continue to multiply in the tissues.

It is obvious that much more experience needs to be acquired of the long-term results of multidrug therapeutic regimens, and particularly of their efficacy in ridding the body of persisting bacilli. They may not be the final answer, but if they are not generally adopted the control of leprosy in the world will become impossible.

The 64,000 dollar question is still unanswered: Does skin sensitivity to mycobacterial antigens indicate the protective value of induced lepromin sensitivity? Only time and the rigorous monitoring of large-scale trials will provide a convincing answer to

this question. The equivocal results of the BCG trials—in Uganda, the Karimui, and Burma—must not be repeated when a specific and safe vaccine becomes available.

#### Session IV—Microbiology

Knowledge of the ultrastructure, the biochemical characteristics and the antigenic components of *M. leprae* has developed apace in the last five years. The most significant feature of this new knowledge is perhaps the availability of relatively huge quantities of *M. leprae* in the living culture medium provided by the armadillo. Methods of purifying *M. leprae* and removing the last traces of armadillo tissue are being developed. These armadillo-derived organisms have been examined and analyzed in numerous sophisticated ways, and their resemblance to closely related organisms like corynebacteria on the one hand and to *M. leprae* and the scrofulaceum group on the other, are becoming better known. The antigenic structure of *M. leprae* is in some ways unique, and groups of workers in Scandinavia, the United States, the United Kingdom, Japan, and Ethiopia (and in other countries) are using sophisticated procedures to elucidate, for instance, the reason for the predilection of *M. leprae* for nerve tissue, and also its respiratory requirements. Apparently, *M. leprae* in human tissues are not infrequently accompanied by related organisms, acid-fast bacilli that may be contaminants or opportunist invaders, some of which may also be present in the soil. The chemical analysis of the cell wall of *M. leprae* has yielded some interesting results, including several types of lipid: the phenolic glycolipid fraction may be antigenically unique.

The claims to have cultured the organism in artificial culture media have not been confirmed, but since *M. lepraemurium* has been successfully cultured, the prospects for eventual success in coaxing our recalcitrant organism to multiply in the various appetizing soups and jellies prepared by our resourceful microbiological cooks in their laboratories seem perhaps brighter now than formerly. Work on opsonins may help provide the answer.

The only real advance comes from the use of the nude mouse and the athymic rat

as animals that are readily infected with *M. leprae*.

#### Session V—Surgery and Rehabilitation

It is nothing short of tragedy that at this Congress, held in the year 1984, we have to have a session on surgery and rehabilitation. We have known for 30 years how to treat leprosy, how to prevent damage to peripheral nerves, and how to minimize the consequences of sensory and motor deficit. But we haven't prevented the preventable disability due to neglected leprosy.

This session gave to surgeons and field workers opportunities to come together and discuss together the common problems they jointly face.

The most important outcome was the closing of the gap between the surgical interventionists and the non-interventionists in the treatment of the acutely inflamed peripheral nerve in the course of a reversal reaction. Medical treatment should always be given a trial, but for how long? This thorny question still provokes argument, but there is more light and less heat than at previous congresses. Release of constricting bands at open operation, or incision of an unyielding fibrous sheath around the nerve—at the appropriate time—will give prompt relief from pain and prevent irreversible loss of motor and sensory modalities.

Reconstructive surgery still fascinates many competent surgeons, who get good results. Wise selection of patients, and good preoperative and postoperative physiotherapy are very important. Special appliances—shoes, splints, prostheses—are essential components of a good program.

Investigations are continuing into the pressures exerted through the sole of the standing and walking foot, with the obvious practical application of the knowledge to the benefit of the patient.

The importance of education of the patient was stressed again and again at this session. The patient himself can do much to prevent damage to his anesthetic extremities.

A good leprosy doctor is not necessarily one who is well versed in the microbiological niceties of *M. leprae*, but one who can prevent or successfully treat plantar ulcers.

I personally long for the day when such a session as this will no longer feature in a Congress program. Meanwhile, we express our thanks to all who contribute to the success of this part of a comprehensive program of patient care.

#### Session VI—Ophthalmology

Good papers at this session gave accounts of cataract operations on patients with leprosy, and an ingenious procedure for enhancing visual acuity by repositioning the pupil and allowing impinging light to reach the retina through the repositioned pupil—a sort of purposeful iridectomy.

The serious results that follow concurrent damage to both the facial and the trigeminal nerves were again emphasized, with the implication that painless exposure keratitis (from uncorrected lagophthalmos) should be detected at the earliest possible stage, so that a patient who has already lost digital sensation should not have to bear in addition the burden of blindness and so be doubly cut off from the outside world.

The ultrastructure of the eye as revealed by electron microscopy opened a fascinating vista of beautiful microphotographs of unimagined complexity. The pathway taken by *M. leprae* via the lacrimal ducts was well documented.

The histopathology of specimens of iris obtained operatively was demonstrated in superb fashion by light and electron microscopy. Both the stroma and the dilator muscle were found to be atrophic in a high proportion of specimens. The origin of the changes observed are believed to be a neuroparalytic iritis. Continuing inflammation leads to deposition of immune complexes in the compromised iris.

#### Session VII—Nerve Damage

New techniques for the investigation of nerve structure and function that have recently become available are being utilized in leprosy.

The existence of primary persistent polyneuritic leprosy was confirmed: this entity is well known in India, but quite rare elsewhere. All types of leprosy are revealed by histopathological examination of the nerves. The puzzle of the absence of any skin abnormality still intrigues investigators: no

skin lesions appear subsequent to the persisting nerve signs.

Once again, the question was raised “Why does *M. leprae* have a predilection for peripheral nerve tissue (while it persistently eschews the central nervous system)?” This is as interesting a question as that posed outside the research laboratories: “Why do gentlemen prefer blondes?” and the answer still eludes us.

Work on several antigens and on the breakdown products of related mycobacteria suggests parallels with allergic peripheral polyneuritis. Basic studies are still needed in this field.

The culture of nerve cells and nerve ganglion cells challenges investigators.

Interesting reports on the pathology of peripheral nerves entrapped in fibro-osseous tunnels were presented. The importance of segmental demyelination was emphasized.

Surgeons are becoming neurophysiologists these days, and are discovering interesting facts about nerves and the conduction of impulses in normal and damaged nerves, correlating structure with function.

It was reported that *M. lepraemurium* were able to cause damage to peripheral nerves in certain strains of mice, but no explanation has been found.

Some workers had found that *M. leprae* could invade the central nervous system in the heavily infected experimental animal but, in general, despite the presence of *M. leprae* in the peripheral blood there was no invasion of the central nervous system.

The problems posed by the possible multifactorial pathogenesis of nerve damage in leprosy will continue to challenge investigators.

#### Session VIII—Experimental Leprosy

New data concerning the epidemiology of leprosy in feral armadillos in the southern states of the U.S.A. suggest that the infection has been endemic among these animals over a long period. Serial lepromin testing of experimentally infected armadillos afforded predictive evidence regarding the probability that an individual animal would or would not develop leprosy, and indicated the type of leprosy that would occur. Sometimes litter mates would develop the disease when experimentally infected.

There was one report of a spontaneous reversal reaction observed in an armadillo with lepromatous leprosy.

The seven-banded armadillo of Argentina has been successfully infected with *M. leprae*. This is an interesting observation since, unlike its relatives further north, *Dasypus hybridus* breeds in captivity—an obvious advantage to the researcher if not to the young victim of the inoculation needle.

Evidence for the occurrence of leprosy of the lepromatous type in a captured sooty mangabey monkey was presented at this session. The animal developed nerve damage in the course of the disease. Experimental transmission of leprosy from this monkey to other monkeys of the same species, to one of two rhesus monkeys, and to three African green monkeys was reported. Intravenous introduction of infective material may be important if lepromatous disease is required.

Two groups reported their studies on leprosy infection in nude mice: the most successful routes were the intravenous and the foot pad. The intranasal and intraperitoneal routes were less successful.

The arrest of sciatic nerve damage in normal mice infected with *M. leprae* seemed to depend on the timing of dapsone medication. Other workers described both the genetic and the lymphocytic control of resistance to subcutaneous inoculation of *M. leprae*. From other laboratories, the investigation in animal models of the molecular biology of the host-parasite relation in *M. lepraemurium* infection of rodents was reported.

#### Session IX—Epidemiology and Control

This session was introduced by an authoritative statement from Dr. H. Sansaricq (of the WHO) on a realistic, long-term global strategy for leprosy control, a paper that set the tone and the standard of the session. Secondary prevention of leprosy based on multidrug therapy should be pursued vigorously at present, since in the continued absence of a proven and specific vaccine this is the only means we possess of controlling the leprosy endemic.

In some countries, this strategy can be combined with the campaign against tuberculosis, where both diseases are fully integrated into the program of primary health

care. In Tanzania, for instance, it has been shown that such a combined approach results in a saving in both men and money. A longitudinal study from China has given excellent results so far as the incidence of new cases of leprosy is concerned. There has been a real decline in the overall case detection rate and also in the deformity rate.

In Vietnam an ambitious program for the "eradication" of leprosy has recently been inaugurated.

Spain is one of the few European countries that has a sizable leprosy problem.

From a Polynesian island an interesting report was presented, fully documented, of an explosive epidemic of leprosy in virgin soil reminiscent of the Nauru epidemic of half a century ago.

Attempts have been made, so far without conspicuous success, to identify the influence of certain states (e.g., prolonged undernutrition) on the incidence and prevalence of leprosy. Rural areas and low-income groups have been traditionally associated with high prevalence rates of leprosy, but patterns are changing in several countries.

An important paper was presented on immunoprophylaxis and immunotherapy with an assessment of the possible effect of these procedures on epidemiological trends.

Individual susceptibility to multibacillary leprosy is apparently similar in all age groups, while paucibacillary leprosy seems to be of higher incidence in the younger age groups. In areas of high prevalence, as in Brazil, the risk of contracting leprosy at a younger age is higher than it is elsewhere.

The news from Phuket Island in Thailand is not so good. A frank report indicated that there had been no noticeable reduction in incidence after ten years of intensive work in the integrated health program.

From Madras comes the conclusion that incorrect classification of leprosy is more common among paramedical workers than wrong diagnosis. Their case detection was good, but their knowledge of the clinical presentation of the different forms of leprosy was not so good. The implications of these observations for the control of leprosy and the teaching of paramedical workers are obvious. More in-service training was recommended and literature, suitably presented and illustrated, is a continuing unsatisfied need.

In *Session B*, the problem of classification was raised, and a simplified system was advocated, based on the Ridley-Jopling scale, and based essentially on clinical grounds (with histopathological justification).

Strategies aimed at strengthening case detection activities, associated with programs for primary health care, were helpfully discussed, and the field use of various tests was reviewed. Subclinical infections may be common but they are of minimal epidemiological significance; they are, however, of intense immunological interest.

One welcome sign in many recent reports of findings in control areas is a reduction in the deformity rate in patients presenting themselves for diagnosis and treatment.

The possible widespread use of acedapson as a prophylactic procedure in selected areas was examined, a short course of three injections given at ten-week intervals being suggested as a protective measure for household contacts of diagnosed sufferers from leprosy.

The detection of regularity of intake of dapsone by means of a simple urine spot test may prove useful in assessing patient compliance in a leprosy control program. Now that multidrug regimens are becoming fashionable, and in view of the fact that rifampin may command a high black-market price in some countries, the usefulness of such a test may be questioned. However, it is an easy test to use by paramedical workers in field conditions.

Genetic epidemiological studies are at long last showing signs of clarity and precision, with twin-pair investigations giving concordance rates significantly higher in monozygotic sibs than in dizygotic twins. The course of the disease often shows striking similarities. There is some evidence that certain HLA histocompatibility antigens may contribute to—if not determine—genetic susceptibility to leprosy of the tuberculoid type.

#### Session X—Experimental Therapy

After a period of relative stagnation in this branch of investigation, this session produced several interesting and important papers. We have dapsone, rifampin, and clofazimine and the thioamides, but little else. There exists a real need for other mycobactericidal—or mycobacteriostatic—

drugs, perhaps of novel chemical structure and composition.

The synthesis of sulfone derivatives with high inhibiting activity and lower toxicity than dapsone was reported. Perhaps, in combination with polylysine, the drug can penetrate a cell-membrane barrier and hence exert its activity.

At very high dosage, dapsone has been shown to be markedly hematotoxic, involving vascular hemolysis at peak plasma levels.

Clofazimine is a most interesting compound pharmacodynamically. It is also interesting in that it is concentrated in the cytoplasm of macrophages. With a high loading dose and a lower daily dose, a steady state concentration is rapidly reached.

Much good work is proceeding on the investigation of the pharmacology of rifampin. Daily doses of the drug do not give better results than a once-monthly dose. Synergism by the use of several anti-leprotic drugs could permit reduced doses of the other drugs and so reduce the risks of toxic side effects.

Some new compounds with chelating properties are being investigated.

Deoxyfructose serotonin is a novel compound being investigated in several centers. It and related compounds are of great potential interest and importance.

The nude mouse and the nude mouse with thymus transplants are proving useful models, as is the neonatally thymectomized Lewis rat.

New methods of assessing the viability of *M. leprae* were described at this session, the results being correlated with those obtained in the standard procedure using the mouse foot pad.

#### Session XI—Pathology

This session was included to provide a forum for the discussion of the pathology of leprosy. Some forgotten facts received salutary exposure and emphasis.

The importance of the vascular endothelium as a repository for leprosy bacilli and as a preferential site for persistent bacilli was brought to the notice of the participants. In the diffuse leprosy of Lucio, as well as in advanced nodular lepromatous leprosy, these endothelial cells become vacuolated, and the lumen of the vessel may become occupied by a thrombus.

Visceral lesions are probably more common in lepromatous leprosy than is generally thought, especially in lymph nodes and in the liver and kidney. During reversal reactions, epithelioid granulomata may be seen in deep organs, an indication that the prognosis is worsening.

A study of finger whorls in patients with lepromatous or tuberculoid leprosy compared with those in healthy subjects revealed some correlation of change in pattern with the development of lepromatous leprosy.

A clinical study in Mexico, complemented by histopathological researches, suggested that there exists a subpolar type of tuberculoid leprosy, occurring in patients with slight and unstable resistance. It is characterized by numerous tuberculoid skin lesions, almost symmetrical in distribution. The participants at this session seemed not to be convinced of the desirability of making a special group for these patients. In Africa, this clinical category is usually termed "interpolar tuberculoid". It is probably a transient pre-borderline type and its existence indicated the need for special care in treatment and a reserved prognosis.

Recent studies in India confirmed the observation that has been frequently made elsewhere that leprosy bacilli may leave the intact skin through the sebaceous and sweat glands and through the epithelial cell layer lining of the hair follicles. Clumps of acid-fast organisms may often be encountered in histological sections made from lepromatous skin; such bacilli may reach the surface of hairy and sweating skin.

#### Session XII A & B—Social Aspects

The main thrust of the first session on the social aspects of leprosy was undoubtedly the realm of health education. What we know about leprosy should become common knowledge, since correct information in assimilable form filters down to ordinary people in towns and villages in the endemic countries. Stigma can be reduced only if accurate information reaches people in groups—such as schools, workplaces, factories, villages—and to individuals in their homes as they listen to the radio or read the papers.

Many factors need to be taken into consideration when planning a health educa-

tion program, such as the social, economic, cultural, and religious background, and the prevailing assumptions about leprosy current in the community. There are deeply ingrained beliefs and prejudices enshrined in language and psychology.

The matter of change of the name of the disease "leprosy" was discussed. It was suggested that if the term "Hansen's disease" was introduced, while the true diagnosis remained a secret, then the patient would suffer a kind of self-stigmatization. "A rose by any other name would smell as sweet" as the Bard expresses it.

The pros and cons of integration of leprosy into the general health services were discussed at some length. In hospital wards, the young and the non-deformed would be the obvious target group for the introduction of this innovation. Doctors dealing with leprosy patients are at last realizing that the old isolation of themselves from their fellow workers in other branches of medicine must cease. People like sociologists, anthropologists, and social workers may provide new and helpful insights into the common problems faced by leprosy workers. Since people vary tremendously from country to country and within countries, it is more than ever necessary to study the beliefs and prejudices of leprosy patients and of ordinary people, so that the factors causing stigmatization may be identified and ameliorated.

Medical students and doctors are the obvious target groups for the kind of health education discussed most profitably during this session.

The opening academic and intensely practical introductory lecture set the tone for the second session on the social aspects of leprosy. The need for social research and the study of community needs at different levels was stressed. Understanding of the cultural background is essential if action is to be taken to overcome the stigma present among medical people—doctors, nurses, and auxiliary workers. There must also be a definite commitment by governments in policy, finance, and staffing.

The social aspects of leprosy are important, too, when it comes to the planning of rehabilitation services, including the provision of financial support to individual patients and to self-employment schemes.

The psychological stresses to which lep-



rosy patients are exposed are an area of wide concern.

When patients are convinced that treatment is effective, the proportion of them dropping out will undoubtedly fall. Ignorance and lack of confidence in treatment are the germane factors; will the treatment prevent plantar ulceration and the stigmatizing deformities popularly associated with leprosy? These are the constantly recurring questions in the mind of the average patient.

The primary health care approach that includes leprosy control entails greater risks as well as providing great opportunities. It should increase the case detection rate, improve regularity of treatment, and materially assist the rehabilitation program.

The hope was expressed that at future congresses the active participation of leprosy patients might be organized.

And so we come to the end of this disjointed and superficial review of a good week's work. I have tried to underline some of the interesting features of a very full program, and close by thanking all who have contributed in any way to the success of this XII International Leprosy Congress. We have stood back for the best part of an hour, and we have stared at the proceedings at these various sessions. Now let us go back to our places of work, armed with such of the new knowledge as is relevant to our situation and, more determined than ever, bring to heel the redoubtable foe, *M. leprae*.



Mrs. Stanley Browne, Dr. Browne greet Madame Gandhi.