SOME REMARKS ON THE CLASSIFICATION
OF MICROCOCCI

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SUMMARY. Sarcina lutea, S. flava and S. auriantica are synonyms of Micrococcus luteus. The genus Sarcina should include only the anaerobic species.

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At present, micrococci and staphylococci are classified in two ways: 1) in groups, 2) in separate species. The differentiation of these organisms into "groups" and "subgroups" was first used by Abd-El-Malek and Gibson (1948), and later by Hill (1959), Pohja (1960), Pike (1962), and Baird-Parker (1963). This way of classifying has at least two advantages: 1) methodically, a new and rapid way of differentiating a great amount of material into separate groups is introduced, 2) not being burdened by the so-called species concept, this classification ascertains which natural groups (biotypes) really exist within the genus Micrococcus.

If micrococci can be differentiated into subgroups, they can, in our opinion, be classified in species. The sole problem involved consists in determining which of the "subgroups" or "groups" corresponds to any present species or biotype. At present, the use of the basic taxonomic unit—the species—and of binomial nomenclature should not be abandoned.

Another topical question is the classification of new species within the genus Micrococcus. We have ascertained that, in the past 20 years, 25 new species of micrococci have been described which have not yet appeared in official classifications. It is questionable which of these new species are really new and which are not; some are certainly illegitimate. It will be necessary to compare those whose type cultures are available with the present species before publication in official guides; those species whose type cultures are not available should not be taken into account.

More attention should be concentrated on the relationships between the genera Micrococcus and Sarcina. Up to now the formation of packets has been used as a sole criterion for the differentiation of these two genera. We, and other workers, have shown that the packet formation is not a suitable criterion for the differentiation of the two genera as this is a variable property influenced above all by the consistency of the medium. In our paper (Kocur and Martinec, 1962) we suggested that the species Sarcina lutea, S. flava, and S. aurantiaca should be considered identical with Micrococcus luteus; the species Sarcina litoralis was also transferred to the genus Micrococcus. It was further recommended (Kocur and Martinec, 1963) to transfer the motile spore-forming organism, Sarcina ureae, to the genus Sporosarcina. With the exception of a questionable species, i.e. Sarcina hansenii, the genus Sarcina would therefore include only anaerobic species with a fermentative metabolism. This character seems to be more suitable than packet formation for the differentiation of the genus Sarcina from the genus Micrococcus. This view is supported by the fact that the type species of the genus Sarcina—Sarcina ventriculi—is an anaerobe. The genus Sarcina should therefore include only anaerobic species.

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