publication, have been found highly correlated with clinical occurrence, including organ localization and pathogenicity. The habitat and other epidemiological and pathogenic characteristics were acknowledged by the committee to deserve consideration in the classification of microorganisms, but unless they could be identified with a definable structural, chemical, or physiological trait of the organism, their role in taxonomy had to remain an ancillary one. Kilian is to have a meeting with Pittman in the near future, at which any differences in viewpoint can, one hopes, be reconciled. The species *H. aegyptius* is being maintained pending the results of forthcoming investigations.

Minute 10. *Other business.* The following matters were mentioned as worthwhile areas of research or activity.

Minute 10.1. Compilation and circulation of a list of strains of *Haemophilus* and *Haemophilus*-like species presently in possession of, or known to, Subcommittee members. Two collections believed to exist are in the possession of the Burroughs-Wellcome Corporation, Beckenham, Kent, U.K., and Gösta Tunevall, Serafimerlasarettet, Stockholm, Sweden.

Minute 10.2. Characterization of presently unclassified cultures of *Haemophilus* and *Haemophilus*-like organisms.

Minute 10.3. Investigations of pathogenic mechanisms and traits related to parasitism, virulence, and pathogenicity.

Minute 10.4. Studies on nucleic acid homologies

among *Haemophilus* species and between *Haemophilus* species on the one hand and possibly related forms on the other.

Minute 10.5. Exploration of the question of criteria for inclusion of organisms in the genus *Haemophilus*, apart from requirements for V and X factors.

Minute 10.6. Development and comparison of rapid test methods for biochemical activities of *Haemophilus* spp., particularly those suitable for resting cells.

Minute 10.7. The Secretary was authorized to urge upon editors of pertinent publications enforcement of the correct spelling of *Haemophilus* or at least assurance of adequate cross-referencing to facilitate literature searches.

Minute 11. *Current membership.* Current membership of the Subcommittee is as follows: K. Zinnemann (Chairman), Leeds, U.K.; M. Kilian (Secretary), Aarhus, Denmark; W. L. Albritton, Winnepeg, Canada; E. L. Biberstein, Davis, Calif., U.S.A.; P. Branefors-Helander, Göteborg, Sweden; A. Gunnarsson, Stockholm, Sweden; K.-H. Hinz, Hannover, F.R.G.; J. Nicolet, Bern, Switzerland; R. Nielsen, Copenhagen, Denmark; M. Pittman, Washington, D.C., U.S.A.; G. C. Simmons, Brisbane, Queensland, Australia; G. Tunevall, Stockholm, Sweden.

Minute 12. *Adjournment.* The meeting was adjourned.

E. L. BIBERSTEIN, *Secretary*
K. ZINNEMAN, *Chairman*

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

Minutes of the Meeting, 3 to 6 September 1978

Munich, F.R.G.

Minute 1. *Call to order.* The closed session of the meeting was called to order by the Chairman, S. Faine, at 9:00 a.m. on 3 September. It was followed by an open session at 10:30 a.m. Further open sessions were held at 2:00 p.m. on 4 September, 9:00 a.m. on 5 September, and 9:00 a.m. on 6 September.

Minute 2. *Record of attendance.* Members present were: S. Faine (Chairman), M. Torten, R. C. Johnson, H. Dikken and E. Kmety. In addition to members of the Subcommittee, the following attended one or more of the open sessions: Kari Hovind-Hougen, M. Mailoux, W. Terpstra, H. Willinger, R. Tinniswood, A. Schonberg, W. Sojka, D. Kuhn, and J. van Ramshorst.

Minute 3. *Changes in membership and officers.* A letter was received from L. H. Turner indicating his

recent retirement and resignation from the Subcommittee. The Subcommittee records with deepest regret the death of C. Borg-Petersen, who was a past Chairman. As a mark of sympathy and respect the Subcommittee observed one minute of silence. R. Yanagawa, Marina Cinco, and N. D. Stallman were elected members and admitted to the meeting. N. D. Stallman was elected as Secretary. L. H. Turner, having retired from active work, was elected as adviser. B. Caccia-puoti, Joyce Coghlan, C. Everard, and K. Bogel were elected as observers. W. Terpstra, C. Manev, V. Kiktenko, H. Willinger, P. Bakoss, D. Myers, and F. Kemenes were elected as collaborators. D. J. W. Smith, who had served on the Subcommittee for 10 years and as an adviser for 10 years, announced his retirement.

Minute 4. Appreciation expressed. The Chairman expressed his and the Subcommittee's warm appreciation for the cooperation and assistance given by L. H. Turner in carrying out his duties and asked that a letter of appreciation be sent.

Minute 5. Definition of genus *Leptospira*. A draft prepared at the last meeting was further reviewed, and a final draft has now been prepared.

Minute 6. Description of species. A description prepared by A. D. Alexander and R. C. Johnson was discussed at length. A draft has been prepared for further discussion and approval by correspondence.

Minute 7. Reference antisera. It was agreed that a standard method of preparation of antisera should be recommended and published. Numerous problems relating to this were discussed. It was recognized that the possible existence of thermolabile antigens should be taken into account. However, the means by which this should be achieved was not resolved. An investigation by S. Faine and H. Dikken into schedules for preparation of antisera remains unresolved. It was recommended that the following schedule be used pending further investigation. Rabbits should be injected intravenously with a 5- to 7-day-old cloned live culture of approximate density of 2×10^8 organisms per ml. The culture should be grown in rabbit serum peptone medium. Five injections of 1, 2, 4, 6, and 6 ml should be given at 7-day intervals. The rabbits should be bled 14 days after the last injection if the titer is between 1:10,000 and 1:50,000. At least two rabbits should be used and the final sera should be pooled. The serum preferably should be freeze-dried.

Minute 8. Role of factor analysis. E. Kmety, who pioneered factor analysis, introduced a discussion of the subject by describing its value for pathogens. Marina Cinco also reviewed the subject for saprophytes. From a practical point of view, factor analysis would facilitate the typing of strains. However, it does require a laboratory to maintain a full range of main and minor antigens. Probably only a few laboratories could satisfy this need. A strain investigated by this means still needs to be confirmed by the standard 10% criterion in absorption tests. It was agreed, for the reasons above and in the interests of standardization of methods, that although factor analysis was a very great step forward it would not be accepted as a standard method at present.

Minute 9. Standardization of methods for serovaring. The following guidelines were recommended for the performance of cross-agglutinin absorption tests. (i) Rabbit antiserum should be prepared as described under "Reference antisera." (ii) The titer of the antiserum should range between 1:10,000 and 1:50,000. (iii) Absorptions should be performed with live antigens. The antigen should be added to the serum in three equal amounts at intervals of 10 min. (iv) Serial twofold dilutions should be used in performing titrations. Live antigens should be used in the agglutination tests. (v) Two strains are considered to belong to different serotypes if, after cross-absorption with adequate amount of heterologous antigen, 10% or more of the homologous titer regularly remains in at least one of the two antisera in repeated tests.

Minute 10. Recognition of new serovars. It was agreed that the following guidelines be used for the recognition of new serovars. (i) Strains validly published and described as representing a new serovar are

given provisional status and included in the list of serovars, pending further confirmation. (ii) Provisionally accepted strains should be studied by at least two laboratories, one of which must be a reference laboratory. Results of typing studies should be submitted to the Secretary of the Subcommittee on the Taxonomy of *Leptospira*, who will prepare a proposal for all members of the Subcommittee. (iii) Laboratories of members or observers of the Subcommittee are considered as reference laboratories. (iv) The proposal for recognition of a new serovar should contain the following data: history of the strain, date of isolation, source, locality, and any other relevant information if available (e.g., age, sex, size, species, and serum titer of animal from which it was isolated; pH, salinity, and animal pollution of surface waters from which isolates have been made); date of publication containing the first valid description, typing results, proposed designation, etc; results of confirmative investigations submitted by one or more reference laboratories; proposed name of the new serovar, reference strain and its recommended serogroup. (v) A new serovar is accepted if no objections are raised by any member of the Subcommittee within a designated time and if at least two-thirds of the members express their agreement by correspondence or voting. (vi) Objections against the acceptance of a new serovar or against any other part of the proposal must be announced to the Secretary of the Subcommittee within a limited time. If different results are reported, reinvestigations of the reference strain are initiated by the Secretary. If necessary, additional laboratories are asked to undertake control studies. Formal objections have to be cleared by correspondence or discussion. Differing opinion about the serogroup status of the new serovar is not to be considered as an objection for its recognition. The serovar is placed in the serogroup designated by the majority of the Subcommittee. If no majority agreement is achieved, the proposal of the author deserves priority. (vii) The Secretary of the Subcommittee is to maintain a register of new serotypes.

Minute 11. Revision of serogroups. It was agreed that the revision of serogroups Autumnalis into three groups, Hebdomadis into three groups, and Canicola into two subgroups be completed by correspondence.

Minute 12. Preparation of catalog of published serovars. A Subcommittee consisting of E. Kmety (Chairman), H. Dikken (Secretary), A. D. Alexander, Y. G. Chernukha, Catherine Sulzer, and N. D. Stallman was elected to prepare a catalog of published serovars. The method of tabulation of serogroups and serovars was not agreed upon. It was hoped that this could be finalized by correspondence.

Minute 13. Distribution of antisera for reference purposes. J. van Ramshorst (WHO Biologicals) attended the meeting as an observer to discuss the possible need for World Health Organization Reference Antisera to be available for distribution. It was agreed that typing of cultures should be performed at a limited number of specialist laboratories and that there would not be a need to have a wide range of standard antisera available for general distribution. Each specialist laboratory would maintain a full range of reference antisera. It was recommended that group antisera be available for distribution to laboratories wishing to undertake preliminary identification of cultures. Van Ramshorst was advised that the current list of refer-

ence antisera recorded in "International Biological and Standards Reference Preparation" be deleted and that the Subcommittee would advise on which group-reactive antisera should be recorded in this publication. This matter would be further discussed by the Chairman at a meeting with the World Health Organization in November 1978.

Minute 14. Preservation of reference cultures. Cultures previously cloned should be preserved in the vapor phase of liquid nitrogen. A working collection could also be stored at -70°C . It is not necessary to add glycerol to the medium before preservation.

Minute 15. Proposal to introduce a new genus *Leptonema*. After discussion on the proposal by Kari Hovind-Hougen for the introduction of a new genus for *illini* to be called *Leptonema* it was agreed that this was premature and that further investigation was required.

Minute 16. Objection to nomenclature. A document ("Nomenclature of the species—revision") prepared by E. Kmety had been circulated before the meeting. He contended that the use of "interrogans" as a

species name was illegitimate and he suggested that "*icterohaemorrhagiae*" should be used as the nomenclatural type. The Subcommittee was unable to agree with his proposal.

Minute 17. Current membership. The current membership of the Subcommittee is as follows: S. Faine (Chairman), Melbourne, Victoria, Australia; N. D. Stallman (Secretary), Brisbane, Queensland, Australia; A. D. Alexander, Chicago, Ill., U.S.A.; Y. G. Chernukha, Moscow, U.S.S.R.; M. Cinco, Trieste, Italy; C. D. Cox, Amherst, Mass., U.S.A.; H. Dikken, Amsterdam, The Netherlands; R. C. Johnson, Minneapolis, Minn., U.S.A.; E. Kmety, Bratislava, Czechoslovakia; M. Torten, Ness-Ziona, Israel; R. Yanagawa, Sapporo, Japan.

Minute 18. Adjournment. The final session was closed by the Chairman at 11 a.m. on 6 September 1978. The date and place for the next meeting were not decided.

N. D. STALLMAN, *Secretary*

International Committee on Systematic Bacteriology Subcommittee on *Moraxella* and Allied Bacteria

Minutes of the Meeting, 2 to 4 September 1978

Munich, F.R.G.

Session 1. Closed meeting.

Minute 1. Call to order. The meeting was called to order at 1500 on 2 September by the acting Chairman.

Minute 2. Record of attendance. The members present were K. Bøvre (Secretary, Acting Chairman) and J. M. Shewan.

Minute 3. Agenda. The agenda was approved.

Minute 4. Report on the activities of the Subcommittee. The report to the Chairman of ICSB of July 1978 was approved.

Minute 5. Minimal standards for description of new taxa within the genera *moraxella* and *acinetobacter*. The evaluation of the published proposal (Int. J. Syst. Bacteriol. 26:92–96, 1976) by the Judicial Commission and the first application of the minimal standards in actual description of a new species (Int. J. Syst. Bacteriol. 26:511–521, 1976) were noted. Current experience by application of the standards has resulted in technical modifications which will be discussed within the Subcommittee in future correspondence. Also, the consequences of including *Branhamella* in genus *Moraxella* by some taxonomists should be discussed in consultation with the Subcommittee on the Taxonomy of *Neisseriaceae*, as well as the importance

of having standards covering the differential-diagnostic demands of *Neisseria elongata* and the genus *Kingella*.

Minute 6. Approved Lists of Bacterial Names. In response to a letter from the Chairman of ICSB on designations of type or neotype strains in the Subcommittee's sections of the Lists (*Moraxella*, *Acinetobacter*, and *Kingella*), it was decided that K. Bøvre should take the necessary action. A valid description of the organism tentatively named *Moraxella urethralis* was mentioned as a particularly urgent task.

Minute 7. Future of the Subcommittee. Recent investigations have shown clearly that the taxonomic problems of oxidase-positive and -negative organisms to be covered by the Subcommittee are far from completely solved. It was agreed that the maintenance of the Subcommittee is justified.

Minute 8. Changes in membership and officers. The death of M. Piéchaud was noted with regret. S. D. Henriksen had resigned as Chairman and member of the Subcommittee in 1976, and since then the Secretary, K. Bøvre, had been acting Chairman after agreement among the members. In 1978, the members Sylvia G. Cary, A.-L. Courtieu, S. P. Lapage, H.