Report (1962–1966) of the Subcommittee on the Taxonomy of *Leptospira* to the International Committee on Nomenclature of Bacteria

Moscow, USSR

The Montreal (1962) minutes, as such, were not published, but a Report which summarized the main points appeared in 1963 [Int. Bull. Bacteriol. Nomencl. Taxon. 13:161–165]. The report of the previous meeting (Stockholm, 1958) was published in the same number [p. 159–160].

After the meeting, some points were raised and were discussed by correspondence. The following statements reflect the consensus of opinion at that time (October 1963):

1. Strain Mankarso should, for the time being, continue to be recognized as representing a serotype (*mankarso*) rather than a subsertype within the icterohaemorrhagiae group.

2. The recognized reference strain of a serotype should be the earliest strain which was validly published; that is, selection will (for the present) be on a historical basis so as to avoid repeated corrections which the alternative (“antigenic completeness”) might entail. Investigations of the antigenic (i.e., agglutinogenic) factors of strains of *Leptospira* have been initiated by E. Kmety and his colleagues, Plesko and Bakoss; but, until the work is completed, we are obliged to retain the Wolff-Broom method and scheme which the available factor analyses have shown to be generally reliable.

3. The reference strain of serotype *icterohaemorrhagiae* should, therefore, be recommended from among the strains previously designated as “*icterohaemorrhagiae A*” or the “incomplete biotype.” The only two strains which were thought to be worthy of consideration are “RGA” and “No. 1” of Inada and Ido (the original Japanese strain). This topic led to further discussions which are still in progress; but the present position is summarized separately (see below).

4. There is still a considerable divergence of opinions regarding the value of recognizing the category “subserotype,” and discussions continue.

5. The present method of grouping strains has given rise to some difficulties: some strains might be included in either of two groups and, in some cases, in either of two serotypes. These difficulties will be resolved, it is hoped, by factor analyses.

In view of the recommendation that two species within the genus *Leptospira* be recognized, a brief was prepared in which the reasons for proposing the epithets “*interrogans*” and “*biflexa*” were set forth. The replies to a questionnaire which was distributed with the brief to all members and associates showed that seven members and nine associates agreed with each and every item in the brief. Various comments were offered (and are summarized below), but each item was approved by a majority of members and by a majority of associates.

The main objections were as follows:

1. The resulting nomenclature would be too clumsy for general use and would confuse physicians and veterinarians: for example, *L. interrogans* serotype *icterohaemorrhagiae* is too lengthy. However, because serotypes are at this time not recognized as species, the current use of binary combinations (the name of the genus followed by a single specific epithet) should be abandoned; such combinations are applicable only to species.

Although there is no officially recognized abbreviation for indicating the various infrasubspecific categories (serotype, biotype, phagotype, etc.), it would seem that the use of the single serotype epithet in italics (or distinguished in some other fashion) is comprehensible and that it should be permitted provided that the full formal designation is given at the beginning of a publication. Thus, after writing *Leptospira interrogans* serotype *icterohaemorrhagiae* in the first instance one could write *icterohaemorrhagiae* alone thereafter.

The clumsy full names, it was asserted, would confuse medical and veterinary workers. However, it was reemphasized that such workers were already being confronted with changes of names of other genera, whereas in the case of leptospiral serotypes the epithet of the working taxon would be retained.

2. The reactions which were proposed for distinguishing “parasitic” and “saprophytic” strains have not proved to be reliable and clear-cut. This matter is still under discussion. It has been suggested that only one species should be recognized until sufficient data are available on which a satisfactory classification can be built up (from below), the aim being a form of Adansonian classification based on overall similarities, not only on serological reactions. Genetic techniques will also be used.

As a result of the underlying taxonomic
uncertainties of the “two-species” proposal, the brief was not submitted to the Judicial Commission for an Opinion.

**Japanese strain “No. 1.”** M. Kitaoka understood that the original Japanese strain of Inada and Ido (strain “No. 1”) had been lost. A request was sent to all members and associates to report any knowledge of cultures of strain No. 1 or of any other strains in serotype *icterohaemorrhagiae* earlier than strain RGA (S. icterogenes of Uhlenhuth and Fromme, 1915), cultures of which are maintained in many laboratories and which is a well-documented strain. Four people failed to reply; the remainder, except Yamamoto, knew of no such cultures of No. 1 nor of other early strains except strain Verdun, which was isolated in 1918 and has been maintained in the Pasteur Institute, Paris, as a virulent line.

Yamamoto, however, claimed to have a culture of strain No. 1 which he had received in 1940 from Kubo, who worked in the laboratory of K. Sakaguchi (the successor to Inada). Yamamoto stated that his strain Asakawa and strain No. 1 were identical when compared in agglutinin-absorption tests in 1940. In 1945, cultures of strain No. 1 became contaminated by fungi but were recovered in pure culture by intraperitoneal inoculation of mice (from which the spleen was removed 5 days earlier) with 1.0 cc of contaminated culture. After 10 min, blood was obtained from the heart, and 0.2-cc volumes were inoculated into Korthof’s medium. Yamamoto has stated that he has again compared strains Asakawa and No. 1 and has obtained results similar to those of 25 years ago. Moreover, comparison of strains No. 1 and RGA, in repeated tests, showed that these two strains were not identical serologically. Yamamoto also states that “the exact relationship of strain Uchida [Wuchida] to strain No. 1 is unknown, as in Japan none compared these two strains by using absorption test.”

A few members have agreed to compare strain No. 1 with other serotypes and subserotypes in the *icterohaemorrhagiae* group. These findings will be studied at the Moscow meeting.

A resolution was adopted in Lublin, Poland, 1962, which indicated that workers in Eastern Europe agreed to abide by the Code and were in favor of more intensive cooperation, a common terminology (nomenclature), and standardization of methods [see *Int. Bull. Bacteriol. Nomencl. Taxon.* 13:211–212].

In September 1965, a “List of References to the Isolation and Typing of Type Strains of Parasitic Leptospires” was made available by the World Health Organization in duplicated (not printed) form. This list was prepared by J. W. Wolff. A supplement was provided later.

A catalogue of the genus *Leptospira* is being prepared by C. Lataste-Dorolle and Vauclot at the Pasteur Institute, Paris. This list will include references to strains other than the recognized reference strains.

A list, or catalogue, of the hosts of various serotypes has been prepared for publication by Mildred Galton and others. This list deals only with isolates and not with serological evidence of infection. Each country is considered individually, and the references to the first isolation and typing are given. The data have been entered on IBM cards, and periodical reviews are envisaged.

An Information Exchange Letter on Leptospirosis (IEL) will be produced by the World Health Organization. The initial object is to produce one number each year with a review of the project based on the response. The first number of the IEL, which is due to be produced in 1966, will be widely available, but subsequent numbers will only be issued to workers who contribute material to it. Further details may be obtained from the Veterinary Public Health section of the Division of Communicable Diseases, WHO, Geneva.

In March 1966, S. Faine (Sydney, Australia) requested that the Subcommittee consider a submission that no further attempts to define species or other taxa be undertaken until sufficient data, based on scientific and standardized investigations, had been accumulated to enable a stable classification to be formulated. The points raised in Faine’s submission have been discussed by correspondence and will be further considered at the Moscow meeting.

J. Parnas (Lublin, Poland) proposed that the generic name *Leptospira* be rejected in favor of *Inadaidia* in honor of Inada, who jointly discovered leptospires to be a cause of Weil's syndrome in 1915. His proposal was distributed to the Members and Associates and none of those who replied supported it (10 out of 12 Members; 13 out of 16 Associates; and 6 out of 7 other correspondents).

L. H. Turner, Secretary