LEPROSY NEWS AND NOTES

Information concerning institutions, organizations, and individuals connected with leprosy work, scientific or other meetings, legislative enactments and other matters of interest.

SEVENTH INTERNATIONAL CONGRESS OF LEPROLOGY

HELD IN TOKYO, JAPAN, NOVEMBER 12 TO 19, 1958

CO-SPONSORED BY THE
JAPANESE LEPROSY FOUNDATION (TOFU KYOKAI)
AND THE
INTERNATIONAL LEPROSY ASSOCIATION

With Financial Aid to the Latter by the
Council of International Organizations of Medical Sciences

PATRON

His Imperial Highness Prince Takamatsu

NATIONAL ORGANIZING COMMITTEE

Honorary Chairman

Dr. K. Mitsuda, ex-Director, Nagashima Aisei-en National Leprosarium.

Honorary Members

His Excellency R. Hashimoto, Minister of Health and Welfare.
His Excellency H. Nadao, Minister of Education.
Mr. S. Yasui, Governor of Tokyo.
Mr. K. Shibusawa, President, Japanese Leprosy Foundation.
Dr. K. Kaneshige, President, Science Council of Japan.
Dr. T. Tamiya, President, Japanese Association of Medical Sciences.
Dr. T. Ogata, Honorary Professor, University of Tokyo.
Dr. M. Terada, Honorary Professor, Tokyo Jikei-kai School of Medicine.

Active Members

Chairman: Dr. K. Kitamura, Professor of Dermatology, University of Tokyo.

Executive Secretary: Dr. K. Hamano, Managing Director, Japanese Leprosy Foundation.

Members: Dr. R. Ozawa, Director, Medical Affairs Bureau, Ministry of Health and Welfare.

Dr. T. Omura, Director, Public Health Bureau, Ministry of Health and Welfare.

Mr. A. Saita, Chief Liaison Officer, International Affairs, Ministry of Health and Welfare.

Dr. Y. Hayashi, Director, Tama Zensho-en National Leprosarium.

Dr. R. Kobayashi, Director, National Institute for Leprosy Research.
Dr. K. Yanagisawa, Vice-Director, National Institute of Health.
Dr. T. Yamamoto, Professor of Dermatology, University of Kyoto.
Dr. A. Kobayashi, Director, Health Bureau, City of Tokyo.
Dr. N. Nagatomo, Councillor, Minister's Secretariat, Ministry of Health and Welfare.
Dr. E. Wakamatsu, Chief, Tuberculosis Prevention Section, Public Health Bureau, Ministry of Health and Welfare.
Dr. S. Hashimoto, Chief, National Sanatorium Section, Medical Affairs Bureau, Ministry of Health and Welfare.
Dr. S. Takashima, Director, Nagashima Aisei-en National Leprosarium.
Dr. T. Inaba, Director, Suruga National Leprosarium.
Dr. K. Tanioku, Professor of Dermatology, Shinshu University.
Sister Marie de St. Jacques, Director, Koyama Fukusei Hospital.
Dr. Y. Yoshie, Chief, Research Section, National Institute for Leprosy Research.
Dr. S. Okada, Medical Section, Tama Zensho-en National Leprosarium.
Dr. T. Yokota, Chief, Medical Section, Nagashima Aisei-en National Leprosarium.
Dr. S. Ishihara, Chief, Medical Section, Suruga National Leprosarium.
Dr. M. Maeda, Chief, Epidemiological Section, National Institute of Health.
Mr. Y. Nakaoka, Tuberculosis Prevention Section, Public Health Bureau, Ministry of Health and Welfare.
Dr. K. Imai, Tuberculosis Prevention Section, Public Health Bureau, Ministry of Health and Welfare.
Dr. K. Takenaka, Tuberculosis Prevention Section, Public Health Bureau, Ministry of Health and Welfare.
Mr. N. Yamada, National Sanatorium Section, Medical Affairs Bureau, Ministry of Health and Welfare.
Dr. T. Ishimaru, National Sanatorium Section, Medical Affairs Bureau, Ministry of Health and Welfare.
Mr. N. Mori, Secretary, Japanese Leprosy Foundation.
Mr. Y. Yoshida, Secretary, Japanese Leprosy Foundation.

INTERNATIONAL LEPROSY ASSOCIATION

President: Dr. H. W. Wade.
Vice-President: Dr. Dharmendra and Dr. H. C. de Souza-Araujo.
Secretary-Treasurer: Dr. E. Muir.
Councillors: Dr. E. Agricola, Dr. S. N. Chatterjee, Dr. R. G. Cochrane, Dr. F. Contreras, Dr. T. F. Davey, Dr. A. R. Davison, Dr. J. A. Doull, Dr. A. Dubois, Dr. J. M. M. Fernandez, Dr. N. D. Fraser, Dr. K. Kitamura, Dr. E. Muir, Dr. J. N. Rodriguez, Dr. H. C. de Souza-Araujo, Dr. M. Vegas.

ORGANIZATION OF THE CONGRESS

The set-up for the operation of the Congress itself followed the precedents of previous meetings. On that basis, automatically, the Congress officers are as follows: The presidency goes to the chairman of the host group (i.e., the local Organizing Committee), and the position of secretary goes to the secretary of the International Leprosy Association. The president of the Association becomes the vice-president of the Congress, and the vice-secretaryship goes to the secretary of the Organizing Committee—whose time in general is thoroughly occupied with the multiferous details of operation.

The Executive Committee, which has to be established before any of the final planning can be made definitive, consists of the individuals slated to be the Congress officers plus a few others selected for the contributions they can make. All acts of this group are subject to approval by the General Council, which cannot be convened until the foreign members arrive, a short time before the opening of the Congress.

The General Council comprises all of the members of the Council of the International Leprosy Association who are present, and an equal number of representatives of the local Organizing Committee, chosen by that group, the president-to-be serving as chairman and making the group odd-numbered. In this instance, as at Madrid, one member of the local group—Dr. Kitamura—was also a councillor of the Association, so in fact he served in a dual capacity. Eleven foreign members of the Association attended the Congress, so the General Council consisted of 23 persons, as shown below.

CONGRESS OFFICERS

Dr. K. Kitamura, *President*
Dr. H. W. Wade, *Vice-President*
Dr. E. Muir, *Secretary*
Dr. K. Hamano, *Vice-Secretary*

GENERAL COUNCIL

Dr. K. Kitamura *(Chairman)*

Dr. K. Hamano *(Vice-Secretary)*
Dr. Y. Hayashi
Dr. T. Inaba
Dr. R. Kobayashi
Dr. T. Omura
Dr. R. Ozawa
Mr. A. Saita
Dr. S. Takashima
Dr. K. Tanioku
Dr. T. Yamamoto
Dr. K. Yanagisawa

Dr. H. W. Wade *(Vice-Chairman)*
Dr. E. Muir *(Secretary)*
Dr. E. Agricola
Dr. R. G. Cochrane
Dr. F. Contreras
Dr. T. F. Davey
Dr. Dharmendra
Dr. J. A. Doull
Dr. J. M. M. Fernandez
Dr. N. D. Fraser
Dr. J. N. Rodriguez

EXECUTIVE COMMITTEE

Dr. K. Kitamura *(Chairman)*
Dr. H. W. Wade *(Vice-Chairman)*
Dr. E. Muir *(Secretary)*
Dr. K. Hamano *(Vice-Secretary)*
Dr. J. Ross Innes
Mr. A. Saita
Dr. K. Yanagisawa

LADIES COMMITTEE

Miss Y. Eguchi
Mrs. O. Fukushi
Mrs. E. Hamano
Mrs. Y. Hayashi
Mrs. S. Hayashi
Miss (Dr.) T. Horiuchi
Miss K. Izaki
Mrs. H. Kitamura
Miss S. Nakamura
Miss T. Omura
Miss Y. Ota
Mrs. O. Saito
Mrs. (Dr.) A. Sano

Because the International Leprosy Association has the responsibility for setting up the scientific program, the Association officers fulfilled the functions of a program committee, without formality. Dr. Muir, Secretary, and Dr. Ross Innes, Medical Secretary of the British Leprosy Relief Association (and, so to speak, secretary-select of the I.L.A.) arrived in Tokyo in the latter part of October to start that operation, and Dr. Wade joined them early in November. For the first time since the Association was organized, a detailed program of the Congress sessions was handed to members at the time of registration.

This same group also served, after the closing of the Congress, as an editorial committee in an endeavor to make the reports of the technical committee uniform in format and of the nature of acts of the Congress itself rather than of reports of committees to it. So far as possible this was done in collaboration with the chairmen of the technical committees concerned.

The Executive Committee had no occasion for any formal meeting. Problems were dealt with among the members as they arose. The General Council, as usual, met twice, first just before the opening plenary session and again just before the closing plenary session.

TECHNICAL COMMITTEES *vs* PANELS; SYMPOSIA *vs* OPEN SESSIONS

About a year before the time of the Congress the International Leprosy Association set up certain Interim Panels to review the main topics proposed for the agenda of the Congress, and also to consider what changes —if any—in the technical resolutions of the Madrid Congress should be recommended in the light of developments since that time. It was proposed that the panels—set up by, and therefore agents of, the Association—would be responsible for symposium sessions of the scientific pro-

gram, but that otherwise they would not function as panels. It was planned that the Congress should set up its own Technical Committees (each to include the corresponding panel members present, with other persons added), and that was done. The list of members of each committee is given in connection with the appropriate technical resolution.

The *symposia* were strictly for presentations ("invited" papers) arranged by the Interim Panels—with, however, free discussions from the floor. The chairmen of the symposium sessions were the chairmen of the panels responsible for organizing and running those sessions, and they chose their own rapporteurs. For the "proffered" papers on the various agenda topics—papers that had been offered by members and accepted by selection committees, usually on the basis of the abstracts submitted —there were *"open sessions,"* each with its own chairman and rapporteur. Certain topics required two half-day sessions of the program, while in other instances both the symposium and the open session could be held in a single session. Because of necessary program fitting, the topics had to be arranged otherwise than as originally planned. In the earlier symposia the chairmen usually presented previously-prepared reviews of their subjects, while in the later symposia the draft reports of the corresponding technical committees were read.

MEMBERS OF THE CONGRESS

The list of actual participants, supplied by the office of the Congress secretariat and corrected by deletion of certain names of individuals known not to have attended, shows that 181 persons registered as members, not including ladies who registered as associate members in order to attend the social events. In addition, we are informed, about 120 Japanese physicians were permitted to attend as spectators without registering. As at Madrid, no distinction was made between official delegates and others.

Abe, Dr. Masahide, Aomori, Japan.
Agricola, Dr. Ernani, Rio de Janeiro, Brazil.
Albornoz Martinez, Dr. Rafael, Caracas, Venezuela.
de Albornoz, Dra. María Cecilia B., Caracas, Venezuela.
Aleixo, Dr. Josefino, Belo Horizonte, Brazil.
Ambles Pipo, Dr. M., Madrid, Spain.
Arakawa, Dr. Iwao, Aomori, Japan.
Arif, Dr. Mohamad, Djakarta, Indonesia.
Arnesen, Dr. Kristen, Seoul, Korea.
Azulay, Dr. Rubem David, Rio de Janeiro, Brazil.

Baccareda-Boy, Dr. Aldo, Genoa, Italy.
Bagalawis, Dr. I. Artemio, Seoul, Korea.
Barba Rubio, Dr. José, Guadalajara, Mexico.
Bartling, Miss Clara, Inhambane, Mozambique.
Bechelli, Dr. Luiz Marino, São Paulo, Brazil.
Beckett, Dr. Desmond William, Makogai, Fiji.
Binford, Dr. Chapman H., Washington, D.C., U.S.A.

Blanc, Dr. Michel, Djakarta, Indonesia.
Bland, Dr. Ronald Heywood, New Delhi, India.
Bly, Miss Marjorie, Taipei, Taiwan.
Bonniol, Dr. Pierre, Tananarive, Madagascar.
Boshell, Miss Patricia F., Paris, France.
Brand, Dr. Paul W., Vellore, South India.
Buu-Hoi, Dr. N. P., Paris, France.

Cap, Dr. Josef, Léopoldville-Kalina, Belgian Congo.
Chandy, Dr. Jacob, Faizabad, India.
Chao, Dr. Yung-fa, Taipei, Taiwan.
Chatterjee, Dr. K. R., Calcutta, India.
Chen, Dr. Tsung-yung, Taipei, Taiwan.
Cochrane, Dr. Robert G., London, England.
Contreras Duenas, Dr. Felix, Madrid, Spain.
Convit, Dr. Jacinto, Caracas, Venezuela.
Costa Neves, Dr. Maria, Rio de Janeiro, Brazil.
Crowther, Mr. C. I., New York, N.Y., U.S.A.

Dalal, Dr. B. B. A., Tamshedpur, India.
Davey, Dr. Thomas Frank, Uzuakoli, Eastern Nigeria.
Dharmendra, Dr., Chingleput, South India.
Diniz, Dr. Orestes, Rio de Janeiro, Brazil.
Doull, Dr. James A., Washington, D.C., U.S.A.
Duncan, Miss Ruth, Tainan, Taiwan.

Estrada Silos, Dr. C., Mexico, City, Mexico.

Farris, Dr. Guido, Genoa, Italy.
Fasal, Dr. Paul, San Rafael, Calif., U.S.A.
Fernandez, Dr. José M. M., Rosario, Argentina.
Ferrante, Dr. Anton, Sliema, Malta.
Fite, Dr. George L., Carville, La., U.S.A.
Follereau, Mr. Raoul, Paris, France.
de Fonseka, Dr. Patrick J., Colombo, Ceylon.
da Fonte, Dr. Joir G., Rio de Janeiro, Brazil.
Fraser, Dr. Neil Duncan, Hong Kong.
Freymann, Dr. John H., Omaha, Neb., U.S.A.
Frölich, Dr. Walter, Taipei, Taiwan.
Fukushi, Dr. Katsunori, Tokyo, Japan.

Gabriel, Dr. Morgan, Queensland, Australia.
Gandy, Dr. Truett, Houston, Texas, U.S.A.
Gay Prieto, Dr. José, Madrid, Spain.
Gomez Orbaneja, Dr. A., Madrid, Spain.
Gonzales, Dr. E., Lourenço Marques, Mozambique.
Garrod, Dr. John, Busia, Uganda, East Africa.
Giffen, Dr. Horace K., Omaha, Neb., U.S.A.
Guinto, Dr. Ricardo S., Cebu, Philippines.

Hamano, Dr. Kikuo, Tokyo, Japan.
Honda, Dr. Hajime, Osaka, Japan.
Hanks, Dr. John H., Boston, Mass., U.S.A.
Harman, Dr. Douglas, Hong Kong.

Hayashi, Dr. Yoshinobu, Tokyo, Japan.
Hediger, Dr. Frans, Osaka, Japan.
Hemerijckx, Dr. Frans, Taluk, Madras, South India.
Hirako, Dr. Makoto, Tokyo, Japan.
Hirano, Dr. Norimasa, Tokyo, Japan.
Horton, Dr. Donald R., Victoria, Canada.

Ikeda, Dr. Kameo, Tokyo, Japan.
Inaba, Dr. Toshio, Gotemba, Japan.
Innes, Dr. James Ross, London, England.
Ishidate, Dr. Morizo, Tokyo, Japan.
Ishihara, Dr. Shigenori, Gotemba, Japan.

Jagadisan, Mr. T. N., Mylapore, South India.
Jamal Din, Dr. Maurice, Mandalay, Burma.
Jopling, Dr. William Henry, Earlswood, Surrey, England.

Kettanurak, Dr. Chaisiri, Bangkok, Thailand.
Kibby, Dr. Sydney, Kalaupapa, Molokai, Hawaii, U.S.A.
Kirby, Dr. Herbert W., Arcadia, Calif., U.S.A.
Kitamura, Dr. Kanehiko, Tokyo, Japan.
Klingmüller, Dr. Georg, Bonn, Germany.
Kobayashi, Dr. Rokuzo, Tokyo, Japan.
Kuper, Dr. Sidney W. A., London, England.

Lai, Dr. Shang-ho, Taipei, Taiwan.
Landsborough, Dr. David, Changhua, Taiwan.
Laviron, Dr. P., Teheran, Iran.
Lechat, Dr. Michel F., Coquilhatville, Belgian Congo.
Lew, Dr. Joon, Seoul, Korea.
Lloyd, Rev. C. M., Taegu, Korea.

Macnamara, Dr. Charles, Osaka, Japan.
María Francis, Sister, Kumamoto, Japan.
María Pierre Damien, Sister, Kumamoto, Japan.
Marie Francis de Sales, Sister, Lyon, France.
Marie of the Trinity, Sister, Lyon, France.
Marshall, Dr. Irvine H., Naha, Okinawa.
Mayer, Dr. Rudolph L., Summit, N.J., U.S.A.
MacFadzean, Dr. James, Sungei Buloh, Malaya.
Merklen, Dr. Felix Pierre, Paris, France.
Miller, Mr. A. Donald, London, England.
Minato, Dr. Jiro, Sendai, Japan.
Miquel, Dr. Ramon, Khon Kaen, Thailand.
Mitsuda, Dr. Kensuke, Okayama, Japan.
Miyata, Dr. Tadao, Kagoshima, Japan.
Miyazaki, Dr. Matsuki, Kumamoto, Japan.
Moffett, Dr. Howard F., Taegu, Korea.
Montestruc, Dr. Etienne, Fort de France, Martinique.
Morgado, Dr. Rui José, Lourenço Marques, Mozambique.
Moris, Dr. Stanley W., Minneapolis, Minn., U.S.A.
Morris, Dr. Anthony J., Tokyo, Japan.
Muir, Dr. Ernest, London, England.
Mungavin, Dr. John, Cheshire, England.

Murray, Dr. Florence J., Seoul, Korea.

Namba, Dr. Masashi, Okayama, Japan.
Naylor, Dr. Ralph Francis, Kampala, Uganda, East Africa.
Nilssen, Dr. Ragnar W., Seoul, Korea.
Nishimura, Dr. Shinji, Osaka, Japan.
Nishiura, Dr. Mitsugu, Kyoto, Japan.
Nojima, Dr. Taiji, Takamatsu, Japan.
Nuñez Andrade, Dr. Roberto, Mexico, D.F., Mexico.

Ogata, Dr. Tomio, Tokyo, Japan.
Ogata, Dr. Tomosaburo, Tokyo, Japan.
Okada, Dr. Seitaro, Tokyo, Japan.
Ozawa, Dr. Ryu, Tokyo, Japan.

Paras, Dr. Armando M., Culion, Palawan, Philippines.
Pfaltzgraff, Dr. Roy E., Garkida, Eastern Nigeria.
del Pianto, Dr. Enrico, Rome, Italy.
Pinto, Dr. A. R., Bissau, Portuguese Guinea.
Plucs, Dr. Jacques, Hong Kong.

Rabello, Dr. F. E., Rio de Janeiro, Brazil.
Reddy, Dr. K. M., Sungei Buloh, Malaya.
Rees, Dr. Richard J. W., London, England.
Rhee, Dr. Yilsun, Seoul, Korea.
Richet, Dr. Pierre, Dakar, French West Africa.
Ricou, Dr. S. M., Angola, Turkey.
Ridley, Dr. Dennis S., London, England.
Risi, Dr. João Baptista, Rio de Janeiro, Brazil.
Rivas, Dr. Armando, Caracas, Venezuela.
Rodriguez, Dr. José N., Manila, Philippines.
Rollier, Dr. R., Casablanca, Morocco.
Ross, Dr. Charles M., Kaduna, Northern Nigeria.
Ross, Sister Hilary, Carville, La., U.S.A.
Runez, Dr. Artemio, Tala, Rizal, Philippines.
Russell, Dr. Douglas A., Port Moresby, New Guinea.
Rutgers, Dr. A. W. F., Macassar, Indonesia.

Sadaghiani, Dr. Youssef, Teheran, Iran.
Sakurane, Dr. Yoshinosuke, Osaka, Japan.
Salazar Leite, Dr. Augusto, Lisbon, Portugal.
Salomão, Dr. Abrahão, Belo Horizonte, Brazil.
Schmidt, Dr. Karl, Basel, Switzerland.
Seal, Dr. Kenneth S., Oji River, Eastern Nigeria.
Sheahan, Sister Angela, Wakayama, Japan.
Shepard, Dr. Charles C., Montgomery, Ala., U.S.A.
Shimizu, Dr. Yasuhiro, Osaka, Japan.
Si, Dr. Bun-chu, Tainan, Taiwan.
Silvio, Dr. Colimedio, Caracas, Venezuela.
Skinsnes, Dr. Olaf K., Hong Kong.
Sobue, Dr. Akihito, Nagoya, Japan.
Storkan, Dr. Margaret Ann, Redondo Beach, Calif., U.S.A.
Sushida, Dr. Kiyo, Tokyo, Japan.
Such Sanchez, Dr. Manuel, Guadalajara, Spain.

Tajiri, Dr. Osamu, Kumamoto, Japan.
Takashima, Dr. Shigetaka, Okayama, Japan.
Tanioku, Dr. Kihei, Matsumoto, Japan.
Thomson, Dr. Donald, Bangkok, Thailand.
Thompson, Dr. Graham Murray, Hong Kong.
Tolentino, Dr. José G., Cebu, Philippines.
Tran-Van-Bang, Dr., Saigon, Viet-Nam.

Uehara, Dr. Kazuo, Kusatsu, Gumma-Pref., Japan.

Vellut, Dr. (Miss) Clair, Taluk, South India.
Venkateswaran, Dr. C. H., Coimbatore, India.

Wade, Dr. H. W., Culion, Palawan, Philippines.
Wardekar, Dr. Ramchandra V., Wardha, India.
Weaver, Mrs. Eunice, Rio de Janeiro, Brazil.

Xuong, Dr. N. D., Paris, France.

Yamamoto, Dr. Toshihira, Kyoto, Japan.
Yanagisawa, Dr. Ken, Tokyo, Japan.
Yajima, Dr. Yoshikazu, Kusatsu, Gumma-Pref., Japan.
Yoshie, Dr. Yoshio, Tokyo, Japan.

Countries and territories represented.—As usual, the indicated origins of members do not represent the distribution by nationalities, because persons originating in—so to speak—exporting countries (e.g., the United Kingdom) are credited to the places where they are actually working.

Of the 181 persons listed 38 were of the host country, although 6 foreigners increased to 44 the registration from Japan. A full three-fourths of the registrants, therefore, came from abroad. When the Organizing Committee printed the program it was expected that there would be 134 Japanese registrants, apart from Congress officers, but only 29 of the printed list are reported as having actually registered. The 38 Japanese nationals constituted only 21 per cent of the total, which figure is to be compared with 36 per cent local members among the 167 reported registrants at the Cairo Congress, 38 per cent of the 226 at Havana, and 36 per cent of the 337 at Madrid.

From the following tabulation it is to be seen that, including Japan, members came from 42 countries or significant political subdivisions or territories. However different from previous congresses may be the list of countries represented and the proportional distribution of members by regions, the number of countries represented is not materially different from the numbers from which came the members of previous congresses: Cairo, 49; Havana, 40; Madrid, 50.

COUNTRIES AND TERRITORIES REPRESENTED

Country	*Members*	*Country*	*Members*
Argentina	1	Malaya	2
Australia	1	Malta	1
Belgian Congo	2	Martinique	1
Brazil	11	Mexico	3
British East Africa	2	Mozambique	3
Burma	1	New Guinea	1
Canada	1	Nigeria, Eastern	3
Ceylon	1	Nigeria, Northern	1
France	7	Okinawa	1
French Morocco	1	Philippines	6
French West Africa	1	Portugal	1
Fiji	1	Portuguese Guinea	1
Germany	1	Spain	5
Hong Kong	5	Switzerland	1
India	11	Taiwan	8
Indonesia	3	Thailand	3
Iran	2	Turkey	1
Italy	3	United Kingdom	9
Japan	44	United States	16
Korea	8	Venezuela	5
Madagascar	1	Viet-Nam	1

PROGRAM OF THE CONGRESS

The following list of events combines the general program printed before the Congress convened, and that of the sessions of the scientific program. As an innovation, the names of authors of papers read and of discussers are given. The names of authors will serve as a guide to the abstracts published in this issue; the discussions, as recorded, are expected to appear in the transactions. Certain of the papers read in the first open session (second working session) would have been placed in an "Other Topics" group had there been room in the program for such a category. That is done with the abstracts.

TUESDAY, NOVEMBER 11TH

Registration. (Also continued on the 12th.)

WEDNESDAY, NOVEMBER 12TH

9 A.M. First meeting of General Council.

11 A.M. Formal opening ceremony.

2 P.M. Opening plenary session (following the presentation, by Bishop Arai of Yokohama, of the Damien-Dutton award to Dr. Wade). Minutes of this session appear later in this report.

EVENING. Cocktail party by Prince and Princess Takamatsu at Korin Mansion.

THURSDAY, NOVEMBER 13TH

FORENOON. First working session. Pathology and Bacteriology, *symposium.* Dr. J. H. Hanks, *chairman,* Dr. R. J. W. Rees, *rapporteur.*

Speakers: Hanks (introductory review), Rees, Hanks (personal contribution), Binford, Chatterjee, and Ridley. *Discussers:* Hanks, Chatterjee, Binford, Wade Rees, Azulay and Montestruc.

AFTERNOON. Second working session. Pathology and Bacteriology, *open session.* Dr. C. H. Binford, *chairman,* Dr. Dharmendra, *rapporteur.*

Speakers: Shepard, Naylor, MacFadzean (MacFadzean & Valentine), Rees (Rees, Valentine & Wong), Okada, Kuper, Hayashi, Yamamoto (Yamamoto, Nishiura, Harada & Imaeda), Tomosaburo Ogata, Brand, Minato, Gay Prieto (Gay Prieto & Contreras), Lechat (Lechat & Chardome), Bang (Bang & Teip), Lai and Hanks. *Discussers:* Rollier, Chatterjee, Rees and Brand. (*Note:* Because there were so many papers, discussions were postponed to the end and then the remarks were necessarily few and limited.)

EVENING: Attendance at an operetta at the Toho Theatre, by invitation of the Ministry of Health and Welfare.

FRIDAY, NOVEMBER 14TH

FORENOON. Third working session. Therapy, *sympósium.* Dr. J. N. Rodriguez, *chairman,* Dr. T. F. Davey, *rapporteur.*

Speakers: Rodriguez, Takashima, Davey and Brand. *Discussers:* Davey, Hayashi, Ojima, Dharmendra, Rodriguez, Chatterjee, Wade, Bechelli, Baccareda-Boy, Guinto, Miquel, Takashima, Fite and Wardekar.

AFTERNOON. Fourth working session. Therapy, *open session.* Dr. J. Gay Prieto, *chairman,* Dr. J. Convit, *rapporteur.*

Speakers: Schmidt, Mayer, Pianto, Baccareda-Boy, Rollier, Kibby, Ikeda, Vellut, Farris, Yanagisawa, Buu-Hoi and Tolentino. *Discussers:* Fernandez, Jopling, Miyazaki, Dharmendra, Miquel, Mayer, Doull, Pianto, Mungavin, Gay Prieto, Davey, Cap, Bonniol, Montestruc, Lechat, Bang, Ross (Sr. Hilary), Merklen, Venkateswaran, Hirano, Rollier, Nishimura, Blanc, Laviron, Contreras and Barba Rubio.

EVENING. Dinner party tendered by Prince and Princess Takamatsu, at Korin Mansion, to representatives of the various countries and territories and certain organizations concerned in the Congress, including its officers. (Because of limited capacity, the number of invitations was necessarily restricted.)

SATURDAY, NOVEMBER 15TH

FORENOON. Fifth working session. Classification.

(*a*) *Symposium.* Dr. K. Kitamura, *chairman,* Dr. R. G. Cochrane, *rapporteur.*

Speaker: Kitamura, Cochrane and Dharmendra. *Discussers:* Gay Prieto, Chatterjee, Bechelli, Wade, and Azulay.

(*b*) *Open session.* Dr. T. F. Davey, *chairman,* Dr. J. Gomez Orbaneja, *rapporteur.*

Speaker: Tajiri. *Discussers:* Nuñez Andrade, Estrada, Hikado, Nishiura, Barba Rubio, Venkateswaran, Morgado, Cap, Marshall, Bonniol, Rutgers, Kitamura, Cochrane and Dharmendra.

AFTERNOON. Visit to the National Institute for Leprosy Research, and to the Tama Zensho-en National Leprosarium.

MONDAY, NOVEMBER 17TH

FORENOON. Sixth working session. Epidemiology and Control, *symposium.* Dr. J. A. Doull, *chairman,* Dr. R. V. Wardekar, *rapporteur.*

Speakers: Doull (report of the technical committee), Wardekar, Montestruc and Diniz. *Discussers:* Fraser, Gay Prieto, Chatterjee, Convit, Landsborough, Ishimaru, Miquel, Richet, Froelich, Azulay, Baccareda-Boy, Blanc and Bechelli.

AFTERNOON. Seventh working session. Epidemiology and Control, *open session.* Dr. Paul Brand, *chairman,* Dr. John Garrod, *rapporteur.*

Speakers: Yanagisawa, Sobue, Lew (Lew & Chung), Barba Rubio, Nuñez Andrade, Gabriel, Bonniol, Salazar Leite, Agricola, Pinto, Fasal, Arif and Fite. *Discussers:* Morgado, Chandy and Brand.

Film: A surgical film showing reconstructive operations was shown by Dr. Brand.

TUESDAY, NOVEMBER 18TH

FORENOON. Eighth working session. Immunology.

(*a*) *Symposium.* Dr. J. M. M. Fernandez, *chairman,* Dr. K. Yanagisawa, *rapporteur.*

Speakers: Fernandez (report of the technical committee), Yanagisawa, Bechelli, Wade and Fernandez (personal contribution). *Discussers:* Dharmendra, Montestruc, Chatterjee, Rollier, Froelich, Estrada, Azulay, Fite, Ogata and Wade.

(*b*) *Open session.* Dr. R. G. Cochrane, *chairman,* Dr. N. P. Buu-Hoi, *rapporteur.*

Speakers: Aleixo (Aleixo *et al.*), Bechelli (Bechelli, de Souza & Quagliato), Azulay (Azulay, Neves & Azulay), Wade (Guinto & Wade), Doull (Doull, Guinto & Mabalay), Tomio Ogata (Ogata & Abe), Fujinami (Fujinami & Honda), and Skinsnes. No discussion, for lack of time.)

AFTERNOON. Ninth working session. Social Aspects.

(*a*) *Symposium.* Mr. T. N. Jagadisan, *chairman,* Dr. F. Hemerijckx, *rapporteur.*

Speakers: Jagadisan (report of the technical committee), Weaver (Mrs.), Follereau, Contreras and Hemerijckx. *Discussers:* Venkateswaran, Richet, Such, Murray.

(*b*) *Open session.* Mr. A. Saita, *chairman,* Sr. Hilary Ross, *rapporteur.*

Speakers: Estrada, Ozawa (by Hamano). *Discussers:* Giffen and Hemerijckx.

Film: A film showing the rehabilitation work at the Trillo leprosarium in Spain was shown by Dr. Such Sanchez.

EVENING. Cocktail party tendered by the Governor of Tokyo, at the Kiyozumi Garden.

WEDNESDAY, NOVEMBER 19TH

9 A.M. Final meeting of the General Council.
10 A.M. Closing plenary session.
12 Noon Closing ceremony.
2 P.M. Meeting of the Council of the International Leprosy Association.
3 P.M. General meeting of the International Leprosy Association.

There is information that certain other films were shown to congress members, not as a part of the regular program. One of them, entitled "The World of Microbes—In Quest of the Tubercle Bacilli," is a documentary which received the first prize for scientific films at the 1958 International Film Festival in Venice. A remarkable job of time-lapse photography with the phase microscope, the first part deals with the multiplication of the avian tubercle bacullus and the second part with its phagocytosis by exudate cells from the peritoneal cavity of the mouse. Science Films, Inc., of Tokyo, published a large-format book, with the same title as the film, in which many sequential frames of the film are beautifully reproduced. Each registrant of the Congress was given a copy of this book.

MINUTES OF SPECIAL MEETINGS

FORMAL INAUGURAL CEREMONY

The opening ceremony of the Congress was held at 11 a.m. on Wednesday, November 12, with Their Imperial Highnesses Prince and Princess Takamatsu on the platform, together with several other dignitaries. Mr. A. Saita presided.

The opening address was presented by Dr. K. Kitamura, and the response by Dr. H. W. Wade. Prince Takamatsu then declared the Congress opened. A poem written by the late Empress Teimei which had been set to music was sung by the Tokiwa-Kai Chorus Group, alumni of the Girl's Peers' School.

There then were welcome addresses by: His Excellency R. Hashimoto, Minister of Health and Welfare; Mr. R. Shibusawa, President of the Japanese Leprosy Foundation; Dr. K. Kaneshige, President of the Science Council of Japan; and Mr. S. Yasugi, Governor of Tokyo.

There followed greetings by Dr. Felix Contreras, Secretary-General of the VI Congress held in Madrid in 1953; by Dr. Enrico del Pianto, representing the Order of Malta which had held the Rehabilitation Congress in Rome in 1956; by Dr. Dharmendra, representing the Indian Association of Leprologists; and by Dr. I. C. Fang, Regional Director for the Western Pacific of the World Health Organization.

Dr. K. Mitsuda, Honorary Chairman of the National Organizing Committee (refusing to remain seated as it had been intended that he should), gave the closing address. By request the Chorus Group repeated the delightful song to which Empress Teimei's poem had been set.

FIRST MEETING OF THE GENERAL COUNCIL

This meeting was held at 9 a.m. of November 12, in anticipation of the first plenary session to be held that afternoon. Dr. Kitamura presided, Dr. Wade in association. All 23 members were present.

The set-up of the Congress organization was explained and approved, and the actions and decisions of the Executive Committee (which, as said, had had no formal meetings) were considered. It was understood that all actions of the Council itself were subject to ratification by the plenary session.

Regarding the scientific program, approval was given the original plan of the International Leprosy Association, on the basis of which preparations had been made for nearly a year. This was, that there should be two kinds of working sessions, namely, (1) *symposia* for "invited" papers by members of the Interim Panels set up by the Association, these sessions to be under the chairmanship of the chairman of those panels, and (2) *open sessions* for the reading of "proffered" papers which the selection committees had approved for inclusion in the program. Also approved were, (*a*) the list of symposium rapporteurs that had been nominated by the respective chairmen, and (*b*) the list of chairmen and rapporteurs for the open sessions proposed by the Executive Committee.

It was explained that, apart from their operation of the symposium sessions, the ILA Interim Panels would not function as such. The Technical Committees of the Congress would be entities of the Congress itself, not of the Association. It was proposed, however, that the members of the Association's panels who were at the Congress should be included in the corresponding Technical Committees—on, so to speak, a priority basis—together with other persons to be chosen to bring the total number to seven, which number was regarded as the largest practical number of persons for such committees. New names were proposed for each of the intended six Technical Committees except the one on Epidemiology and Control. (That group was composed of a total of eight priority members because of the merging of two original panels, one of which—the one on evaluation of BCG vaccination in prophylaxis—had not been intended to continue as a separate group.) Each of these committees would elect its own chairman and secretary. This plan was approved, as were the nominations for added members of the committees.

In keeping with a rule adopted at the Madrid congress, it was decided that to avoid distractions and possible confusion the meetings of the Technical Committees should be closed, kibitzers not allowed. It was also agreed that the reports of these committees should be handed in not later than Monday, November 17, and earlier if possible, so that they could be mimeographed and distributed before the final plenary session. At that meeting a report might be accepted *in toto*, or rejected, but no modifications could be attempted apart from minor ones immediately acceptable to the chairmen concerned,

Among other Executive Committee decisions that were ratified (some of which, of necessity, had already been applied) were: That members of the Congress might each present one accepted proffered paper, provided that each member of a symposium might present such a paper in addition to the invited one which he might present in his symposium. That not more than 10 minutes each would be allowed

for proffered papers, a rule which the session officers were asked to enforce rigidly; the time allowed symposium papers would be at the discretion of the chairmen of the symposia. That manuscripts, if not already in the hands of the secretariat (as they were supposed to be), should be turned in immediately after reading. That the full papers, not just the abbreviated ones prepared for reading because of the 10-minute rule, would be published in the transactions. That only the papers read by persons present at the Congress would be published, and not those sent in by persons who did not come or unused (multiple) papers submitted by actual members. The detailed program of the Congress, which with respect to the working sessions had been prepared on the basis of these rules, was approved.

As at the Madrid Congress, no distinction between members was made, at the time of registration or later, on the basis of their sponsorship; i.e., whether they officially represented governments, or organizations or institutions, or were on a personal basis. As always, it was understood that selected papers might be used in the Congress number of THE JOURNAL. The question of how votation should be conducted in the plenary sessions was not considered.

After the opening ceremony, at 12:40 p.m. the Congress officers met for a briefing session with the chairmen and secretaries of the Technical Committees, which had previously met to elect their officers (the panel chairmen acting as conveners), for a briefing session. Stress was laid on the fact that these committees were entities of the Congress, not panels of the Association. Each committee would have to determine when its meetings should be held, and also the place of meeting if elsewhere than in the assigned space of the convention hall.

Stress was also laid on the importance of consistency and continuity from one congress to another, and on the confusion that would arise if on each occasion the technical committees should render entirely new reports conflicting with previous ones in essential features. In other words, the existing (Madrid Congress) technical resolutions should be modified in essence only as dictated by further knowledge and experience acquired in the past five years. If any of the Madrid resolutions should be regarded as entirely unsuitable or untimely it could be rewritten, but they should at least be used as the basis for discussion, the point of departure.

It was pointed out that approval of a committee's report by the final plenary session would constitute its adoption as a technical resolution of the Congress, which would change its status and direction. There would, therefore, be an editorial committee which, after the closing of the Congress, would make the necessary changes of wording and also attempt to make the resolutions uniform in form.

FIRST PLENARY SESSION

This meeting was convened at 2:15 p.m. of the opening day, November 12, 1958, Dr. Kitamura presiding.

Before the agenda was taken up, there was a presentation, by Bishop Asai, of Yokohama, of the Damien-Dutton award for 1959 to Dr. Wade. The ceremony of this annual award of the Damien-Dutton Society of

New Brunswick, N. J., which is given without respect to creed or nationality, had not previously been held elsewhere than at their headquarters in New Brunswick.

The agenda of the session proper followed closely that of the General Council meeting, with explanations of the set-up of the Congress, the constitution of the six Technical Committees, and the differences between symposia and open sessions of the scientific program (already distributed in mimeographed form). No disagreements were voiced.

The list of symposia, with the names of the chairmen and rapporteurs, and also the list of open sessions, with nominations for chairmen and rapporteurs, were read (not having been mimeographed). They were approved by formal vote, without objection.

The list of the Technical Committees as proposed was in the hands of the members (mimeographed). A few suggestions were made from the floor for additions to certain of the committees, but there were also reminders from both the platform and the floor of the necessity of limiting the number of members of each committee. It was then voted formally, without any negative voice, that the lists as presented be approved.

After informal discussion of certain other points, mainly informational, the session closed. The chairmen of the Technical Committees then announced when and where their first meetings would be held. (The list of members of each committee is given in connection with the corresponding technical resolution.)

SECOND MEETING OF THE GENERAL COUNCIL

The second and final meeting of the General Council was convened at 9 a.m. on November 19, preceding the final plenary session. Seventeen of the twenty-three members were present, Dr. Kitamura presiding.

As usual, the principal business was the examination of the reports of the Technical Committees. These had been handed in to the secretarial staff in time for mimeographing, but it had not been possible for the Executive Committee to examine them. They were available only in English, there being little need and no opportunity for translating them.

Classification: The report of this committee was noted without comment.

Bacteriology and Pathology: A few minor errors were pointed out and corrected.

Immunology: A few slight corrections were made by members of the immunology committee who were present.

Therapy: Certain suggestions for additions and deletions were offered and accepted by the members who represented the committee. There was some comment on the length of the physical therapy section, and a

suggestion that it be made into an appendix, but it was finally decided that it should be left as it was.

Epidemiology and Control: Two or three changes and additions were suggested and accepted by the members of the committee present.

Social Aspects: Accepted without change.

The committee reports, with the slight changes made, would be put before the plenary session for approval. It was agreed that, as previously proposed, there should be an editorial committee to prepare these reports for publication as acts of the Congress. (The Association officers, working at the Tofu Kyokai office, did this work shortly after the Congress ended.)

Another important matter touched on was the precarious situation of the *International Journal of Leprosy*. (This matter is discussed at length in the report of the meeting of the International Leprosy Association.)

FINAL PLENARY SESSION

This session was convened at 10:20 a.m. of November 19, immediately after the meeting of the General Council. Dr. Kitamura presided, Dr. Wade in association.

The President thanked the members for their assiduous attendance at the meetings, and the work accomplished. The reports of the Technical Committees were then taken up, one by one. Because they had been distributed in mimeographed form ahead of time (and three of them, as written by the committees, had been read in the corresponding symposia), it was voted in each case by show of hands that they should not be read in full. Changes which had been made by the General Council were reported.

Classification: Accepted without discussion.

Bacteriology and Pathology: Dr. Hanks read certain corrections, some of punctuation. Accepted as corrected.

Immunology (read in symposium): Accepted as corrected.

Therapy: Dr. Davey read the few changes that had been suggested. Accepted as corrected.

Epidemiology and Control (read in symposium): Dr. Doull reported changes which had been made. Dr. Azulay pointed out a discrepancy in what had been written in two places, and proposed a change of wording (from "dispensary" to "outpatient") in one place, and Dr. Doull agreed. The report was then accepted as corrected.

Social Aspects (read in symposium): Accepted.

(Dr. Such Sanchez held that "social rehabilitation" should be considered in the report on social aspects, and proposed that at the next congress there be a special committee on rehabilitation. Mr. Jagadisan

pointed out that this was a matter for the International Association to consider in preparing for future congresses.)

Dr. Wade reminded the assembly that there would have to be an editorial committee to see to it, for example, that "the Congress recommends" shall replace "the Committee recommends," since the reports upon acceptance became acts of the Congress.

The Secretary, Dr. Muir, read a telegram of greetings from Mr. and Mrs. Perry Burgess, and then a proposed reply which was approved by acclamation.

Mr. A. Donald Miller then presented the resolutions of appreciation, in the following remarks.

Mr. President: As we come to the end of this memorable Congress, I am sure that every delegate is deeply conscious of the debt we owe to those who have made these days together so happy and so significant. We have met in your beautiful and ancient land where the graces of courtesy and culture still shine amid the stresses and ardors of technical progress. We are grateful for the abundant hospitality we have received, and as we scatter to many parts of the world we shall take fragrant memories of you, our true friends.

The Congress has been notable in many ways. To those of us who remember earlier ones the progressive advances in hopefulness and authority have been evident. And this Congress, I believe, will be remembered for its clarity of thinking, its unity of spirit, and its humanity of outlook.

There are those, Mr. President, to whom, on behalf of the members of the Congress, it is my privilege to express our thanks, though there are many who have earned our gratitude who cannot be mentioned personally.

First, we express our deep appreciation of the gracious and active part taken by Their Imperial Highnesses Prince and Princess Takamatsu. Their help has been a visible confirmation of that Imperial concern which has been so marked in the past.

And then we are grateful to the Minister of Health and Welfare, the Minister of Foreign Affairs, the Governor of the Metropolis of Tokyo, and the President of the National Council of Science for the various and valuable parts they have played in facilitating the gathering and operation of this Congress with such easy efficiency.

We are greatly indebted to the Tofu Kyokai and its President, Mr. Shibusawa; and also to the Japanese Leprosy Association, which has been associated with the Tofu Kyokai in sponsoring all arrangements for our reception.

Especially must I make reference to the Organizing Committee members, under the honorary chairmanship of Dr. Mitsuda. It has been one of our greatest honors to meet this veteran and distinguished doctor who for over sixty years has rendered such yeoman service in leprosy work. We are grateful also for the active chairmanship of Dr. Kitamura; and it is difficult to express adequately our thanks for the self-effacing, arduous, and skilful work of the Executive Secretary, our good friend Dr. Hamano. A member of the Committee who has rendered invaluable help in more ways than we can realize is the Chief Liaison Officer, International Affairs, Ministry of Health and Welfare, our familiar guide and counsellor Mr. Saita. To these, and to the members of staff of Tofu Kyokai and the many voluntary helpers we offer our warm gratitude.

The visits that have been made by delegates to the National Leprosy Research Institute and the Tama Zensho-en National Leprosarium were greatly appreciated, and we are grateful to Dr. Kobayashi and Dr. Hayashi and their staffs.

The Ladies Committee has rendered splendid service in gracious helpfulness and imaginative planning for the happiness of the wives of delegates. We are grateful to these, and for all the other arrangements made for our social entertainment.

Our most sincere thanks also goes to the International Leprosy Association and its distinguished officers. The Association has been co-sponsor of the Congress and of indispensable help. I am sure I voice the feeling of us all when I pay tribute to the gallant and devoted service rendered for so many years by Dr. Wade, its President. In between two Congresses the *Journal* which he edits with meticulous care holds us all together and conserves what would otherwise become ephemeral. And to Dr. Muir, the Secretary-Treasurer, we pay our homage for the selfless and dynamic work he has engaged in, not only for this Congress but in blazing a trail of new and natural life. The deputy secretary, Dr. Ross Innes, has quietly carried all the exacting burden of detailed minute-to-minute work, and our gratitude to him is very real.

I must now mention summarily other bodies or people to whom we are grateful, especially the World Health Organization, represented by Dr. I. C. Fang, from Manila, Director of the Western Pacific Region, and Dr. José Gay Prieto, recently appointed head of the newly-created leprosy section of WHO in Geneva. The interpreters, led by Mr. Simha of the Geneva headquarters and Mr. Schellenberg of the Western Pacific Region office, and helped by friends in Tokyo. The simultaneous translation has been of a very high order, and many of us have listened and watched with fascination Mr. Simha translating technical papers with consummate ease and literary grace. And then Miss McGregor of the Manila office who, flooded with manuscripts and requests, has with imperturbable charm dealt, together with her office staff, with the oceans of typing and duplication. To all these we are most grateful.

The Council of the International Organization of Medical Sciences has materially assisted by a grant to the International Leprosy Association in its preparatory work and by help to enable certain research workers in nearby countries to attend.

We are all most grateful also to Dr. Dharmendra, on whose shoulders fell a great deal of preparatory work of a most important character when it was expected the Congress would be held in India. The Organizing Committee greatly benefited by this work, which enabled it to prepare for the Congress in Japan at such short notice.

The beautiful flowers sent by the patients of Tama Zensho-en have kept us in constant remembrance of those whom we endeavor to serve in many lands. Our greetings go to them, and the assurance of our loving concern.

Mr. President, I request you to accept this inadequate recital of our thanks, and I would ask the delegates assembled here to express their endorsement of them by standing and by applause.

These expressions of appreciation and gratitude were approved by a rising vote, and acclamation.

FORMAL CLOSING SESSION

The formal closure followed immediately after the closing plenary session, with Mr. A. Saita presiding and Dr. K. Hamano supporting.

Addresses by Drs. Hanks and Davey summarized briefly and commented on the high lights of the scientific program of the Congress. The former speaker dealt with the first three items of the agenda, classification, bacteriology and pathology, and immunology; and the latter dealt with the

other three items, therapy, epidemiology and control, and social aspects. (Their remarks, it is understood, will be published in full in the transactions.)

Mr. Saita translated a special message of good wishes and farewell from Their Imperial Highnesses Prince and Princess Takamatsu, and also one from the Minister of Health and Welfare. These were received with acclamation.

Dr. Hamano expressed his pleasure and that of his colleagues for the kind words of appreciation. He was grateful for the help of Dr. Wade, Dr. Muir and Dr. Ross Innes; also for that of the simultaneous translators, and especially for the help of Mr. Saita and all of his colleagues in Japan. "I give you a greeting from all the patients in Japan who wish for early eradication of leprosy from the world."

At 11:40 a.m. Mr. Saita declared the Congress closed.

TECHNICAL RESOLUTIONS

The reports of the technical committees as adopted by the final plenary session of the Congress, edited to make them as uniform in form as possible, follow here. Upon adoption they acquired the force of acts of the Congress, and with one exception they have been modified to read as such rather than as reports of the individual committees. The exception is the report of the Committee on Classification, which as will be seen was not susceptible to such modification; but the recommendations of that committee were approved by the Congress.

CLASSIFICATION[1]

In view of disagreements in the Committee, and of the difficulty of studying in detail the evolution of leprosy in relation to its histopathology, the Committee proposes that its recommendations be confined to re-emphasizing the view that the basis for classification should be primarily clinical. A more detailed classification than was adopted by the Madrid Congress cannot be presented to this Congress, owing to the lack of detailed knowledge and the impracticability of this Committee's studying the histopathologic picture of leprosy lesions in relation to their clinical manifestations. The Committee therefore advises that recommendations concerning a more detailed classification be made a matter of study before the next congress.

It is generally agreed that the two main (polar) forms of leprosy are the lepromatous and the tuberculoid types, and therefore the Madrid definitions pertaining to the cutaneous manifestations of these two types (lepromatous and infiltrated tuberculoid lesions) remain unchanged; further,

[1]The Committee on Classification was composed as follows: Dr. K. Kitamura, *chairman,* Dr. R. G. Cochrane, *secretary,* and Drs. Dharmendra, N. D. Fraser, J. Gay Prieto, F. Rabello and R. Rollier, *members.*

that the definitions of the Madrid classification as to the indeterminate and borderline (dimorphous) groups also remain unchanged.

With reference to tuberculoid lesions, the Committee accepts the definition of the Madrid Congress as to infiltrated tuberculoid lesions, and agrees that these should be subdivided into minor and major subtypes.

The Committee has been unable to arrive at agreement with reference to the maculoanesthetic lesions. The Indian group of leprologists hold that these lesions, because of their distinctive clinical entity and their relative frequency in India, should be placed in a separate category to be styled the *maculoanesthetic group.* In their opinion they are not tuberculoid lesions, and therefore should not be considered as belonging to that polar type. On the other hand the Latin-American leprologists are of the opinion that these lesions present sufficiently clear features to be included in the tuberculoid polar type. A decision with reference to this matter must, we feel, be left to the discretion of the individual leprologists, and the Committee makes no recommendation.

Finally, in connection with neuritic lesions (polyneuritic and mononeuritic) the Committee recommends more detailed study of these lesions, but has to admit a disagreement as to their place in a basic classification. The Indian leprologists are of the opinion, again because of their importance as a clinical entity, that these lesions should be placed in a separate group to be named *neuritic.* On the other hand, the Latin-American leprologists are of the opinion that by careful examination and observation these lesions can be included at least in the tuberculoid type or the indeterminate group. Decision with reference to this matter must be left, we feel, to the individual leprologist, and the Committee has no specific recommendation to make.

The Committee requests the plenary session to prepare a resolution asking WHO to convene a special committee of workers particularly interested in the histopathology and clinical aspects of leprosy. The purpose of this committee should be to study in detail the histopathology of leprosy correlated with the clinical picture and in relation to the different races of the world, and their findings should be adequately illustrated and be presented to the next international leprosy congress.

BACTERIOLOGY AND PATHOLOGY[1]

BACTERIOLOGY

Practical contributions and prospects.—The major contribution of bacteriology has been methods for estimating the numbers of bacilli recovered from scraped skin incisions. Because of the usefulness of such data in

[1]The Committee on Bacteriology and Pathology was composed as follows: Dr. J. H. Hanks, *chairman,* Dr. R. J. W. Rees, *secretary,* and Drs. R. Azulay, C. H. Binford, K. R. Chatterjee, Y. Hayashi, J. MacFadzean and D. S. Ridley, *members.*

diagnosis, classification and assessing the progression or regression of infection, these simple methods deserve further careful development and eventual standardization.

The shortcomings of present methods are: the difficulty of preparing standard dilutions from samples of unknown volume, the labor of evaluating a series of samples from each patient, and the unreliability of averages derived from these crude estimates. Data of greater significance could be obtained with much less effort by pooling a series of samples from appropriate skin sites and by making quantitative microscopic observations in standard films prepared from the pool.

A further problem concerns methods of maximal sensitivity for specific diagnosis in persons carrying minimal numbers of bacilli, and also for demonstrating acid-fast organisms in persons who live in contact with open cases but exhibit no lesions. Although principles for the concentration of mycobacteria are well understood, it is questionable whether their efficiency compensates for the dilutions involved in making tissue suspensions. Useful information might result from comparisons between: (*a*) dense films prepared directly from skin scrapings, (*b*) contact impressions from small biopsy specimens, and (*c*) concentrates prepared after suspending the same tissues.

SPECIAL PROBLEMS

Cultivation of M. leprae.—The most notable interaction between *M. leprae* and its host has been the evolution of a mycobacterium which appears to depend upon specific systems within its natural host. The mycobacteria cultivated from lepromatous tissues are regarded as incidental or passenger strains rather than as causative agents.

Another host-dependent mycobacterium, *M. lepraemurium,* has been found incapable of obtaining energy for substrates *in vitro.* This appears to explain the failure of such microorganisms to propagate on bacteriologic media. It should be recognized that the so-called cultivable pathogens, e.g., tubercle bacilli from cutaneous lesions and resected lung lesions and Johne's bacillus from sheep may also fail to propagate *in vitro.* Investigation of these problems should assist in defining requirements which permit host-adapted mycobacteria to grow independently.

M. leprae has not been shown to proliferate in tissue—cell cultures containing any of the three major cell types. This indicates that the problem is not solved merely by protection in a intracellular environment or by the metabolites which all cells elaborate. It suggests that there may also be dependence upon enzyme systems or hormones from more specialized cells within the host. If this problem is to be studied in model systems, *M. lepraemurium* is perhaps the most useful organism. This preference is not based solely upon the failures of this organism to proliferate independently, nor upon its universal availability and measur-

able infectiousness. The special merit of *M. lepraemurium* is its naturally declumped state, which alleviates grave problems in obtaining significant microscopic data, and the fact that limited multiplication has been observed in cell cultures.

It appears, therefore, that the cultivation problem may be resolved into two basic approaches: (*a*) direct study of the deficits and impediments in the noncultivated mycobacteria and (*b*) the finding of tissue-cell or other biologic systems which can substitute for natural hosts.

Transmission to animals.—Physiologic and immunologic investigations continually reveal factors which modify the subtle balances between bacteria and their hosts. Factors emphasized in reports have been: genetic susceptibilities of inbred hybrid animals, hormonal modification of physiology, the inoculation of cool organs in which defense mechanisms may be least effective, and the use of washed suspensions of *M. leprae.* This work deserves further study and confirmation.

The assessment of results in transmission studies are fraught with difficulties. Sound conclusions may require control groups of uninoculated animals, of animals inoculated with inactivated bacilli, coded experimental groups, and predetermined methods of numerical or histologic evaluation.

Metabolic and cytologic studies.—As matters now stand, the classical tools of microbiology have not revealed the secrets of *M. leprae.* It is useful, therefore, to develop methods which yield information in the absence of growth. Many of the difficulties in metabolic studies may be due to impermeability of the organisms. Cytologic methods can be applied to bacilli recovered from patients by the usual methods. In the field of general microbiology, cytochemical and enzymatic studies combined with electron microscopy are developing surer knowledge of relationships between structure, function and physiologic states. Comparative studies with other mycobacteria must be included as a basis for interpretation.

PATHOLOGY

Descriptions of the pathology of leprosy have improved in accuracy and detail over a period of many years. It is known, therefore, that active leprosy involves primarily the cooler tissues, skin, peripheral and superficial nerves, testes, and upper respiratory mucosae. The higher degrees of resistance in tuberculoid leprosy seem to confine infection mainly to the skin and nerves. In lepromatous leprosy destruction of bone and muscle may occur, but it is thought to result, as a rule from neural involvement. In lepromatous leprosy prodigious numbers of bacilli occur in cells of reticuloendothelial origin, but the accumulation of organisms in the deeper reticuloendothelial system (lymph nodes, spleen, liver and

adrenals) is thought to be due to bacteremia and phagocytosis rather than to significant multiplication locally.

Practical and contributions and prospects.—Pathology provides practical histologic tools for diagnosis, classification and prognosis, and for assessing the progression or regression of leprosy.

Histologic techniques.—Refinements of the Fite-Faraco process during the last few years have made it possible to demonstrate leprosy bacilli in paraffin sections much more reliably than in the past. The improvements have not been due to modification of carbol-fuchsin stains, but to deparaffinizing by methods which do not remove so much of the lipids from the bacilli and so many bacilli from sections; also the use of procedures which tend to "restore" a more acid-fast character to bacilli of poor tinctorial quality, more precise methods of decolorization or differentiation, and formalinization of stained bacilli to accentuate the coloration and render it more permanent.

Where difficulties are met in spite of these improvements, an important factor is the scarcity in many areas of trained technicians and of histologic training facilities. This problem can best be solved by exchanging personnel between medical centers and field stations.

Diagnosis.—The histologic diagnosis of leprosy depends on demonstration of: (*a*) acid-fast bacilli, (*b*) host cells in characteristic circumstances (see classification below), or (*c*) cellular infiltrations which selectively invade or surround nerve branches. In the absence of these criteria histologic findings may be suggestive but not conclusive.

Classification.—Histologic study is a tool for intimate inquiry and for clarifying clinical observations, and it permits exchanging expert opinion by mail. While pathologists do not agree in all their interpretations, there is general agreement on the following criteria for differentiating the several types of leprosy.

1. Tuberculoid lesions are characterized by focal infiltrations of epithelioid and lymphocytic cells. Such foci tend to extend into the subepidermal zone of the skin. Nerve branches may be infiltrated, destroyed or difficult to detect.

2. Lepromatous lesions are characterized by granulomatous infiltrations containing infected histiocytes, Virchow cells and globi. These infiltrations do not extend into the subepidermal zone of the skin.

3. Between these two polar conditions, the position of the patient in the spectrum of intermediate responses is best defined by the number of bacilli, the preponderance of either Virchow cells or epithelioid cells and lymphocytes, the infiltration of nerve branches, and by the degrees of involvement of the subepidermal zone.

There are several points at which further correlation of knowledge and opinion would be helpful: more frequent exchange of clinical photo-

graphs and of sections among histopathologists; recognition that the terminologies applied to the clinical scale and the histologic scale do not carry exactly the same meaning when applied to different races; and more frequent study of the histologic response in the lepromin reaction.

Assessment of treatment.—The special merit of histologic study in therapeutic research is to distinguish between reduction of lesions and the much slower decrease in the concentrations of bacilli. Combination of these two types of data has resulted in the proposal of an index which describes the results of therapy more adequately than do bacteriologic indices. Pathologists are urged to seek agreement on the simplest reliable means of deriving such indices.

Other laboratory tests.—Various serologic and biochemical tests have been under active investigation in recent years. The agglutination of OT-sensitized red blood cells and Kahn's serologic reaction have not found a place in the routine assessment of leprosy.

SPECIAL PROBLEMS

Active leprotic infection is characterized by predilection for superficial tissues, by exceptionally long incubation periods, and by polar patterns of immunologic response. The tendency to damage peripheral and superficial nerves is unique among infectious diseases.

Predilection for nerves.—Correlations between the clinical type of lesion, sensory tests and neurohistologic findings may be summarized as follows: In all forms of leprosy showing manifestations of immune response (i.e., except in lepromatous lesions) the cutaneous sensory nerves are damaged more severely than other elements. The histologic character of the lesions in these nerves corresponds with the lesion seen in the skin they serve. Although bacilli are usually not seen in tuberculoid lesions, the microorganisms in dimorphous lesions showing similar nerve damage are situated as follows: If few, they are confined within the endoneurial sheath, in the myelin sheath near regenerating axones, and in the cytoplasm of Schwann cells surrounding empty Schwann tubes. If bacilli are somewhat more abundant, they occur also in cells of the endoneurium but do not occur outside the thickened epineurium. If abundant, the bacilli are scattered throughout the adjacent subcutis but are most concentrated in and around the neural elements. Hyperpathia and other unpleasant sensations are associated with the presence of isolated regenerating axones bearing obstructed growth cones. The continual damage to nerves is compensated in part by these attempted regenerations and also by invasion of sprouts from adjacent undamaged nerves. Although extension to less distal portions of nerve trunks is common in the neural form of tuberculoid leprosy, functional damage is recognized primarily in nerve tracts which are highly superficial.

The initiation of disease.—As noted above, in dimorphous lesions containing the fewest bacilli, the latter are associated with Schwann cells

and regenerating axones. This observation suggests that initial proliferation of bacilli in this haven may determine the infection of adjacent structures. An answer is required to the question whether cutaneous nerve branches are always the first structures to harbor *M. leprae* or whether on the contrary the earliest recognizable infection in some persons may involve other structures. Are these nerves a pabulum for the initiation of infection, or are they a haven in which immunologic factors exert their influence least effectively?

Lepra reaction.—These reactions are of two types: erythema nodosum leprosum (an exudative reaction around Virchow cells) and reactional states in lesions characteristic of each form of leprosy. These exacerbations are not attributed to acute episodes of bacterial activity. They are regarded instead as indications of a less tolerant immunologic state. Although these reactional states increase injury in infected nerves, and, if protracted, may cause continuous deterioration in other forms of the disease, they may (in dimorphous leprosy) be followed by dramatic improvement. There is urgent need for surer knowledge of the significance of these reactions.

It is proposed:

1. That appointment of a technical committee solely for the Congress (and at the time of the Congress) is undesirable. It leads to compromise rather than to understanding.

2. (*a*) That the International Leprosy Association sponsor a working committee on bacteriology and pathology to assess progress in these topics and to report through the Association at any time which seems desirable. (*b*) This committee could organize a symposium and/or present a report as a part of the program of the Eighth Congress, but not officially for the Congress.

3. That during the Congress rooms be made available for the informal conduct of round-table discussions as may be desired.

IMMUNOLOGY[1]

THE LEPROMIN REACTION

The use of the lepromin reaction as an index of the degree of resistance to leprosy infection is constantly increasing. It offers a useful element in respect to prognosis and classification of cases of leprosy, and consequently its use in practice is recommended.

Antigens.—Antigens which contain bacillary bodies (e.g., the Mitsuda-Hayashi lepromin) can themselves modify the immunologic state of the

[1]The Committee on Immunology was composed as follows: Dr. J. M. M. Fernandez, *chairman,* Dr. K. Yanagisawa, *secretary,* and Drs. J. Aleixo, L. M. Bechelli, S. W. A. Kuper, A. Salazar Leite and H. W. Wade, *members.*

body and provoke positive reactions even in subjects who have not been in previous contact with *M. leprae* or *M. tuberculosis.*

For the preparation of lepromin it is recommended that the method be used which fulfills most closely the following requirements: (*a*) maximal possible utilization of the bacillary element of the leproma material, and (*b*) the greatest simplicity of preparation. It is much to be desired that a method be devised whereby lepromin may be standardized.

The separation method of Dharmendra gives an antigen which can be standardized with minimal loss of bacilli. On the other hand, the late reaction with this antigen is weaker than with the original lepromin, presumably because the sequential use of chloroform and ether in its preparation modifies the composition of the bacilli.

Methods such as that of Fernandez and Olmos Castro give standardized antigens with bacilli very little changed in their composition ("purified bacillus suspensions"). The one mentioned has the advantage that a great many bacilli are wasted in its preparation. Others which have been made have shown no advantage over regular lepromin, and they give weaker reactions. The Mitsuda-Hayashi method, in spite of the fact that it gives a cruder antigen which has not yet been standardized, is most widely used because of the simplicity of its preparation and its practical efficacy.

With these considerations in mind, the Mitsuda-Hayashi antigen as modified by Wade is recommended as preferable for routine work. Investigations should be continued on the preparation of other forms of skin-test antigens of this type.

Studies should be continued to determine the feasibility of employing dilutions of lepromin in testing the reactivity of patients and contacts and in field surveys.

Certain workers have devised methods of preparing solutions of leprosy-bacillus constituents freed from solid elements, for eliciting the early or Fernandez reaction. The usefulness of such preparations in practical work should be determined. Incidentally, because of the analogy to tuberculin, it is recommended that such antigens be called leprolins (suffix—*lin*), in distinction from lepromins (suffix—*min*) prepared from whole lepromas.

Finally, it is recommended that some central laboratory prepare a standard lepromin, samples of which could, on request, be supplied to workers elsewhere for comparison with their own preparations. Such a standard should be made in a large quantity, and freeze-dried to prevent deterioration. The suspension should be made with plain saline, not phenol-saline, to avoid concentration of phenol which might be injurious; the recipient would reconstitute the suspension by adding the proper amount of 0.5 per cent phenol in distilled water.

READING OF THE LEPROMIN REACTIONS

The intradermal injection of lepromin commonly provokes, in persons who react positively, a double response: (*a*) an early reaction in 24 to 48 hours—the reaction of Fernandez; and (*b*) a delayed reaction read after three to four weeks—the reaction of Mitsuda. Either reaction may occur without the other, especially the late reaction in young healthy children.

The early reaction.—The early reaction when positive reflects a pre-existing state of hypersensitivity to the constituents of the leprosy bacillus. It consists of an erythematous-edematous lesion, sometimes evident 12 hours after the injection, the aspect and evolution of which resembles the reactions of the tuberculin type. It reaches its maximum after 24 to 48 hours, and ordinarily begins to diminish after 72 hours. In strongly positive cases it persists for a longer time in the form of a dark halo surrounding the late nodule.

In the reading of the early reaction the element of importance is the edema. Reactions which present only erythema should be considered doubtful or negative, and also reactions which appear very early and regress or disappear before 48 hours. A sharp margin of ameboid configuration is peculiar to very strong positive reactions.

It is recommended that the results of this reaction be read after 48 hours, conforming to the following criteria:

Negative (−): Absence of reaction, or erythema without edema, or erythema with edema measuring less than 5 mm. in diameter.

Doubtful (±): An erythematous-edematous reaction measuring 5 mm. or more but less than 10 mm. in diameter.

Weak positive (+): An erythematous-edematous reaction measuring 10 mm. or more but less than 15 mm. in diameter.

Moderate positive (++): An erythematous-edematous reaction measuring 15 mm. or more but less than 20 mm. in diameter.

Strong positive (+++): An erythematous-edematous reaction measuring 20 mm. or more in diameter.

The late reaction.—This reaction consists of a nodular induration which usually begins to appear after the first week following the injection, ordinarily reaches maximum about the third or fourth week, and later regresses, frequently leaving atrophy or a scar. Intensely strong reactions may result in ulceration. Sometimes the evolution is accelerated and reaches its peak before the third week, while at other times it is delayed, reaching its peak after the fourth week. In negative or doubtful cases it may be well to make later readings up to 60 days.

The criteria of reading should be based not only on the size of the induration, but also on its appearance and evolution.

Negative (−): Absence of any local reaction.

Doubtful (±): Induration less than 3 mm. in diameter.

Weak positive (+): Frank induration between 3 and 5 mm., inclusive, in diameter.

Moderate positive (++): Nodular induration larger than 5 mm. in diameter.

Strong positive (+++): When the induration undergoes ulceration.

For clinical records and in reporting research work the actual measurements in millimeters of reaction lesions should be recorded. When the lesions are not round two measurements should be made and averaged.

It is recommended that histologic studies of the late reaction be pursued to determine whether or not these limits agree with biologic factors.

INTERPRETATION OF THE RESULTS

A positive reaction to lepromin is regarded as an expression of a certain amount of resistance to *M. leprae,* directly proportionate to the degree of positivity.

A negative reaction is interpreted as follows:

(*a*) In patients with leprosy, and contacts living with open cases, it is generally regarded as a sign of deficient resistance.

(*b*) In healthy individuals not contaminated with leprosy, it is not a sign of deficient resistance unless negativity persists on repeated testing.

BCG AND THE LEPROMIN REACTION

There has been much interest in recent years in the possibility of converting lepromin-negative persons to positive reactors by BCG vaccination, it being hoped that positivity thus induced will enhance resistance to leprosy infection. If this should be so, this measure would have an important influence in the control of leprosy.

Up to the present time there has been lack of agreement in the results of observations that have been reported. Some workers believe that BCG is effective in converting lepromin negatives to positives, while others are not satisfied that this has been adequately proved. While there have been some favorable reports, there has not yet been time for sufficient observations to prove beyond doubt that BCG vaccination is actually protective against leprosy infection.

It is probable that the lack of agreement regarding the effectiveness of BCG in converting the lepromin reaction is in large part due to unsystematic experiments, often done without adequate control. Another factor may be that different methods of employing BCG (oral and intradermal) will not necessarily give the same results. Finally, when fresh BCG suspensions are used they may vary more or less widely in potency because of ageing.

It is therefore recommended that experiments on this matter be well

planned, with the aid of statisticians. It would be highly desirable if a standard experiment could be worked out which might be applied in various countries.

With respect to controls, it should be borne in mind that preliminary lepromin testing affects the immunologic state of the subjects of the experiment, as tuberculin testing does not. Preliminary tuberculin testing is necessary in order to select tuberculin negatives for the experiment if BCG is to be given intradermally, to avoid unduly severe skin reactions to the vaccine. Preliminary testing with lepromin, on the other hand, is not necessary. With two comparable and sufficiently large groups of subjects, BCG may be given to one group, with lepromin testing afterward, but the controls would be tested with lepromin only once, to establish the rate of "natural" lepromin reactivity of the population employed.

To avoid variability of potency of the BCG, it is recommended that the use of a reliable dried vaccine be considered in standardized experiments.

(Dr. Ken Yanagisawa, of the National Institute of Health in Tokyo, has offered to supply experimenters with dried BCG which retains full potency for one year in refrigeration, or three months at room temperature.)

THERAPY[1]

During the five years which have elapsed since the Sixth International Congress, the use of sulfones in the treatment of leprosy has expanded enormously, and the effectiveness and limitations of this group of compounds are now more generally understood. At the same time, stimulated largely by research in the field of tuberculosis, several new substances have been found by leprosy research workers to possess therapeutic activity in leprosy, but as yet none of these has displaced the sulfones from their position of preeminence in the treatment of the disease.

A major development has been the expansion of sulfone therapy in mass campaigns based on outpatient treatment, and it would appear that this is becoming an important public health measure in endemic areas. The low cost of DDS and the comparative safety of its administration through auxiliary personnel make it the drug of choice for this purpose.

The present position regarding the treatment of leprosy in its various aspects is here reviewed.

SULFONE THERAPY

Although some leprologists still make use of the more complex sulfones, the parent substance, 4,4′-diaminodiphenyl sulfone (DDS), is the

[1]The Committee on Therapy was composed as follows: Dr. J. N. Rodriguez, *chairman,* Dr. T. F. Davey, *secretary,* and Drs. P. Brand, N. P. Buu-Hoi, W. H. Jopling, M. Lechat and S. Takashima, *members.*

one most widely used. In many areas, 600 to 800 mgm. per week is found to be a satisfactory optimum dose in adults, but there appears to be considerable variation in the degree of tolerance exhibited by different racial groups, and doses ranging from 300 to 1,200 mgm. per week are sometimes employed.

It is of fundamental importance, in order to minimize possible side-effects, that the initial dose should be low, and be increased gradually to the optimal dose over a period of two to four months. Oral treatment may be given daily, twice weekly, or, when necessary, weekly. The initial dose is usually in the range of 50 mgm. twice weekly to 50 mgm. daily, and this should not be exceeded. This dose should be increased by small increments at not less than 10-day intervals.

Under certain conditions it may be desirable to administer sulfones by injection. In mass treatment campaigns, where it may be necessary to have a long-acting sulfone preparation, suspensions of DDS have been employed. A variety of vehicles, oily and nonoily, have been used, but further research is needed in order to secure a more effective repository effect and at the same time diminish discomfort on injection.

Whichever method of treatment is used, it is important that therapy should continue for some time after clinical and bacteriologic resolution of the disease, but more data regarding the frequency of relapses are required before definite rules can be laid down regarding the length of time during which maintenance therapy should be continued.

TOXIC EFFECTS AND COMPLICATIONS OF SULFONE THERAPY

Although toxic effects are not common when sulfones are used in a normal treatment routine, it is obligatory on all who use these compounds to be aware of them and of their management.

Important toxic manifestations include anemia, dermatitis, hepatitis and psychosis. Complications of leprosy occurring during therapy may take the form of reactional states such as erythema nodosum leprosum, acute neuritis, and iridocyclitis.

With the exception of milder degrees of anemia, toxic manifestations call for the immediate cessation of sulfone treatment, and subsequent extreme care in its reintroduction. Corticosteroids have been found very useful in the treatment of dermatitis, and subsequent desensitization by minute but increasing doses of sulfone is of proved value.

Management of reactive episodes.—1. Erythema nodosum leprosum: This is a well-known complication in lepromatous patients during chemotherapy, and may require a decrease in dosage or, if severe, withdrawal of the drug for a period of time.

Many cases respond promptly to a short course of antimony injections. Spectacular results have been obtained by the use of ACTH, cortisone, or the more recently introduced analogs. Although short courses

of treatment with corticosteroids may be adequate, in some cases it may be necessary to give prolonged treatment under close medical supervision, with gradual reduction of dosage. Other methods of treatment such as chlorpromazine, chloroquine, vitamin K and vitamin B_{12} have been tried. Intravenous infusions of blood and plasma have also been employed.

2. Reaction in tuberculoid leprosy: Corticosteroids have proved of value in the treatment of tuberculoid reaction.

3. Acute neuritis: Acute neuritis may occur alone or in association with erythema nodosum. Procaine, hyaluronidase, or hydrocortisone, injected peri-neurally, alone or in combination, have given relief from pain. Reference is made later to the place of surgery in this complication.

4. Lepromatous orchitis: This complication responds well to corticosteroids.

5. Iridocyclitis: In lepromatous leprosy bacterial invasion of the anterior segment of the eye is common, and some recurring iridocyclitis continues to be seen even in sulfone-treated patients. The acute condition usually responds to local application of steroids, either in the form of eye drops of 0.5% to 1.0% cortisone, ointment, or subconjunctival injections, accompanied by the use of mydriatics. In the management of ocular manifestations slit-lamp biomicroscopy is of definite value, as it may reveal early involvement of the uveal tract and so lead to prompt treatment and the prevention of secondary glaucoma.

Corneal ulceration in leprosy is invariably secondary to lagophthalmos and anesthesia; it may be minimized by the use of lubricating eye drops and the wearing of eye shields. Blepharoplasty is indicated in some cases.

Rhinolaryngologic manifestations.—Active lesions of the mucosa of the nose and upper respiratory tract usually respond promptly to systemic sulfone medication. In cases of long standing, however, the management of chronic atrophic rhinitis (ozena) is not always satisfactory. The use of a trypsin-containing ointment has been helpful in facilitating removal of crusts and in improving nasal hygiene.

Although lepromatous lesions of the larynx are still seen, sulfone therapy supported by the judicious use of antibiotics to control intercurrent infection has made it possible to avoid tracheotomy in practically all cases.

OTHER THERAPEUTIC AGENTS

Reference was made in the report of the last Congress to several drugs other than the sulfones for which claims of activity in leprosy had been made. In recent years others have appeared, and the present position may be summarized as follows:

(*a*) *Chaulmoogra oil and its derivatives.*—Nearly all workers have abandoned the use of chaulmoogra oil except as a vehicle for the administration of sulfones by injection. In dark-skinned patients, given in

the form of intradermal injections, it may have a cosmetic effect in encouraging the repigmentation of pale macules.

(*b*) *Thiosemicarbazone* (*TB-1*). —This compound has been used fairly widely as an alternative to sulfones in a daily dosage in adults of 100 to 200 mgm. It is effective, but has toxic qualities of about the same order as DDS. Agranulocytosis has occasionally been reported in susceptible individuals. Progress during the first year of administration is usually good in all types of leprosy, and may be maintained subsequently at this level, especially in tuberculoid cases and those with neural involvement. Some workers have found a less satisfactory later response in lepromatous cases, with the appearance of drug resistance after one or two years of treatment. Relapse following TB-1 therapy is not rare, but has been very rare in patients who have been treated with alternate courses of DDS and TB-1.

(*c*) *Isonicotinyl hydrazide* (*INH*).—Reports on the usefulness of INH in the treatment of leprosy continue to be conflicting, but a majority of leprologists consider it of little value as a routine form of treatment.

(*d*) *Streptomycin.*—Streptomycin has been used, usually combined with INH, by some workers in patients unable to tolerate sulfones.

Among recently-introduced preparations the following are prominent.

(*e*) *Diaminodiphenyl sulfoxide* (*DDSO*).—This compound, which is closely related to DDS, has been used in several centers, and reports on it are generally favorable. Its dosage follows that acceptable for DDS, and it has been found to be effective whether given daily or twice weekly. Reactions, particularly neuritis, have been encountered less frequently than with DDS, and in individual patients progress has been very gratifying. The toxicity of DDSO appears to be no less than that of DDS, and it may be a little greater. Further studies are needed on the toxicity of the drug and its effect in the later stages of treatment. At present DDSO is rather more expensive than DDS.

(*f*) *Thiourea derivatives.*—During the past three years certain derivatives of diphenyl thiourea have been shown to be effective antileprosy drugs. 4-butoxy-4′-dimethylaminodiphenyl thiourea (Ciba 1906) has been studied in several centers, and in a daily dose of 25 to 40 mgm. per kgm. of body weight it has exhibited an activity at least as great as that of DDS. This drug has the advantage of an almost complete lack of toxicity. Therapeutically it has proved very useful in all conditions in which DDS therapy is unsuitable. The desirability of daily administration and the relatively high cost of the drug make it unsuitable at present for mass treatment. It combines well both with DDS and INH, but further study of its late effects is needed, as it has not yet been in use for a period sufficient to determine whether or not late drug resistance may be encountered.

Another such compound, 4,4′-diethoxydiphenyl thiourea, has also ex-

hibited activity in leprosy and freedom from toxicity. There seems little doubt that the thiourea group of compounds holds much promise and deserves careful investigation.

(*g*) *Derivatives of ethyl mercaptan.*—In a group of compounds related to the thioureas, evidence has begun to appear that certain derivatives of ethyl mercaptan may also possess activity in leprosy. Their study must be regarded as purely experimental at present.

(*h*) *Cycloserine.*—Preliminary reports suggest that this antibiotic may possibly possess activity against *M. leprae* in doses of between 250 and 750 mgm. daily, but undesirable side effects may limit its usefulness, while its cost at present is prohibitive. Further study will be needed before its place in the chemotherapy of leprosy can be determined.

Other preparations under trial include kanamycin and an oxdiazolone named vadrine.

(*i*) *Antigen marianum.*—Although some earlier studies suggested that improvement may occur with the use of this preparation, more recent detailed observations have been disappointing. The general use of this agent in the treatment of leprosy is not recommended.

GENERAL CONSIDERATIONS

The study of new drugs should be encouraged only in circumstances where the careful observation of adequate numbers of patients can be made by experienced leprologists with full laboratory facilities. Premature conclusions based on the observation of very few patients for short periods should be discouraged; but where the above conditions hold good, small pilot trials may be a useful preliminary to investigations on a larger scale.

THERAPY RESEARCH

The favorable results of the present methods of chemotherapy of leprosy should not be allowed to obscure the great need for newer chemotherapeutic agents acting with greater speed and efficacy, or to handicap research directed towards the establishment of more effective treatment. A useful lead in this research is afforded by the fact that all the drugs useful against leprosy so far known possess antituberculosis activity, although the reverse may not in every case be true. Research should be also directed towards an explanation of the discrepancies often observed between the chemotherapeutic results obtained in human leprosy and those obtained in animal tests with murine leprosy. There is urgent need for large-scale, carefully-planned and accurately-conducted therapeutic trials of certain agents already available, and of new agents as they become available. Such trials should include studies of possible therapeutic agents given singly, or in combination where no cross-resistance between the various drugs to be used in such combined therapy is evident. In

view of the rather wide differences of results of chemotherapy in peoples of different races, therapeutic trials should be made in different centers and in different countries.

The response of a suitable group of cases of leprosy to the well established DDS (4:4′-diaminodiphenyl sulfone) should be used as the control in experiments designed to assess the value of newer drugs.

PHYSICAL THERAPY AND RECONSTRUCTIVE SURGERY

While chemotherapy has greatly improved the general outlook in the treatment of leprosy, and may often prevent the onset of paralysis, it has little or no effect on those deformities which are secondary to nerve involvement. Further study of the pathology of deformity in leprosy and its treatment is an urgent need. In the meantime it has become apparent that a large proportion of the deformities of leprosy are correctable by plastic and orthopedic surgery, and that even in the absence of surgery a simple educational program backed by physical therapy can considerably reduce the incidence of deformity.

The following summary is divided into three sections, (*a*) education, (*b*) physical therapy, and (*c*) reconstructive surgery. It is urged that even before facilities are available for (*b*) and (*c*), most treatment centers should be able to do good preventive educational work with the help of social workers trained in the principles of (*a*).

A. *Education.*—All patients with anesthetic hands and feet should be taught about the hazards from which pain no longer protects them. They should be convinced that most of the deformities of leprosy are preventable or correctable.

They should learn to:

1. Use special handles and holders for hot articles.
2. Inspect their own hands and feet daily for thorns and blisters.
3. Dress and splint every wound, and keep it splinted until it heals.
4. Wear well-fitting shoes or sandals, and avoid any shoes made with nails.
5. Rest the hands during lepra reaction, and when they are swollen. A splint should be provided for such occasions.
6. When paralysis and clawing occur, they should begin a daily routine of oil massage and exercises designed to keep the fingers fully mobile.
7. As part of the educational program the patient may need advice about a form of employment that will not harm his hands or over-tax his feet.

B. *Physical therapy.*—When a fully qualified physiotherapist is not available the work may be carried out by a person with limited training. Such training should be given at centers with qualified and experienced staff.

The following techniques have proved useful:

Massage, taught to the patient and carried out by himself.

Wax baths, especially for stiff joints and for dry nonsweating skins.

Electric stimulation, for recently paralyzed muscles for which there is hope of recovery, and for postoperative re-education. Infra-red irradiation for nerve pain.

Whirlpool baths.

Splintage. This is extremely useful for contractures. A good method is to apply a light plaster of paris cast to each finger, with the finger held gently in extension, and to re-apply them daily after exercise.

Exercises, carried out individually and in drill groups, and including passive movements, assisted active, and active exercises.

Occupational therapy. This is of great importance, and is best carried out as part of a full rehabilitational program.

C. *Reconstructive surgery.*—It is strongly urged that orthopedic and plastic surgery should not be attempted until proper facilities and trained surgeons are available. Orthopedic, plastic, and ophthalmic surgeons in general hospitals should be encouraged to take up this work in their own institutions, or to work part-time in properly-equipped leprosy sanatoria. Alternatively, reconstructive surgery in leprosy may be taken up as a whole-time specialty at certain centers to which surrounding smaller institutions and clinics can refer their patients.

The following operations have proved useful:

The face: For mild nasal deformity, dorsal and columellar bone grafting.

For severe nasal deformity, excision and free grafting of the lining of the nose by Gillies technique, followed later by an internal prosthesis or by bone grafting.

For eyebrow loss, scalp grafting by the "island flap" technique, or by free implantation of hair follicles.

For lagophthaloms, tarsorraphy or fascial slings.

For wrinkling and sagging of the skin, excision of loose folds, and face-lifting.

The hand: For clawing of fingers, lumbrical replacement by tendon free-grafts (Brand), or by sublimis transfer (Stiles-Bunnell), or by Fowlers technique.

For thumb paralysis, abductor-opponens replacement (Riordan), after correction of thumb web.

For radial paralysis, wrist fusion, followed by transfer of flexor carpi radialis to extensor digitorum, and pronator teres to extensor pollicis longus.

For gross irreversable contracture, anterior skin grafting and interphalangeal arthrodesis.

The foot: For foot drop, transfer of the tibialis posterior to the middle cuneiform bone.

For lateral instability, triple arthrodesis.

For claw toes (hammer toe), transfer of flexor digitorum longus.

For recurrent ulceration (if bone seems to be the cause), sequestrectomy, and removal of any ventrally-projecting spurs or ventrally subluxated portions of bone (Dreisbach).

For gross extensive ulceration, when necessary, amputations, such as Lisfranc Symes, and site of election, followed by use of special shoes or artificial limbs.

Nonoperative treatment of chronic ulceration.—Although many treatments have been recommended, the following principles are basic.

Acute phase, with cellulitis, rest and elevation, and penicillin.

Chronic stage, plaster of paris cast (below knee), padded only at malleoli and at ulcer. Walking iron or rocker.

Healed stage, a shoe that is molded to take weight on good skin, and hollowed to spare the scar. A soft or sorbo insole is an advantage. In severe cases the sole should be rigid in its length and have a rocker.

Nerves.—Ulnar nerve stripping has a place in the treatment of intractable nerve pain. The stripping should be limited to the superficial aspect, and care must be taken to avoid division of blood vessels entering through the sheath.

Ulnar nerve transposition as a prophylactic measure to avoid paralysis may be of value if the nerve is well buried in muscle.

Gynecomastia.—Simple mastectomy through the areolar incision of Webster.

It is recommended to the International Leprosy Association that a small continuing committee be established, to share information between research workers engaged in therapy studies, and to endeavor to secure as much coordination of effort as possible.

EPIDEMIOLOGY AND CONTROL[1]

The methods of control here recommended differ from those adopted by the Sixth Congress in emphasis and direction rather than in substance. Science has added no new weapons to our armamentarium since 1953. Nevertheless, progress is being made. Significant developments in administrative methods promise to increase greatly the efficiency of those measures already at our command.

The first of these developments is of the important role of outpatient treatment in the attack on leprosy. Another is the trend towards integration of antileprosy activities with general public health services.

The importance of sulfone therapy as a means of control of leprosy is emphasized. It is recognized, however, that it will fail unless supported by an effective campaign of case detection and education.

Vaccination with BCG was recommended by the Sixth Congress for protection of contacts and as a part of "prophylaxis campaigns." At the same time, further studies were advocated to determine its value. Although such studies are under way in several countries, and although some preliminary reports have been published, evidence regarding the value of BCG in the prevention of leprosy is still insufficient to warrant its general use. The recommendation of the Sixth Congress is therefore modified in this document.

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[1]The Committee on Epidemiology and Control was composed as follows: Dr. J. A. Doull, *chairman,* Dr. R. V. Wardekar, *secretary,* and Drs. J. Convit, O. Diniz, R. S. Guinto, J. Ross Innes, E. Montestruc and C. M. Ross, *members.*

EPIDEMIOLOGY

The epidemiology of leprosy is the study of the occurrence and distribution of the disease, in its various forms, at different periods of time and throughout the world. More particularly, it deals with the relationship between the incidence of the disease and climate, housing, diet and other ecologic conditions which may affect either exposure to infection or resistance to the disease. The objective of epidemiology is to explain variations in incidence and, by so doing, to indicate control measures which are most likely to be effective.

The following major topics are given special emphasis:

1. *Prevalence.*—The importance of obtaining reliable estimates of prevalence cannot be exaggerated. Only in this way can an adequate basis be provided for direction of the antileprosy campaign and for measurement of its results.

Apart from difficulties of topography and deficiencies in transportation, there are human problems which may interfere with surveys which require examination of the general population. Objections may be rooted deeply in religious or tribal customs, or they may be based only upon fear of discovery of the disease. A preliminary educational campaign is essential, but to ensure its success the cooperation of civil administrative officials should be sought.

Recognizing the fact that it will not be practicable to sample scientifically in many countries, it is desired to encourage the carrying out of more limited surveys, such as examination of the population of villages and other units. These examinations should be repeated periodically according to circumstances. In many areas, only these procedures are practicable. Caution is advised in applying the results more generally, because one of the peculiarities of leprosy is its concentration in certain localities. Physical examination of entire populations, except under special conditions, is unrealistic, and estimates must be made in other ways. In certain countries in which prevalence is high it may be practicable to carry out correctly designed sampling surveys at intervals of 5 to 10 years. The fundamentals are to determine the method of selection of the individuals to be examined and the numbers to be included. These questions demand, in every instance, joint planning by leprologists, epidemiologists and statisticians. In this planning all facts which relate to prevalence should be taken into account, such as the numbers of registered cases in different areas and the results of previous surveys of villages or other population groups. If such surveys are feasible, their cost will be repaid many times by greater efficiency of control work. Because of the scarcity of qualified personnel, the World Health Organization could render a great service by making experts available to governments to assist in planning these sampling surveys.

Examination of selected classes or groups, for which good health may be a factor in selection, such as military, police, or employees of various industries, yields very little information which is of value in estimating the prevalence of leprosy in the general population. However, examination of schoolchildren may yield useful information.

Leprosy surveys may be combined with those for yaws or other diseases.

2. *Evolution of the disease.*—The development of leprosy in the individual and changes from one type or form of the disease to another are not of primary concern to the subject of epidemiology and control. The frequency of such changes, however, is definitely of epidemiologic importance. In fact, the principal reason for the lack of reliable information on this subject is its neglect by those who have had special training in the essential methodology.

Much information concerning clinical and bacteriologic changes could be gained by keeping careful records of all cases occurring in an area over a period of years and noting the dates of appearance of dermatologic and neurologic signs. Environmental and social facts associated with these changes should be studied. A modified life-table procedure should be used, to take account of gains and losses in numbers and thus to obtain an accurate idea of the rate of change for each form of the disease. Important questions could eventually be answered, such as the frequency of changes from the indeterminate form to either polar type; from tuberculoid to borderline, and, in turn, from borderline to the definitely lepromatous or tuberculoid type. Also, a study of the frequency of recurrence of clinical and bacteriologic activity in arrested cases could be included.

3. *Relative infectiousness of lepromatous and tuberculoid types.*—It is well established that all cases of lepromatous leprosy are bacilliferous and infective, and that, as a rule, cases of the tuberculoid type are not bacilliferous except during reaction when they may shed large numbers of bacilli.

In parts of the world where the great majority of recognized cases are of the tuberculoid type, a kind of epidemiologic enigma has arisen, in that infectiousness of tuberculoid cases seems essential for the continuance of the disease. The probable infectiousness of any case, regardless of type, can be estimated only by the clinical and bacteriologic features which are presented in a series of examinations. Family studies are too difficult and too expensive to be carried out in many countries. It is recommended that in areas where the tuberculoid type greatly predominates, intensive efforts should be made to find the source of every newly recognized case, especially in children.

4. *Evaluation of clinic treatment.*—In many parts of the world, where large numbers of patients are being treated as outpatients, there is op-

portunity to measure the effectiveness of treatment. There are three indices which could be used at all dispensaries:

(*a*) Index of Clinical Effectiveness (treatment and clinical arrest being defined):

$$= \frac{\text{Cases becoming arrested during year}}{\text{Cases treated during year}} \times 100$$

This index should be calculated separately for different types of leprosy; also, in larger clinics, for age and sex groupings.

(*b*) Index of Bacteriologic Effectiveness (the number of sites being stipulated and negativity being defined):

$$= \frac{\text{Cases becoming bacteriologically negative during year}}{\text{Bacteriologically positive cases treated during year}} \times 100$$

This index, likewise, should be calculated separately for each type of the disease, and, if desired, separately for patients on various therapies and durations of treatment.

(*c*) Index of Effectiveness in Case Findings, or Discovery Rate:

$$= \frac{\text{New cases discovered during year}}{\text{Population of the area}} \times 1{,}000$$

Here, likewise, cases should be classified by type, and cases and population by sex and age groups.

The average age on discovery and also the average duration of the disease on discovery should be studied. These will decline progressively with the success of the dispensary.

SPECIAL EPIDEMIOLOGIC PROBLEMS

Attention is drawn to certain special problems in the hope that they will be studied by governments and other organizations having the necessary staffs and facilities.

A. *Relating to effectiveness of therapy in tuberculoid cases.*—Controlled studies of the effect of sulfones on the tuberculoid type are needed, and especially of the value of sulfones in preventing or limiting peripheral nerve damage.

B. *Relating to sources of infection.*—Clinical severity in leprosy varies from cases which are severe and malign to those in which there are only small macules which may remain stationary or even disappear. It may be assumed, on general principles, that there are other instances of infection which may never rise to the level of clinical recognition. Until a method of cultivation of *M. leprae* is available and its cultural characteristics are known, it will not be possible to identify with certainty these cases of subclinical infection. All that can be done at present is to recognize individuals in whom noncultivable acid-fast bacilli are discovered on biopsy. If these bacilli are actually *M. leprae,* infected persons should be more frequent among contacts of lepromatous patients

than in any other group. This readily-answerable question remains to be explored.

C. *Relating to mode of transmission.*—In recent years the possible role of insects in the transmission of leprosy has been revived. Nonflying insects such as lice, fleas, bedbugs, and itch mites have been suspected from time to time. Although acid-fast bacilli have been found in various insects, there are no modern data relating to the cultivability of these bacilli or to their frequency in insects found in association with cases of leprosy as compared to those found in other places.

D. *Relating to resistance.*—The most timely question concerning resistance is whether persons who show lepromin reactivity of the Mitsuda type are more resistant to leprosy than those who do not. Leprologists who favor this hypothesis point to the usual reactivity in tuberculoid leprosy and its absence in the lepromatous type, and some state that lepromatous leprosy does not occur in strongly reactive persons. On the other hand, it is conceivable that infection is independent of reactivity to lepromin, and that the body loses its capacity to react when an enormous multiplication of bacilli takes place. The question could be answered by long-term field studies in which groups differing only in respect to reactivity to lepromin are kept under equally close supervision through that period of life during which attack rates are highest.

The origin of natural reactivity to lepromin warrants the most thorough investigation. Reactivity is frequent in apparently healthy persons both in areas where leprosy exists and in places where the disease is rare or absent. Positive association with hypersensitivity to tuberculin, and the action of BCG vaccination in producing reactivity to lepromin, point to the probability that in some instances natural reactivity to lepromin may result from infection with *M. tuberculosis*. It has been claimed, however, that this explanation is inadequate and that the true cause of much reactivity to lepromin is unknown. Solution of this problem would throw light on the immunology of leprosy and might contribute to prevention of the disease.

BCG vaccination: Several thoughtful plans for study of the effect of BCG vaccination on resistance to leprosy have been published and a few investigators have reported preliminary results. The epidemiologic problem which is presented is more difficult than in tuberculosis because of the relatively low incidence of leprosy and the lack of an indicator of subclinical infection such as the tuberculin test for tuberculosis infection.

Because of the widespread BCG campaigns for the prevention of tuberculosis in many countries in which leprosy is prevalent, it is impossible to conduct a thoroughly satisfactory field study in which, for example, alternate infants would be vaccinated, the others retained as controls and both groups subjected to equally close supervision for a period

of years. We must therefore be content to collect evidence of secondary value, such as:

1. A comparison of the annual discovery rate for vaccinated with that for unvaccinated populations. By close collaboration with antituberculosis workers it may be possible to make estimates of the numbers of children vaccinated at various times and their ages, and from these estimates to compute the numbers remaining unvaccinated.

2. A comparison of the relative frequency of the lepromatous and tuberculoid types in persons known to have been vaccinated with that in unvaccinated persons of the same sex and age groups. This matter should be studied both for persons exposed in the household and for other persons.

Chemoprophylaxis: The value of sulfone drugs in the prophylaxis of leprosy, especially for individuals intimately exposed, is recommended for study.

Diet: The possible relationship of some peculiarity or deficiency of the diet to resistance to leprosy has never been thoroughly explored. This is a complicated and difficult field, but it could be approached in several countries where there are striking variations of diet in persons of the same race. These studies will obviously require the combined efforts of nutritionists and epidemiologists.

Other factors: There are numerous other factors which may be related to resistance, including debilitating illness, pregnancy, and certain occupations in which there is special liability to injury of the extremities.

CONTROL

Although there is unavoidable overlapping, measures for control may be conveniently grouped under four headings: (1) educational, (2) medical, (3) social, and (4) legal.

1. EDUCATIONAL MEASURES

The control of leprosy depends upon early detection and early treatment of all cases. The services of a physician skilled in diagnosis should be available, and the public should be sufficiently aware of the nature of the disease to request those services when suspected signs or symptoms appear.

A second facet of education relates to the patient and his family. If patients are to remain in their homes, it is essential that the mode of infection be explained to those who are most intimately concerned.

It is therefore recommended that in all countries where leprosy is endemic the responsible health authorities should take action to promote educational measures specifically directed to the following groups:

(*a*) *Medical students, physicians and auxiliary personnel.*—Clinical and didactic instruction in diagnosis, treatment and prevention of leprosy should

be given to medical students as a part of the curriculum and, by means of regularly scheduled postgraduate courses, to general practitioners and health officers. Suitably graded instruction should be provided for nurses, social workers and lay assistants.

(*b*) *The patient and his family.*—Emphasis should be placed on the necessity of regular and prolonged treatment. The possibility of reactions and other complications should be anticipated. The early signs of the disease should be described, and all contacts be requested to report for physical examination at a definite time and place. Instruction should be given on personal hygiene and matters relating to transmission. The advantage of removal of young children from the home and their placement with relatives or friends or in an institution for general child care should be explored. Vaccination with BCG should be performed as a *possible* and not as an *assured* means of protection. Finally, if considerable numbers of tablets of DDS are issued to patients, instructions should be given as to their safekeeping, and procedures to be taken in the event of accidental poisoning.

(*c*) *The general public.*—In all countries where leprosy is endemic the nature of the disease and the steps taken to control it should be explained to the public by the same methods as are used in the campaign against tuberculosis and other infectious diseases. The cause, mode of transmission, early signs and treatment should be explained. Instruction should be by newspapers, radio and illustrated lectures. Governments should develop illustrative educational material suitable for instruction of the general public. Instruction should be given in schools as a part of a program of health education.

2. MEDICAL MEASURES AND FACILITIES

The principal arm of the modern antileprosy campaign is chemotherapy. Although a rapidly effective, bactericidal drug is urgently needed, prolonged sulfone treatment will reduce infectiousness. It follows that if a considerable proportion of bacteriologically positive patients are treated, the disease will decline. The primary problem therefore becomes largely an administrative one: to reach and to treat patients who are bacteriologically positive and those likely to become positive.

(*a*) *Health centers, dispensaries and other facilities for outpatient treatment.*—There should be an adequate number of centers, the number and distribution being related to the prevalence of the disease in various regions. Clinics should be so located as to be conveniently accessible to the largest possible number of patients, and they may be established in general hospitals. If this is not possible, recourse should be had to the mobile clinic, with a regular itinerary. Equipment of clinics should be standardized.

Health centers that are staffed and equipped for generalized public

health services can readily be adapted to carry out all functions essential to the antileprosy program, including treatment, selection of patients for hospitalization, training of personnel, epidemiologic investigations and surveys, home nursing and social work. In addition, as noted above, these centers offer an opportunity for study of the effect of treatment upon clinical and bacteriologic status in different types and forms of the disease.

(*b*) *Hospitals, leprosaria and other facilities for inpatient care.*—Although outpatient care is stressed, facilities for inpatient care are necessary for patients in reaction, and they can play an important part in the control of leprosy. In countries with adequate facilities, as many infectious patients as can be accommodated should be induced to enter leprosaria on a voluntary basis. The period of hospitalization, however, should be only sufficient to effect clinical regression. A prolonged series of negative smears should not be required. From the epidemiologic point of view *it is more advantageous to reduce infectiousness in many patients than to eliminate infectiousness in a few.*

The leprosarium may also be a center for research, education of professional personnel, special surgery and vocational training of patients.

(*c*) *Medical supervision of contacts.*—The extent to which supervision of contacts is practicable varies greatly. In some countries, because of the frequency of leprosy and deficiency of staff and transportation facilities, very little can be done in this direction at the present time. The following procedures are recommended as an objective, ultimately to be attained.

(1) If the patient is bacteriologically positive, all household contacts and siblings should be given physical examinations and be advised to report annually thereafter.

(2) If the patient is bacteriologically negative, household contacts and siblings should be urged to report for examination. These persons need not be subjected to annual reexamination but should be instructed to apply for examination if suspected signs of leprosy appear.

(3) Contacts may be lepromin tested, and young children may be vaccinated with BCG without a preliminary lepromin test.

3. SOCIAL MEASURES

Erroneous concepts regarding the disease continue to impose harsh and unjustifiable penalties upon the sufferer from leprosy and his family. The obligation of society to render assistance, therefore, transcends that which is associated with other chronic diseases. Obviously, educational, medical and social measures should go hand in hand. In addition to provision of medical care and drugs, various types of social assistance are directly related to control, viz.:

(*a*) Aid in obtaining transportation to and from clinics.

(*b*) Financial help for families of which the breadwinner is unable to work.

(*c*) When advisable, removal of young children from the home and their placement elsewhere.

(*d*) Aid in preserving family ties when the patient is removed to an institution, and other steps to prevent departure of the hospitalized patient prior to his medical discharge.

4. LEGAL MEASURES

Legal restrictions on patients have limited value in the control of leprosy. They drive many into hiding and can be effectively applied only to a few. Reporting of the disease to the health department, however, is a necessity and should be required on the part of physicians and others having knowledge of the existence of leprosy.

Indiscriminate compulsory segregation is an anachronism and should be abolished. Discretionary authority should be given to the health authorities to require isolation in those instances in which the patient is discharging leprosy bacilli and in which sulfone therapy is neglected or ineffective and young children are exposed in the home.

On the international level, the right of national governments to refuse entry to their territories of persons suffering from leprosy is recognized. On the other hand, repatriation of an individual who develops leprosy after a long period of residence in a foreign country may cause hardship and neglect of treatment. This problem might be referred to the World Health Organization with the suggestion that governments be asked to give to such individuals the same opportunity for treatment as is offered to their own citizens.

SUMMARY OF RECOMMENDATIONS

1. The importance of obtaining reliable estimates of the prevalence of leprosy is stressed. These are essential for proper direction of the antileprosy campaign and for measurement of its results. Adequate sampling surveys should be made wherever these are practicable, and it is suggested that expert assistance in planning such surveys might be made available to governments by the World Health Organization.

2. There is particular need for epidemiologic study of such subjects as the infectiousness of the tuberculoid type; the frequency of change in form or type, and especially of the change of the indeterminate and borderline forms to the lepromatous; the frequency of relapse; and the value of outpatient treatment in reducing infectiousness.

3. The tremendous increase in outpatient treatment in many countries has brought sharply into view the urgent necessity of vigorous educational efforts directed towards professional groups, the patient and his family, and the general public. The basis of all education should be the concept of leprosy as an infectious disease which can be successfully treated and controlled.

4. There should be an adequate number of facilities for outpatient treatment. Clinics should be so located as to be conveniently accessible to the largest possible number of patients, and they may be established in general hospitals. If these are not possible, mobile clinics may be used.

5. Continued and closer integration of antileprosy activities with general public health services is advocated, in the belief that this will bring greater efficiency of operation and make more readily available to leprosy patients various specialized services which are now deficient.

6. The leprosarium can play an important role in the control program by providing facilities for treatment of patients in reaction and of infectious patients admitted on a voluntary basis. The leprosarium, moreover, may be a center for research, education of professional personnel, special surgery, and vocational training of patients.

7. All household contacts of bacteriologically positive patients, and siblings whether or not resident in the household, should be given physical examination upon discovery of the case and be advised to report annually thereafter.

8. Removal of infants and young children from contact with bacteriologically positive patients is recommended. Efforts should be made to place those children with relatives or friends. Failing this they may be placed in institutions for general child care. In some countries, special preventoria are in operation; whenever possible, these should be converted into general child-care institutions.

9. Although the value of BCG as a preventive measure in leprosy has not been established, the possibility exists. Young children who are exposed to bacteriologically positive patients in the household should therefore be vaccinated.

10. Various types of social assistance are essential to the control of leprosy, including financial help for families when the breadwinner is hospitalized or unable to work, aid in transporting patients to clinics, satisfactory placement of children who should be removed from contact, and aid in preserving family ties when the patient is hospitalized.

11. Reporting of leprosy to the health authorities is an essential legal requirement on the part of the physicians and others having knowledge of the existence of leprosy.

12. Compulsory isolation should be abolished, but the health authorities should have discretionary power to require institutional isolation in those instances in which the patient is discharging leprosy bacilli and satisfactory conditions for isolation cannot otherwise be maintained.

13. The right of national governments to refuse entry to their territories of persons suffering from leprosy is recognized. Repatriation of individuals who develop leprosy after a long period of residence in a foreign country may result in serious interruption of treatment. It is

recommended that this problem be referred to the World Health Organization with the suggestion that governments be asked to give such individuals the same opportunity for treatment as is offered to their own citizens.

SOCIAL ASPECTS[1]

The increasing hopefulness of medical treatment of leprosy and its consequences greatly enlarges the range of the social aspects of the disease. Until modern treatment became available social action, whether right or wrong, outstripped medical attention. Today, medical advances will yield their full advantages only where there are parallel advances in social attitudes. Should these lag behind, then the great gains achieved by patient research will be grievously diminished in their practical effect. There is therefore urgent need to emphasize the increased social obligations and opportunities which arise both for the community and the individual sufferer from leprosy at the present time. Far from medical advance reducing social responsibility, it affords a fresh challenge to engage in constructive activities to match and take advantage of them.

In general the resolutions of the Madrid Congress of 1953 upon the social aspects of leprosy are endorsed, but the more recent advances in medical and orthopedic work necessitate fresh emphasis and in some cases new approaches, in order to exploit these gains.

Right social attitudes.—Right social action must be based on rational attitudes. Now that our understanding of leprosy shows it to be a disease capable of both prevention and cure, and also one which is among the least contagious of communicable diseases, the efforts of communities faced with leprosy as a social problem should be similar to those which it makes in relation to other diseases. Leprosy is only one disease among others, and should not be regarded differently. Our chief aim should be to destroy the notion that leprosy is a disease apart, always requiring specialized services. For the ultimate solution of the social problems of leprosy the general social worker must become more and more interested, and such welfare services as are open for others should be made available to leprosy patients and their children, consistent with public health considerations.

Early diagnosis and treatment.—A first principle of social action must be to make early diagnosis and treatment available on the widest scale consistent with efficient work. No sufferer should be debarred from the right to avail himself of proper medical attention. There is therefore need to urge the private practitioner and public health authorities to make treatment available at the earliest possible stage of the disease.

[1]The Committee on Social Aspects was composed as follows: Mr. T. N. Jagadisan, *chairman,* Dr. F. Hemerijckx, *secretary,* and Dr. F. Contreras, Mr. R. Follereau, Mr. A. D. Miller, Dr. R. Ozawa and Mrs. E. Weaver, *members.*

In areas of high endemicity and low economic standards the establishment of mass units is an obligation of public health authorities. No patient should need to await the stage when he is deformed, or the disease highly active, before he feels that anything can, or should, be done about his care. In such areas public authorities may act in useful cooperation with social agencies, but the ultimate responsibility for action must rest upon the government and upon the patients themselves. Once early diagnosis has been achieved, it should be urged upon the sufferer that it is his duty to cooperate in receiving the regular treatment made available. It does not yet appear to have been sufficiently emphasized—with certain notable exceptions—that the patient with early leprosy has a duty to the community in cooperating with the efforts made on his behalf.

Preventive work.—(*a*) At home: Side by side with diagnosis and treatment, while the patient lives at home there should be the development of preventive work through proper teaching as to means of protection, where protective action is required.

This teaching may be conveyed in a variety of ways, but it always requires psychologic understanding of the people concerned, so that enlightened cooperation is received and no barrier of resistance built up. Simple teaching in all schools will be useful for the future, and should be undertaken through education departments themselves being properly informed. But village education must come nearer the home than the school. Intensive education of the public, and of the patients and their relatives, should be undertaken side by side with mass treatment work.

(*b*) The children: Every effort should be made to keep children of leprosy sufferers in their own normal surroundings, but in cases where they find themselves cut off from their parents or relatives who are receiving hospital care, they may need to be provided for. In such circumstances there is a social obligation to save these children not only from leprosy but also from any form of institutional living which might be wounding to their own self-respect. While, therefore, there are likely to be situations where good home care by a willing relation is not possible, everything possible should be done to give the child a good start in life. Sometimes special preventoria are so well run that no stigma is attached to the children in them; but where there is any danger of this it should be the aim to place children in general boarding schools or kindergartens. What is essential is that they should not be treated as children who are in any way different from others.

Institutions.—It is recommended that where governments still enforce a policy of compulsory segregation, this should be totally abandoned. In special cases sanatoria and hospitals, when they keep abreast with present medical knowledge, still have their usefulness, but they should be

placed on a voluntary basis, and should be organized so that they prepare patients for rehabilitation as soon as possible.

In every such institution it is most important to maintain the patient's self-respect by encouraging him to become a partner in the activities of the establishment and to engage in gainful and therapeutically useful occupations.

Where economic want on the part of badly disabled patients necessitates residential provision, social assistance should be provided in such a way as to provide as active and happy a life as possible within the limits imposed by the consequences of the disease.

Legislation.—Where special leprosy legislation is in force, based on a mistaken understanding of the disease, there is great need to urge governments to repeal this legislation and use the normal procedures of public health regulations which apply in the case of other diseases over notification, although because public prejudice still persists such notification should be confidential. There may in certain instances even be need to protect the leprosy sufferer by law from discriminatory action.

Rehabilitation.—The advances made in orthopedics have made it possible for many patients hitherto regarded as chronic cripples to be trained for gainful employment in suitable occupations, provided proper attention is paid to the care of hands and feet. Such patients and expatients have an obligation to cooperate, but they will require social assistance in training, employment and other care. All agencies which can help, whether governmental, commercial or social, are challenged by this changed situation to render the help they can give. Specially trained recovered patients can be used in after-care programs, this step itself serving as a means of rehabilitation.

Together with rehabilitation there should be more attention paid to the prevention of deformity. Emphasis on this will reduce a continuation of its problems, and mass treatment units in endemic areas should make this an integral part of their work.

In all this work psychologic rehabilitation must not be forgotten, and consequently every endeavor must be made to restore patients to the normal life of the community. It is most important that healed patients should live in normal home conditions rather than form separate groups, and it is an obligation of the community to receive them in a friendly way.

Education.—As effective leprosy work is often best engaged in where general publicity is minimized, this makes proper education of the public all the more imperative. Medical students in particular should receive instruction in the social aspects of leprosy as well as in the medical ones. Moreover, the responsibility of more favored peoples towards the less favored, and of governments and the medical profession to act constructively where leprosy presents a problem, must be strongly emphasized.

It is hoped that the Council of the International Leprosy Association may be able to prepare a considered statement for the attention of governments and public bodies concerned. The authority of such a statement upon the social responsibilities created by our present knowledge of leprosy, and the measures required both by patients and the public, would carry powerful weight and should stimulate nation-wide and energetic action.