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R. K. Melliish

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AN INTRODUCTION TO
THE MATHEMATICS OF
MAP PROJECTIONS

BY

R. K. MELLUISH, M.A.

Late Scholar of Gonville and Caius College, Cambridge. Assistant Master at Rossall School



CAMBRIDGE
AT THE UNIVERSITY PRESS

1931

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UNIVERSITY PRESS

University Printing House, Cambridge CB2 8BS, United Kingdom

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www.cambridge.org

Information on this title: www.cambridge.org/9781107658486

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First published 1931

First paperback edition 2014

A catalogue record for this publication is available from the British Library

ISBN 978-1-107-65848-6 Paperback

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PREFACE

This book is the outcome of a mathematical essay on “Maps” written at Cambridge in 1922, and is an attempt to supply the need, which I then discovered, for a book dealing comprehensively with the theories that underlie their construction. It is therefore a book for a student of the mathematical side of geography; and a fair knowledge of the Calculus is all he will need to enable him to fill in for himself the many details of the work which have, for the sake of brevity, been omitted from the text.

I have attempted, in the earlier chapters, first of all to trace, as far as possible, the history of the projections concerned; this is followed by an account of the general theory, from which results are then deduced in the special cases that arise. In this way I deal with the properties of the four main classes of projections. Then follows a chapter on the theory of the Indicatrix, and the method of comparing one projection with another; next the question of finite measurements, perhaps the most important of all from a practical point of view; then a discussion of the best projection for a given country, and finally the general problem of conformal representation of which the complete solution has yet to be effected.

Though I have checked as well as I can the many expansions that are given, I am fully aware that some errors, I hope only slight, may have crept in; and I should therefore be pleased to receive corrections from any reader who may have discovered one.

I am indebted for many valuable suggestions to Mr. A. R. Hinks, F.R.S., Secretary of the Royal Geographical Society, who kindly lent me for reference the works by Germain and Tissot which appear in the list below. A great source of further help, especially in the work on “Minimum Error,” was Mr A. E. Young’s book, published as No. I of the Technical Series by the same Society.

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The following is a complete list of the authors and works consulted, and I trust that, where necessary, adequate acknowledgment to them has been made in the text.

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Oct. 1931