# CHARACTERISTICS OF THE BARTONELLAS

## Morphologische, Biologische und Serologische Eigenschaften der Bartonellen

Von Dr. Reinhard Wigand. Pp. viii+71. (Stuttgart: Georg Thieme Verlag, 1958.) 7.80 D.M.

THIS book is not a monograph on bartonellas, which, by the way, would be most welcome. It gives a detailed record of the author's own work on the subjects mentioned in the title.

Electron microscopical studies have mainly confirmed early observations. They have, however, made possible precise measurements of the various members of the group. (The reader should note a printing error: the flagella of *Bartonella bacilliformis* are not 20$\mu$ thick as stated on p. 23.) The cytochemical studies have shown that both *Haemobartonella muris* and *Eperythrozoon coccoides* contain ribonucleic and deoxyribonucleic acids. The conclusion concerning the structure of their outer layer is somewhat obscured by the fact that Wigand uses the term membrane loosely, and not in the modern sense, as opposed to bacterial wall. The study of the action of antibiotics is reported in detail and the tables giving the comparative sensitivity of various bartonellas to antibiotics are certainly useful. So far as infection with *H. muris* is concerned, the statement that a complete picture of infection is observed only in splenectomized mice is not valid. The work of Gledhill and Andrewes concerning the co-operative action of *Eperythrozoon* and of the virus of hepatitis could perhaps have been quoted in the discussion of the pathogenic activity of *Eperythrozoon*.

The demonstration by Wigand of a serological relationship between *H. muris* and *Eperythrozoon* is important. It was predictable since a typical *Eperythrozoon* phase has been recognized in *Haemobartonella canis* (which should have been mentioned in the book). This poses the problem of the 'round' form of *Bartonella bacilliformis* observed by Noguchi and which is interpreted by Wigand as the result of a degeneration. The bodies observed by Noguchi, however, are indistinguishable from typical *Eperythrozoon* and are not to be confused with the coccoid forms of involution so easily observed in bartonellas, or in any other bacteria. It is clear that if an *Eperythrozoon* phase exists in the life-cycle of the human *Bartonella*, the problem of its affinities would have to be reconsidered.

Wigand has not been able to detect serological relationships between *Eperythrozoon* of the mouse and *Anaplasma* of the bovines. It seems perfectly justifiable, however, to conclude, with Wigand, as was already done in 1931 by Lwoff and Vaucel, that the two organisms are related.

According to Wigand, *Bartonella* is a bacterium. *Haemobartonella*, however, is supposed to lack any of the typical features of bacteria. It is neither a virus nor a protozoon. For Wigand, they resemble the pleuropneumonia group of organisms. But these, being bacteria, certainly possess some features of the Schizomycetes group. If *Haemobartonella* and *Eperythrozoon* are pleuropneumonial-like organisms they should also possess bacterial characteristics. Otherwise, they would belong nowhere. Finally, the reader is puzzled by Wigand's statement that *Hæmobartonella* and *Eperythrozoon* are devoid of a membrane, of an internal structure and of cellular organization (p. 26). How these strange creatures, which, by the way, are extracellular parasites, manage to grow, to multiply true to type and to survive, is a mystery. The very existence of *Haemobartonella* and *Eperythrozoon* would, in my opinion, make it probable that, like all other organisms, they do have a cellular organization.

Despite the absence of index, the specialists on *Bartonella* and *Haemobartonella* will find in this book a number of useful technical, electron-microscopical, chemotherapeutical and serological data.

A. LWOFF

# COLORIMETRY IN BIOCHEMISTRY

## Colorimetric Analysis

By Noel L. Allport and Dr. J. W. Keyser. Vol. 1: Determinations of Clinical and Biochemical Significance. Second edition. Pp. xi+424. (London: Chapman and Hall, Ltd., 1957.) 50s. net.

COLORIMETRIC analyses, using photoelectric apparatus to measure the intensity of transmitted light, are nearly always superior to gravimetric or titrimetric methods in speed of assay and in the avoidance of the exercise of personal judgment in making the final readings. Moreover, the cleaning and maintenance of apparatus are usually simpler in the case of colorimetric methods. It is not surprising, therefore, that in clinical biochemical work colorimetric methods are often the methods of choice; their slight inferiority in accuracy, in some cases, being offset by their suitability for the performance of large numbers of routine assays.

In the volume under review Mr. N. L. Allport and Dr. J. W. Keyser have given us a collection of about one hundred colorimetric techniques, covering a much wider range than that usually needed in clinical work. This volume is an extension and revision of section three of the first edition, published in 1945, which dealt with analyses of clinical and biochemical significance. The number of analyses described has been increased about threefold. Among the additions specially likely to interest the clinical chemist, assays of adrenocortical steroids, bromsulphthalein, congo red, dextran, dinitro-orthocresol, Evans blue, inulin, protein-bound iodine, acid optimum phosphatase activity and urobilinogen should be noted.

As in the first edition, description and discussion of colour-measuring apparatus have not been included. The critical selection of material, valuable discussion of each method, and clarity of presentation which were striking features of the first edition have been fully retained.

The wide range of analyses covered adds greatly to the general interest of the book. The clinical chemist should find here many suggestions for additions to his established routine and for techniques which show improvements on the older methods.

Colorimetric methods cannot always be the methods of choice. This is recognized and indicated where necessary, as, for example, in the description of the assay of calcium in serum, where the well-established and straightforward titration of the precipitated calcium oxalate receives due recognition.

In the section dealing with the assay of carbon monoxide in blood, a good feature is the inclusion of the old, but simple and reliable, tannic acid technique. However, the titrimetric technique