

**ELEMENTS OF APPLIED  
MICROSCOPY: A TEXT-  
BOOK FOR BEGINNERS**

Published @ 2017 Trieste Publishing Pty Ltd

ISBN 9780649570942

Elements of Applied Microscopy: A Text-Book for Beginners by Charles-Edward Amory Winslow

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](http://www.triestepublishing.com)

**CHARLES-EDWARD AMORY WINSLOW**

**ELEMENTS OF APPLIED  
MICROSCOPY: A TEXT-  
BOOK FOR BEGINNERS**



ELEMENTS  
OF  
APPLIED MICROSCOPY.

*A TEXT-BOOK FOR BEGINNERS.*

BY

CHARLES-EDWARD AMORY WINSLOW,  
*Instructor in Industrial Microscopy and Sanitary Biology in the  
Massachusetts Institute of Technology.*



*FIRST EDITION.*

FIRST THOUSAND.

NEW YORK:  
JOHN WILEY & SONS.  
LONDON: CHAPMAN & HALL, LIMITED.  
1905.

**HARVARD UNIVERSITY**  
**SCHOOL OF MEDICINE AND PUBLIC HEALTH**  
**LIBRARY**

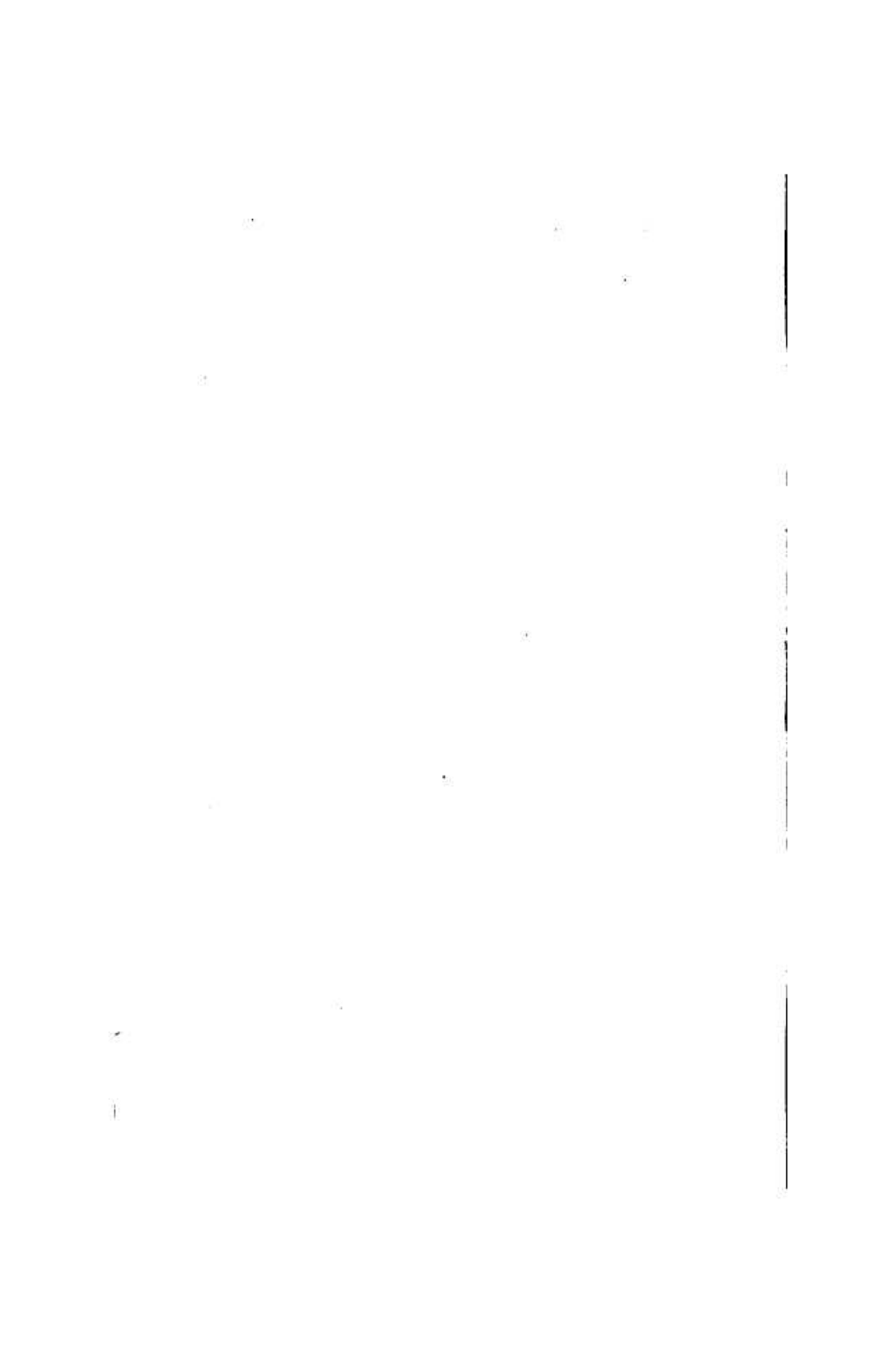
*Gift of Dr. James W. Stang*  
18 NOV 1953  
3.J.1905.1

Copyright, 1905,  
BY

CHARLES-EDWARD AMORY WINSLOW.

ROBERT DRUMMOND, PRINTER, NEW YORK.

DEDICATED  
BY THE AUTHOR  
To His Mother.





## INTRODUCTION.

---

THIS little book is intended for the teacher, and the beginner with the microscope, not for the specialist. It contains very few original data and treats no single subject with completeness.

Almost all the branches of technical microscopy have been already made the basis for monographs with which the present volume can in no way compete. On the other hand, there are many entertaining popular books on the microscope which treat it as a mere adjunct to the study of natural history. Neither type of work was suited for the use of a class in Industrial Microscopy which is offered to second-year Chemists and Biologists at the Massachusetts Institute of Technology. The object of this course is twofold—first, to give facility in the manipulation of the microscope; and second, to furnish an acquaintance with the scope of its practical application. As a text-book there was needed a brief and elementary treatise which should take up the fundamentals of the science and art of microscopy itself and make a rapid but wide survey of the principal fields in which the microscope has been applied to practical

▼

affairs. No such elementary but comprehensive work exists in English among the numerous able treatises upon special branches of the subject. The present volume is therefore the outgrowth of a pedagogic need. The book is necessarily incomplete from the standpoint of the expert in any of the branches which it treats, but if it conveys to the student's mind such an idea of the possible applications of the microscope in varied fields as shall stimulate him eventually to the further exploration of some one of them, it will have served its purpose.

In the preparation of this volume, the authorities quoted in connection with the various chapters have been freely drawn upon. The author further desires to express his grateful obligation, to Dr. P. G. Stiles for the preparation of original drawings; and for advice and assistance in regard to various portions of the manuscript to Professor W. T. Sedgwick, Professor Mary A. Willcox, Professor H. M. Goodwin, Professor F. J. Moore, Professor C. H. Warren, Dr. C. C. Simmons, Mr. A. E. Leach, Mr. A. G. Woodman, Dr. E. L. Walker, and Miss A. F. Rogers.

Acknowledgments are due to the authors and publishers of the following books for figures which have either been copied directly or redrawn:

- DESCHANEL, A. P., and EVERETT, J. D. *Elementary Treatise on Natural Philosophy*. New York, Appleton & Co., 1894.  
HAGER, H., and MEZ, C. *Das Mikroskop und seine Anwendung*. Berlin, J. Springer, 1899.  
CARPENTER, W. B., and DALLINGER, W. H. *The Microscope and its Revelations*. London, J. & A. Churchill, 1891.  
GAGE, S. H. *The Microscope*. Ithaca, Comstock Publishing Co., 1904.

- BAUSCH, E. Use and Care of the Microscope. Rochester, Bausch & Lomb Optical Co., 1902.
- SCHIMPER, A. F. W. Anleitung zur mikroskopischen Untersuchung der vegetabilischen Nahrungs- und Genussmittel. Jena, G. Fischer, 1900.
- HASSACK, C. Wodurch unterscheiden sich die Textilfasern? LEIPZIG-GOHLIS, A. Kleipzig, 1900.
- HERZBERG, W. Papierprüfung. Berlin, J. Springer, 1902.
- ULTZMAN, R., und HOFMANN, K. B. Atlas der physiologischen und pathologischen Harnsedimente. Wien, Braumüller, 1872.
- SLATER, C., and SPITTA, E. J. An Atlas of Bacteriology. London and Philadelphia, J. B. Lippincott Co., 1898.
- WESBROOK, F. F. Report of the Minnesota State Board of Health, 1899-1900.
- WHIPPLE, G. C. The Microscopy of Drinking-water. New York, John Wiley & Sons, 1899.
- GALTON, F. Finger-print Directories. London, Macmillan & Co., 1895.
- HOWELL, W. H. An American Text-book of Physiology. Philadelphia and London, W. B. Saunders & Co., 1901.
- FRAZER, P. Bibliotics. Philadelphia, J. B. Lippincott Co., 1901.
- LEHMANN, O. Die Krystallanalyse. Leipzig, W. Engelmann, 1891.
- CLARK, C. H. Practical Methods in Microscopy. Boston, D. C. Heath & Co., 1894.
- LUQUER, L. M. Minerals in Rock Sections. New York, D. Van Nostrand Co., 1898.
- SAUVEUR, A. The Constitution of Steel considered as an Alloy of Iron and Carbon. Technology Quarterly, 1898, p. 78.