infrasubspecific level for epidemiological purposes. Considerable discussion was next devoted to a mechanism for confirming and recording novel agglutinating serovars. The Subcommittee agreed that a standard mechanism should be adopted, that a central repository of the reference cultures representing each serovar be established, and that four or five reference laboratories, worldwide, be designated to confirm newly proposed serovars. An as yet unnamed ad hoc subcommittee will explore these proposals. L. Wayne next presented a summary of experiences in consolidation of data from four cooperative numerical taxonomy studies of the International Working Group on Mycobacterial Taxonomy. He also presented a related progress report on his efforts to identify the most effective tests for identification to species level among the slowly growing mycobacteria.

Session 3. Closed meeting

Minute 8. Call to order. The meeting was called to order at 1725 by Chairman Wayne.

Minute 9. Record of attendance. Those in attendance were as recorded in Minute 2 above.

Minute 10. Old business. Type culture designations have been corrected for the following species: *M. microti* (NCTC 8710); *M. phlei* (NCTC 8151 = ATCC 11758); *M. smegmatis* (NCTC 8159 = ATCC 19420); *M. ulcerans* (NCTC 7816). *M. malmoense* Schröder and Juhlin 1977 (ATCC 29571) was added to the list of approved species. Chairman Wayne informed the Subcommittee that *M. aquae* was rejected by the Judicial Commission and the name *M. gordonae* retained for the taxon. After some discussion on *M. diernhoferi*, it

was decided to leave this taxon off the 1980 list.

Minute 11. New members. By vote of the committee, two new members elected were W. Kämpfer and H. Saito.

Minute 12. Next meeting. It was unanimously agreed that the next meeting would be held in Atlanta, Georgia, September 1979, in conjunction with the meeting of the International Working Group on Mycobacterial Taxonomy. The exact date and time will be announced after the agenda for this meeting is formalized.

Minute 13. Chairman Wayne reminded the Subcommittee that the "1980 list" must also contain a reference to the actual species description, if, in fact, that differed from the reference to the name of the species. Members were admonished to check carefully the strain numbers of type cultures in various international collections.

Minute 14. Current membership. The current membership of the Subcommittee is as follows: L. G. Wayne (Chairman), Long Beach, Calif., U.S.A.; G. P. Kubica (Secretary), Atlanta, Ga., U.S.A.; W. Kämpfer, Berlin, D.D.R.; H. H. Kleeberg, Pretoria, South Africa; A. Lind, Göteborg, Sweden; M. Magnusson, Copenhagen, Denmark; G. Meissner, Borstel, F.R.G.; S. R. Pattyn, Antwerp, Belgium; E. H. Runyon, Salt Lake City, Utah, U.S.A.; H. Saito, Shimane, Japan; J. L. Stanford, London, U.K.; L. Sůla, Prague, Czechoslovakia; K. Takeya, Fukuoka, Japan.

Minute 15. Adjournment. The meeting was adjourned at 1800.

GEORGE P. KUBICA, *Secretary*

International Committee on Systematic Bacteriology Subcommittee on the Taxonomy of *Neisseriaceae*

Minutes of the Meeting, 3 and 7 September 1978

Munich, F.R.G.

Session 1. Closed meeting.

Minute 1. Call to order. The meeting was called to order at 9:00 a.m. on 3 September 1978 by B. W. Catlin, Acting Chairman.

Minute 2. Record of attendance. Members present were: U. Berger, B. W. Catlin, E. Holten, J. S. Knapp, J.-Y. Riou, and N. A. Vedros.

Minute 3. Changes of membership and officers. Daniel Ivler, Chairman since 1970, died on 25 June 1976, depriving the scientific community of a valued colleague who has made significant contributions to the work of the Subcommittee as well as to our

knowledge of *Neisseria* and *Staphylococcus*. In July 1978, Michel Véron resigned from the Subcommittee and Alice Reyn indicated her wish for a transfer of status to Corresponding Member. Wesley Catlin resigned as Secretary on 3 September 1978, having served in that capacity since 1966. N. A. Vedros was elected Chairman, and J. S. Knapp was elected Secretary.

Minute 4. Subcommittee activities and goals. Since the last meetings of the Subcommittee in Jerusalem, Israel, September 1973, members have been engaged in two projects. (i) An investigation of representatives

of *Neisseria* and possibly related genera was initiated to evaluate the reproducibility and utility of the methods written by the Subcommittee as minimal standards for description of new taxa in the genus *Neisseria* and, also, to obtain data on the characteristics of strains which might be nominated as neotypes where these are needed. Furthermore, because only a limited number of bacterial characteristics are currently used in taxonomic studies of *Neisseria* species, efforts are being made to develop additional differential tests. (ii) The serological groups of *N. meningitidis* are receiving attention. Most strains available for study in the 1940s and 1950s could be classified in one of four serological groups: A, B, C, or D. *N. meningitidis* strains isolated from patients or carriers more recently include some that do not agglutinate in standard antiserum for any of these four groups. Additional serogroups temporarily designated X, Y (also called Bo or E), Z, 29E, and W-135 have been described by various investigators. The Subcommittee recognizes the importance of establishing a uniform and internationally acceptable nomenclature for the serogroups discovered since the early studies carried out by Sara Branham, E. G. D. Murray, M. J. Pelczar, and others which led to the recommendations by the *Neisseriaceae* Subcommittee published in 1958 (Int. Bull. Bacteriol. Nomencl. Taxon. 8:181-183).

Minute 5. Progress report of the ad hoc Committee for the Laboratory Study of *Neisseria*. Currently, this working group is composed of five members: B. W. Catlin (Chairman), U. Berger, E. Holten, J.-Y. Riou, and N. A. Vedros. A Reyn, who was active in assembling and distributing strains, was unable to participate in the later phases of the project. The 54 strains which were selected included one or more representatives of the *Neisseria* and *Branhamella* species given in the first draft of the *Approved Lists of Bacterial Names*, together with a number of unnamed isolates from animals and some strains of *Moraxella* species. The strains were examined in five laboratories using the standard methods written by the Subcommittee. The results sent to the Chairman were compiled and returned to all participants well before this meeting. Although the results of tests of most strains were in agreement, some discrepancies were found, especially with respect to the production of acid from carbohydrates incorporated in cystine Trypticase agar. The characteristics of some of the animal isolates differed from those of any *Neisseria* species recognized at present.

Minute 6. Progress report of the ad hoc Committee on Serological Groups of *Neisseria meningitidis*. This committee, organized in August 1970 during the Subcommittee meeting in Mexico City, initially included N. A. Vedros (Chairman), D. Ivler, and K. Jyssum. The subsequent resignation of Jyssum from the *Neisseriaceae* Subcommittee and the death of Ivler were deterrents to the proposed cooperative laboratory study. In 1976 the World Health Organization, at the request of the Expert Panel on Cerebrospinal Fever, initiated a large collaborative study in which Vedros has participated. The goals of this study were to select prototype strains of each representative serogroup and to define the techniques for producing the specific agglutination antisera and for conducting the agglutination test. During the study, which lasted 2 years and involved four laboratories, various working docu-

ments were developed, and a meeting chaired by Lay Houang was held in Torremolinos, Spain. A final report will be issued by the World Health Organization.

Minute 7. Minimum standards for description of new taxa in the genus *Neisseria*. Methods were discussed in detail, and the descriptions were revised on the basis of the collective experience with the 54 strains (Minute 5).

Minute 8. Current membership. The eight active members currently serving on the Subcommittee are N. A. Vedros (Chairman), Oakland, Calif., U.S.A.; J. S. Knapp (Secretary), Seattle, Wash., U.S.A.; U. Berger, Heidelberg, F.R.G.; K. Bøvre, Oslo, Norway; B. W. Catlin, Milwaukee, Wis., U.S.A.; E. Holten, Oslo, Norway; J.-Y. Riou, Paris, France; M. Rogosa, Bethesda, Md., U.S.A. In addition, M. J. Pelczar, Jr., College Park, Md., U.S.A., and A. Reyn, Copenhagen, Denmark, who were formerly active in Subcommittee affairs, now serve as corresponding members.

Minute 9. Adjournment. The meeting was adjourned at 1500.

Session 2. Open meeting.

Minute 10. Call to order. This open meeting was convened at 1400 on 7 September by N. A. Vedros, Chairman.

Minute 11. Record of attendance. Members present were U. Berger, K. Bøvre, B. W. Catlin, E. Holten, J. S. Knapp, J.-Y. Riou, and N. A. Vedros. Present as an invited guest was A. Le Faou (Strasbourg, France).

Minute 12. Approved Lists of Bacterial Names. The first draft of the list of *Neisseria* species published in 1976 (Int. J. Syst. Bacteriol. 26:563-599) was discussed. The deletion of *Neisseria pharyngis* was recommended. The other names were acceptable to the Subcommittee at the present time. Recognizing the need to propose neotype strains where types do not exist, the members selected strains deemed to be typical on the basis of the results obtained in the laboratory study (Minute 5, above).

Minute 13. Reports of research. The remainder of the meeting was devoted to presentations of ongoing research relevant to the goals of the Subcommittee. Some of the findings emphasized the potential value of supplementing the collection of 54 strains and extending the joint study to assess the extent of intraspecies heterogeneity.

E. Holten in collaboration with Tom Bergan used numerical grouping methods to analyze the results obtained with the collection of strains associated with *Neisseria* and *Branhamella*.

N. Vedros presented data on the DNA base composition (derived from determinations of T_m) of reference strains of *Neisseria* species and various unnamed isolates primarily from animals. Also, he is examining the use of deoxyribonucleic acid-mediated transformation of streptomycin resistance as a taxonomic tool.

J. S. Knapp described the advantage of reducing the peptone concentration in growth media used for tests of sugar utilization by strains of *Neisseria*. Acidity from glucose or other utilizable sugars is more pronounced in heavily inoculated tubes of Oxidation-Fermentation medium (modified from Hugh and Leifson) than in conventional cystine Trypticase agar.

J. S. Knapp also summarized studies of *N. gonor-*

rhoeae strains isolated from systemic and from localized infections and the characteristics that serve as markers of virulence.

B. W. Catlin described the nutritional requirements of *Neisseria gonorrhoeae* strains isolated in the 1930s and 1940s and noted the absence of a pyrimidine

requirement which is common in contemporary strains.

Minute 14. Adjournment. The meeting was adjourned at 1730.

B. W. CATLIN, *Past Secretary*

International Committee on Systematic Bacteriology Subcommittee on the Taxonomy of *Nocardia* and Related Organisms

Minutes of the Meeting, 5 September 1978

Munich, F.R.G.

Minute 1. Call to order. The meeting was called to order by the Chairman, M. Goodfellow.

Minute 2. Record of attendance. Members present were: M. Goodfellow (Chairman), George H. Brownell (Secretary), Gaylen Bradley, M. Mordarski, K. P. Schaal, H. Prauser, and M. Ridell. Also present were the following: V. P. Kurup, M. Magnusson, I. Tarnok, L. V. Kalakoutskii, E. Kuster, R. Locci, E. Welling-ton, S. Williams, D. Minnikin, and R. M. Kroppenstedt.

Minute 3. Election of officers. M. Goodfellow was elected chairman and G. H. Brownell was elected Secretary at a closed meeting (2 September 1978, Munich, F.R.G.) of the Subcommittee. An agenda was also formulated and approved at this meeting.

Minute 4. Communication. For the purpose of communication, it was proposed that the secretaries of related subcommittees be invited for membership on the new Subcommittee on the Taxonomy of *Nocardia* and Related Organisms. The proposal was approved, and S. T. Williams, Secretary of the Subcommittee on the Taxonomy of the *Actinomycetales*, was proposed for membership. It was announced that representatives of the Subcommittee on *Corynebacterium* and Coryneform Bacteria would like a meeting to discuss areas of responsibility. A meeting was arranged for 2:00 p.m., 5 September 1978, and published in the *ICM Daily Bulletin*. In addition, the Subcommittee proposed to create a corresponding membership to obtain input from other individuals interested in nocardial taxonomy. The proposal was approved, and the Subcommittee was advised to send names and addresses of potential corresponding members to the Secretary.

Minute 5. Area of responsibility. A proposed list of genera to be the responsibility of the new *Nocardia*

subcommittee includes: *Actinomadura*, *Actinopolyspora*, *Dermatophilus*, *Excelsopora*, *Geodermatophilus*, *Intra-sporangium*, *Micropolyspora*, *Nocardia*, *Nocardioides*, *Nocardiopsis*, *Oerskovia*, *Promicromonospora*, *Pseudonocardia*, *Rhodococcus*, *Saccharomonospora*, *Saccharopolyspora*, *Sporichthya*, and *Thermomonospora viridis*.

Minute 6. Approved list of *Nocardia* species. The Subcommittee has prepared a preliminary list with type strains.

Minute 7. Type species of the genus *Nocardia*. Mike Goodfellow agreed to prepare a paper which will summarize the results of a cooperative study on the desirability of retaining *N. farcinica* ATCC 3318 as the type species or of designating *N. asteroides* ATCC 19247 as more appropriate.

Minute 8. Description of the genus *Nocardia*. It was agreed that at the next Subcommittee meeting a new description of the genus will be adopted.

Minute 9. Current membership. Current membership of the Subcommittee is as follows: M. Goodfellow (Chairman), Newcastle, U.K.; G. H. Brownell (Secretary), Augusta, Ga., U.S.A.; L. F. Bojalil, Mexico City, Mexico; S. G. Bradley, Richmond, Va., U.S.A.; V. D. Kuznetsov, Moscow, U.S.S.R.; M. Mordarski, Wroclow, Poland; H. Prauser, Jena, D.D.R.; M. Ridell, Göteborg, Sweden; K. P. Schaal, Cologne, F.R.G.; M. Tsukamura, Aichi-ken, Japan.

Minute 10. Next meeting. K. P. Schaal reported on his preparation for the 1979 Third International Meeting on Actinomycetes to be held in Cologne, F.R.G. It was agreed that the next meeting of the Subcommittee would be held at that meeting.

G. H. BROWNELL, *Secretary*