REPORT AND MINUTES OF THE MEETING OF THE
INTERNATIONAL ENTEROBACTERIACEAE
SUBCOMMITTEE, MOSCOW 1966

A meeting of the International Subcommittee on the Taxonomy of the Enterobacteriaceae was held at the Metchnikov Institute, Moscow, at 1100 hrs on July 21, 1966.

Those present were: Dr. S. Hofmann representing Prof. F. Kauffmann, Dr. K. Lachowicz, Prof. L. Le Minor, Dr. R. Rohde, Dr. Joan Taylor, Chairman, and Dr. K. Patricia Carpenter, Secretary.

Apologies for absence were received from Dr. W.H. Ewing, Capt. T.M. Floyd, Prof. F. Kauffmann, Prof. K. Rauss, Prof. E. Van Oye and Prof. H. P. R. Seeliger (ex-officio member).

Opening remarks by the Chairman, Dr. Joan Taylor

The Chairman formally opened the meeting and welcomed the members present and also Dr. Hofmann, representing Prof. Kauffmann.

Dr. Taylor then referred to the great loss to microbiology in general and to this Subcommittee in particular by the recent death of Dr. P. R. Edwards. The Subcommittee wished the Secretary to express their sympathy to Dr. Edwards' family. The Subcommittee had also lost another long-serving and valuable member since the Subcommittee meeting in Montreal by the death of Prof. E. Hormaeche in 1964.

Prof. Le Minor was congratulated on his election as Director of the International Salmonella Centre designated in Paris, France, after the retirement of Prof. Kauffmann from the International Salmonella Centre in Copenhagen in December, 1964.

In her opening remarks Dr. Taylor explained why a formal 1966 Subcommittee Report had not been prepared before the meeting in Moscow. She felt that on this occasion there was a great need for careful discussion and a formal report would have been premature.

Order of business

1. Minutes of the last meeting (Montreal, August 1962).

As the Minutes had been approved by the Subcommittee and subsequently published (Intern. Bull. Bacteriol. Nomen. and Taxon. 13:139 (1963)), the Minutes were taken as read.

2. Matters arising from the Minutes

a) At the Montreal (1962) meeting a proposal was made and accepted by the members present that "... the biochemically defined groups of the Enterobacteriaceae can be regarded as genera." Subsequently, in a postal vote of all members of the Subcommittee, 11 out of 12 voting members accepted this proposal.

b) It was reported that the Judicial Commission had conserved the generic name Enterobacter Hormaeche and Edwards with the type species Enterobacter cloacae (Jordon) Hormaeche and Edwards, and had rejected the generic name Cloaca Castellani and Chalmers (Opinion 28, Intern. Bull. Bacteriol. Nomen. and Taxon. 13:38 (1963)). Proposals by the Subcommittee regarding the generic name Aerobacter Hormaeche and Edwards would be made after the Congress.

3. The 1966 Report of the Enterobacteriaceae Subcommittee to the Nomenclature Committee

The members present reaffirmed the statement that the biochemically defined groups of the Enterobacteriaceae can be regarded as genera.

a) Salmonella

There was much discussion on the methods for recording the antigenic formulae of organisms belonging to the genera Salmonella and Arizona, particularly considering the intra-relationships of the Salmonella subgenera and the inter-relationships of Salmonella and Arizona. Various suggestions were made to overcome the difficulties when an organism belongs to the biotype of Salmonella subgenus II, III (Arizona) or IV but has the antigens of Salmonella subgenus I. Another difficulty discussed was whether new O factors appearing in the biotypes of subgenera II, III or IV would be included in the Kauffmann-White scheme or in the Arizona scheme of Edwards and Ewing. The members present approved the advantage of individualising subgenus III (Arizona) of Salmonella. The incidence of Salmonella subgenus II as pathogens of man and other warm-blooded animals appears to be negligible as far as is known. Therefore it is recommended that diagnostic laboratories perform the malonate test on all Salmonella cultures isolated. This test is very reliable and rapidly distinguishes subgenus I, which is malonate-negative, from subgenus II and subgenus III (Arizona), which are malonate-positive.

The flagellar antigens of Salmonella subgenus II are closer to the flagellar antigens of subgenus III (Arizona) than

to those of subgenus I, and members of subgenus II, like those of the Arizona group, are isolated mainly from cold-blooded animals. Therefore the members present proposed that names should not be given to new serotypes of subgenus II and that the serotypes should be designated by their antigenic formulae only. This will allow them to be easily distinguished from the serotypes of subgenus I in the Kauffmann-White scheme, because the serotypes of subgenus I will be named.

The nomenclature of new serotypes of Salmonella subgenus I was discussed, and the members agreed that a simple place name was best. In the future, supplements to the Kauffmann-White scheme would contain the place and country of origin of the strains.

The members discussed the nomenclature of salmonellae in which some antigenic O factors are dependent on the carriage of particular temperate bacteriophages. Prof. Le Minor proposed that, to indicate such phage-controlled factors in the written antigenic formula in the Kauffmann-White scheme, the phage-controlled factors be underlined. For example, the somatic antigens of S. newington, the lysogenised form of S. anatum (3, 10), would be written 3, 15. The members present agreed that names should not be given to antigenic variants which are differentiated by the presence or absence of phage-controlled factors, i.e. by the state of lysogeny or non-lysogeny for the corresponding bacteriophage. The proposal to underline the phagw-controlled factors was also acceptable.

b) Citrobacter

It was agreed to reaffirm the Subcommittee's 1962 Report.

c) Shigella

The Subcommittee's 1962 Report was reaffirmed. The Secretary reported that the two International Shigella Centres (Atlanta and London) had published recommendations on the designations for Shigella flexneri (Intern. J. Syst. Bacteriol. 16:145 (1966)). These were briefly discussed, and the matter was referred back to the Shigella Subsection of the Subcommittee for further study. The status of the provisional serotype 2710-54 and the biotypes of S. boydii 14 were also referred to the Shigella Subsection for further consideration.

The members present thought that any decision on the taxonomic position of organisms such as the serotype 145.46 (147), the Katwijk group, the Alkaescens-dispar

group and the serotypes 185 and 193 of Trabulsi would be premature and that this decision is one which needs careful consideration. The members of the *Shigella* subsection were asked to study this matter further.

d) Escherichia

The 1962 Report of the Subcommittee was reaffirmed. Dr. F. Ørskov, Director of the International Escherichia Centre would be asked to designate further O groups.

e) Klebsiella

The members present agreed that a Klebsiella Subsection should be set up to consider the status of the various named "species" of the group. Only nonmotile organisms would be studied. The Secretary, as Convenor, was asked to collaborate with Dr. Ida Ørskov in selecting the members of the Subsection.

f) Enterobacter

The Subcommittee's 1962 Report was reaffirmed.

g) Hafnia and Serratia

The 1962 Report was reaffirmed with the proviso that these genera might be reconsidered for the next meeting.

h) Proteus and Providence

The 1962 Report was reaffirmed with the proviso that this may be reconsidered in the light of further studies on the DNA base ratios.

i) Edwardsiella tarda

This organism, described by King and Adler (Amer. J. Clin. Pathol. 41:230 (1964)) and called the Asakusa group by Sakazaki (Intern. Bull. Bacteriol. Nomen. and Taxon. 15:45 (1965)), was named and described by Ewing et al. (Ibid. 15:33). The members present discussed briefly its taxonomic position, but they concluded that further study is necessary before any decision can be made.

4. Ad hoc Commission for the selection of neotype strains

The Subcommittee Secretary reported that Dr. Cowan, Chairman of the Ad hoc Commission, had intimated his resignation. As it was thought that the Judicial Commission proposed making changes concerning neotype strains, the members present decided that the Ad hoc Commission should be dissolved and that, in the future, if necessary, a new Commission be appointed.

5. Proposals on classification by Ewing and by Kauffmann

The proposals were those contained in the following published papers:

a) Ewing, "An outline of nomenclature for the family Enterobacteriaceae," Intern. Bull. Bacteriol. Nomen. and Taxon. 13:95 (1963) (and in a mimeographed C.D.C. publication of a paper given by Ewing to an A.P.H.A. meeting 1964), and

b) Kauffmann, "On the classification and nomenclature of the family Enterobacteriaceae," Intern. Bull. Bacteriol. Nomen. and Taxon. 13:187 (1963). These papers were circulated to all members before the Moscow Congress. The proposals were considered by the members present, but in view of the importance of this matter it was agreed that further detailed study of the proposals by all members was necessary before any decision is made.

Prof. Kauffmann (in a letter to the Secretary and through Dr. Hofmann, his alternate at Moscow) wished it recorded that his paper (Intern. Bull. Bacteriol. Nomen. and Taxon. 13:187 (1963)) was a Minority Report by him. He also wished the following statement quoted: "I do not agree with Ewing's paper and am voting against it. I am protesting that he is saying on page 3 of Appendix I that I have defined the species as a serotype. My species definition is: A species is a group of related sero-fermentative phage-types. I do not agree to establish only 3 Salmonella species: S. cholerae-suis, S. typhi and S. enteritidis. If only 3-4 species are wanted, the 4 subgenera I-IV should be regarded as species, but I am not ready to accept this."

6. Membership

The Secretary stated that Prof. Kauffmann had intimated his resignation with effect from 31st December 1966. Dr. Taylor expressed how much the Subcommittee would miss Prof. Kauffmann after his long service on it and the great help he had been to its work.

Dr. Taylor wished to retire as Chairman of the Subcommittee. The members present unanimously supported the proposal that Dr. Ewing should succeed her as Chairman and that Dr. Carpenter should continue as Secretary for another term. (A postal vote by all members taken after the Congress confirmed the election of Dr. Ewing and of Dr. Carpenter.)

7. Subcommittee Meeting on 26th July, 1966

The Chairman announced that the meeting on 26th July, 1966, would be open to any interested bacteriologists and that an opportunity would be given for discussion on several aspects of the Enterobacteriaceae.

8. The meeting adjourned at 1700 hrs.

K. Patricia Carpenter,
Secretary

ADDENDUM

Dr. Ewing, who was not present at Moscow, has stated that, for several reasons, he could not approve the Minutes as written.

The Report and Minutes have been approved by all voting members of the Enterobacteriaceae Subcommittee except Dr. Ewing.