A PROPOSED GROUP OF THE FAMILY
ENTEROBACTERIACEAE, THE ASAKUSA GROUP

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SUMMARY. The term "Asakusa group" is used as the designation for organisms in the family Enterobacteriaceae which are mannitol negative, hydrogen sulfide positive, and differ from all 10 "groups" listed by the International Subcommittee on Taxonomy of the Enterobacteriaceae. Twenty-eight characters are listed as useful in distinguishing members of the Asakusa group from related groups. Of 256 isolates studied, all but 7 were isolated from snakes, 5 from man, and 2 from seals. No genera or species were named.

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The family Enterobacteriaceae is composed of a number of delineated groups of bacteria, each of which consists of organisms that give similar biochemical reactions. In the report of the International Subcommittee on Taxonomy of the Enterobacteriaceae in 1962, 10 groups, Salmonella, Arizona, Citrobacter, Shigella, Escherichia, Klebsiella, Enterobacter, Hafnia, Serratia, and Proteus-Providencia were recognized within the family Enterobacteriaceae.

Since 1959, an unusual biotype of Enterobacteriaceae, mannitol negative, hydrogen sulfide positive type, was frequently isolated from reptiles in which occurrence and distribution of Salmonella and Arizona types were investigated. Sakazaki and Murata (1962) studied biochemical properties of 153 cultures of the biotype, and found that all of the cultures possessed similar biochemical properties. These workers considered that these organisms should be placed in a single biochemical group of the family Enterobacteriaceae and suggested the name "Asakusa" for the group—a place name where the original strain was isolated. Later, 103 cultures were added to those, totaling 256 cultures, which were studied biochemically and serologically, and in

greater detail, by the present author. Of the 256 cultures, 248 were isolated from snakes, 2 were from seals, and 5 were from the feces of patients affected with gastroenteritis.

It is the purpose of this paper to propose the new group, the Asakusa group of the family Enterobacteriaceae, and define it, although details of the results from the studies will be reported elsewhere.

From the results of the biochemical and serological studies of the 256 cultures, the Asakusa group is defined as follows:

The Asakusa group consists of motile rods conforming to the definition of the family Enterobacteriaceae and having the following biochemical characteristics:

Gas from glucose	+	Sorbitol (acid)	-
Lactose (acid)	-	Indol	usually +
Sucrose "	-	Methyl red	+
Maltose "	+	Voges-Proskauer	-
Trehalose "	+	Ammonium citrate	-
Mannitol "	-	Hydrogen sulfide	+
Dulcitol "	-	Urease	-
Salicin "	-	Gelatin liquefaction	-
Adonitol "	-	Growth in KCN medium	-
Inositol "	-	Phenylalanine deaminase	-
Rhamnose "	-	Sodium malonate	-
Raffinose "	-	Lysine decarboxylase	+
Arabinose "	-	Arginine dihydrolase	-
Xylose "	-	Ornithine decarboxylase	+

Although there are no significant serological relationships with other groups of the family, close O and H antigenic relationships exist within the group.

Members of this group are isolated largely from reptiles and occasionally from warm-blooded animals, including man.

The organisms of the group are closely related to the *Salmonella* and *Arizona* groups in reaction of hydrogen sulfide production, lysine decarboxylation, malonate utilization, urea decomposition, phenylalanine deamination, methyl red and Voges-Proskauer tests, and fermentation of lactose, sucrose, adonitol and salicin, but are distinguished from the *Salmonella* in their indol production, and mannitol-,

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arabinose-, xylose-, and trehalose-nonfermentable characteristics. They are differentiated from the Arizona group by which malonate and gelatin are utilized. They also resemble organisms of the Proteus group, since they are incapable of fermenting several carbohydrates, especially mannitol. However, they give negative reaction in phenylalanine deamination, urea decomposition, and gelatin liquefaction. In addition to these, in the 256 cultures examined, O and H antigens of the organisms of this group do not relate to any of those of the Salmonella and Arizona groups, nor to the Proteus group.

Most recently, King and Adler (1964) have reported a strain of a previously undescribed biotype of Enterobacteriaceae, and suggested the designation Bartholomew group in which to place this biotype. There is no doubt, however, that biochemical characteristics of the Bartholomew group described in their paper are of the Asakusa group.

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