INVESTIGATIONS INTO THE OCCURENCE AND CLASSIFICATION OF THE HAEMOGLOBINOPHILIC BACTERIA

Published @ 2017 Trieste Publishing Pty Ltd

ISBN 9780649143641

Investigations into the occurence and classification of the haemoglobinophilic bacteria by Martin Kristensen

Except for use in any review, the reproduction or utilisation of this work in whole or in part in any form by any electronic, mechanical or other means, now known or hereafter invented, including xerography, photocopying and recording, or in any information storage or retrieval system, is forbidden without the permission of the publisher, Trieste Publishing Pty Ltd, PO Box 1576 Collingwood, Victoria 3066 Australia.

All rights reserved.

Edited by Trieste Publishing Pty Ltd. Cover @ 2017

This book is sold subject to the condition that it shall not, by way of trade or otherwise, be lent, re-sold, hired out, or otherwise circulated without the publisher's prior consent in any form or binding or cover other than that in which it is published and without a similar condition including this condition being imposed on the subsequent purchaser.

www.triestepublishing.com

MARTIN KRISTENSEN

INVESTIGATIONS INTO THE OCCURENCE AND CLASSIFICATION OF THE HAEMOGLOBINOPHILIC BACTERIA



INVESTIGATIONS INTO THE OCCURRENCE AND CLASSIFICATION

OF THE

HAEMOGLOBINOPHILIC BACTERIA

BY

MARTIN KRISTENSEN

CHIEF OF DEPARTMENT AT THE STATE SERUM INSTITUTE COPENHAGEN



COPENHAGEN
LEVIN & MUNKSGAARD PUBLISHERS
MCMXXII

Denne Afhandling er af det lægevidenskabelige Fakultet antagen til offentlig at forsvares for den medicinske Doktorgrad.

Kabenhavn, den 27. Septhe, 1922.

C. Rasch, f. T. Dekanus.

QR 201 16 K7

Contents.

Preface	9
I. Historical Review.	
√Introduction (General considerations (13) — Orientating list of the Contents of the Review of the Literature (15)).	13
(Critical Views (17) - The first Reinvestigations (20)).	17
Account of the Occurrence of Pfeifier's Bacillus. (Résumé (20) — Interval between the Two Pandemics (24) — The Years Immediately Preceding the Pandemic 1918—20; "The Preliminary Epidemics" (30) — The Epidemic in Spain in May 1918 (31) — The Investigations in Pfeiffer's Institute (32) — Other Positive Findings Immediately after the Beginning of the Pandemic (33) — Increasing Prequency of Occurrence During the Course of the Pandemic (34) — Decreasing Frequency of Occurrence During the Decline of the Pandemic (35) — Can the Negative Findings be Explained on the Ground of Defective Technique? (35) — Proofs of Nonuniform Occurrence (36) — Examples of the Wide Distribution of Pfeiffer's Bacillus (36) — The Accessory Sinuses of the Nose (38) — Healthy Persons (38) — Other Diseases than Influenza (38) — The Occurrence in Influenza Pre-eminently in the Early Stages of the Disease (39) — Blood and Internal Organs (39) — Animals (40)).	20
The Occurrence of Pfeiffer's Bacillus in the Blood, Meninges etc.; Virulence (Pathogenicity for Animals (41) — Meningitis and Septico-Pyaemia in Man (42)).	40
Morphology	46
Biochemical Reactions (Indol Formation (48) — Fermentation Reactions (49)).	48
Serological Reactions. (Agglutination and Complement Fixation in Human and Animal Sera; The Serological Differences between Various Strains of Pfeiffer's Bacillus (51) — On the Constancy of the Serological Reactions (55)).	51

(Can the Various Strains of Pfeiffer's Bacillus be divided into Natural Groups? Are the Strains of Pfeiffer's Bacillus found in Healthy Persons and in other Diseases than Influenza Different from those found in Influenza?).	
Pteiffer's Bacillus and Influenza	58
THE AUTHOR'S INVESTIGATIONS.	
II. Investigations upon the Occurrence of Pfeiffer's Bacill	lus.
Introduction	67
them	68
1. Occurrence in Influenza	72
2. Occurrence in Whooping-cough	81
3. — Measles	81
4. — Tuberculosis	82
5. — Meningifis	83
6. — Healthy Persons	84
7. Occurrence in Animals	96
Review of all the Strains	96
III. Analysis of the Bacterial Group »Pfeiffer's Bacillus	«.
Introductory Remarks	98
On the Haemoglobinophilic Character of Pfeitier's Bacillus (Some Main Points from the Literature (101) — Author's Investigations: Conditions on Ordinary Agar and Ascitic Agar in Pure Culture and in the Presence of other Bacteria (103) — Dependence of the Medium on the Haemoglobin Concentration (110) — Experiments on Weaning from Haemoglobin (113) — Discussion (113)).	
The Symbiosis Phenomenon (Some Main Points from the Literature (115) — Author's Investigations: Technique Employed (120) — Discussion of Technique (121) — Symbiosis Phenomenon as "Distance Effect" (125) — Typical and Atypical	115

Pfeilfer's Bacilli (127) — Different Kinds of Bacteria as Growth-Promoting Microbes (131) — Can more than one Growth-Promoting Substance be Demonstrated? (134)).	
Growth on Blood Agar	197
Appearance of the Colonies	
Account of the Macroscopic Morphology	
Microscopic Marphology	
(The strongly developed Polymorphism (145) — Vain Attempt at a definite Morphological Classification (146) — The Spherical Bodies and their Characteristic Staining (147) — Morphology in a Fluid Medium. Motility? (150) — Connection between Macroscopic and Microscopic Morphology (150)).	
Relation to Oxygen	151
Relation to the Reaction of the Medium	152
Minimum Temperature for Growth	
Resistance against Heating, Drying and Keeping	158
Fermentation Tests	161
Investigation of Proteolytic Power	164
Indol Formation (Sharp Division into Indol-Producers and Non-Indol-Producers, Largely Independent of Long-Continued Cultivation and Wide Variations in the Constitution of the Medium).	
Agglutination	176
(General Technique; Investigation of the Accuracy of a Simple Nephelometric Method and Indication of the Limits of its Applicability (176) — Demonstration of Sharply-Defined Differences in Agglutination amongst Different Strains of Pf-iffer's Bacillus (181) — Systematic Examination of the Conditions Governing Agglutination (184) — Special Study of Strains from Influenzal Pneumonia (188) — Various Agglutinu Absorption Experiments (191) — Cerebro-spinal Strains (192) — Miscellany (192)).	
Complement Pixation	194
Summary of the Characters of Pfelfter's Bacilli (Enumeration of the various Characteristics (196) — Investigation of Correlation between Indol Formation and Agglutination (198) — Other Correlations (200) — "Mutations" (203)).	195
IV. Comparison of Pfeiffer's Bacillus with Other »Haemoglobinophilic Bacteria«.	
1. Haemolytic, Haemoglobinophilic Bacilli	205
2. Bordet's Whooping-cough Bacillus	209
3. Bacillus baemoglobinophilus canis	
Symbiosis Experiments as a Means of Classification	217
The Circumscribing and Grouping of Haemoglobinophilic Bacteria (Which Bacteria should be included? What Species are Known in this Group?).	218

V. Technique.

Author's Technique	. 225
Review of Literature on Nutritive Media etc	232
Conclusion	247
Résumé (English)	248
Résumé (Danish)	255
Literature	262
Notes on the Plates	271

I mmediately after the "Spanish illness" had arrived in Denmark in the beginning of July 1918, an investigation was set on foot at the State Serum Institute into the bacteriology of the disease.

As a collaborator in this work I succeeded in demonstrating PFEIFFER'S "Influenza Bacillus", few days after the beginning of the investigation in 5 of the patients from whom samples were taken. This finding directed the bacteriological investigations, which were undertaken under the direction of the Chief of the Department at that time, Dr. OLOF THOMSEN, to a large extent towards demonstrating Pfeiffer's bacillus in influenza and other diseases, as well as in healthy people.

I continued these investigations in the following years, for the first few months in collaboration with Dr. Thomsen and afterwards independently. The original object was only to obtain as comprehensive an idea as possible of the occurrence of the bacillus here in Denmark in the various phases of the pandemic and after it had ceased. But another question soon claimed my attention to a greater extent. It appeared that while the colonies of Pfeiffer's bacillus from influenza patients were always of very characteristic appearance in cultures and easy to distinguish from colonies of other species of bacteria and the microscopic picture did not usually display great differences, the conditions were more complex in the case of samples from healthy persons as colonies of haemoglobinophilic bacteria could vary considerably more, both in macroscopic and in microscopic appearance, making it difficult to judge where the boundary between Pfeiffer's bacillus and other bacteria ought to be placed.