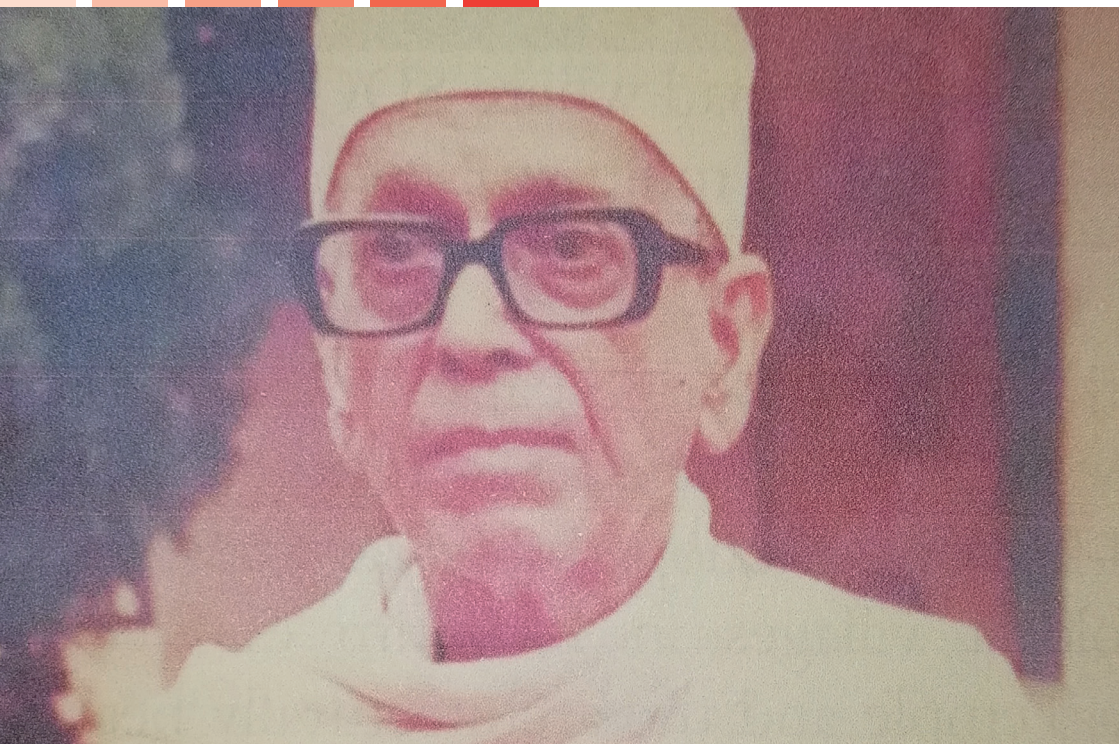


S.D. Chatterjee – A Scientist's Journey from Tradition to Modernity



Rajinder Singh

Suprakash C. Roy

Wissenschaftsgeschichte / History of Science

Rajinder Singh, Suprakash C. Roy

**S.D. Chatterjee –
A Scientist's Journey from Tradition to Modernity**

Shaker Verlag
Düren 2022

Bibliographic information published by the Deutsche Nationalbibliothek

The Deutsche Nationalbibliothek lists this publication in the Deutsche Nationalbibliografie; detailed bibliographic data are available in the Internet at <http://dnb.d-nb.de>.

Copyright Shaker Verlag 2022

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, without the prior permission of the publishers.

Printed in Germany.

ISBN 978-3-8440-8765-9

ISSN 2198-8552

Shaker Verlag GmbH • Am Langen Graben 15a • 52353 Düren

Phone: 0049/2421/99011-0 • Telefax: 0049/2421/99011-9

Internet: www.shaker.de • e-mail: info@shaker.de

Content

<i>Preface</i>	<i>v</i>
<i>Foreword.....</i>	<i>vii</i>
About the authors	xi
<i>Introduction.....</i>	<i>1</i>
<i>Chapter 1 - Some Aspects of S.D. Chatterjee's Life.....</i>	<i>9</i>
Early education.....	11
College Education.....	11
SDC at the Bose Institute	13
SDC in Canada and the USA – Interaction with William F.G. Swann.....	15
Joining the University of Calcutta	17
SDC at Jadavpur University	20
SDC and IACS	25
BARC and Helium Recovery Laboratory.....	26
S.D. Chatterjee Research Foundation	26
Philanthropist SDC	27
PhD Students Guided	30
Honours and awards	31
<i>Chapter 2 - Nuclear Reaction and Spontaneous Fission.....</i>	<i>39</i>
Radioactive compounds, exchange reaction and separation of isotope cobalt-60	39
Separating radioactive isotope of cobalt	40
Nuclear disintegration	42
Discovery of ‘Ghost’ element by E. Fermi and O. Moblic ...	42
SDC - Spontaneous fission in uranium and in search of a new element.....	43

Spontaneous fission of uranium	44
Disintegration of boron and bromine isomers.....	49
Study of silicon isotopes.....	51
Chapter 3 - Magnetic Susceptibility and Electrets	57
SDC and magnetic properties of liquids	57
Study of electrets	59
Photo-magnetic effect and light-absorption in thick films of polycrystalline naphthalene and sulphur	70
Chapter 4 – Continuation of J.C. Bose’s Tradition – Semi-Conductors and More	77
1. Induced conductivity and metal contacts.....	78
2. Determination of the activation energy of surface states by EFIC method.....	79
3. Different types of zinc oxide and rectified properties.....	80
4. “Soft breakdown of Zener diode”	81
Measuring magnetostriction of ferrite and theory of magnetic crescograph	81
Chapter 5 - SDC and Cosmic Rays Investigations	85
A.H. Compton’s stay in Punjab and cosmic rays experiments	85
1. Thermal neutrons in the atmosphere and magnetic storm .	87
2. Solar activity and intensity of cosmic rays.....	88
3. Long-range secondary electrons in cosmic rays	89
4. Ionising power of cosmic rays at sea-level	90
5. Cosmic rays and low energy nuclear bursts	90
6. Cosmic ray “stars” at high altitude.....	93
7. Diurnal cosmic ray intensity variation of meson	96
8. Correlation between ozone and comic ray intensity change .	96
Chapter 6 - Study of Hot Springs, Rainwater and More.....	103

Radioactivity research in India – Starting point	103
Study of hot springs in independent India.....	104
Start by S.D. Chatterjee.....	104
Deuterium in Indian thermal springs.....	110
Study of radium in rivers and tobacco	112
Radioactivity in rainwater and atmosphere over Calcutta...	114
Radiocarbon dating laboratory	117
<i>Chapter 7 - General Investigations – Ionosphere, Lightning Stroke, Night Glow, Galvanometer and Geiger Müller Counter</i>	<i>123</i>
1. A new method for determining ionospheric zenith.....	123
2. Lightning strokes	124
3. SDC- Study of night glow observation	125
4. Near infrared absorption – inorganic substances	126
Study of moving coil galvanometer	127
SDC and Geiger-Müller Counter investigation.....	128
Proportional counter and thermionically emitted electrons	130
<i>Chapter 8 - Concluding Remarks</i>	<i>137</i>
<i>S.D. Chatterjee – List of Publications</i>	<i>141</i>
Scientific papers	141
General articles	147
<i>Bibliography.....</i>	<i>149</i>
<i>Index.....</i>	<i>175</i>