

**AN INDIAN PIONEER OF  
SCIENCE. THE  
LIFE AND WORK OF  
SIR JAGADIS C. BOSE**

Published @ 2017 Trieste Publishing Pty Ltd

ISBN 9780649633005

An Indian Pioneer of Science. The Life and Work of Sir Jagadis C. Bose by Patrick Geddes

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Yours Sincerely  
J.C. Bose

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AN INDIAN PIONEER OF SCIENCE

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THE LIFE AND WORK  
OF  
SIR JAGADIS C. BOSE  
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WITH PORTRAITS  
AND  
ILLUSTRATIONS

LONGMANS, GREEN, AND CO.  
39 PATERNOSTER ROW, LONDON, E.C. 4  
FOURTH AVENUE & 30TH STREET, NEW YORK  
BOMBAY, CALCUTTA, AND MADRAS

1920

## PREFACE

I AM asked whether the title of this book means especially a pioneer in science, who happens to be an Indian, or a pioneer of science in and for India. The answer is—Both. For on one hand Bose is the first Indian of modern times who has done distinguished work in science, and his life-story is thus at once of interest to his scientific contemporaries in other countries and of encouragement and impulse to his countrymen. But it will also be seen, in the general world of science, independent of race, nationality and language, which looks only to positive results, that here is much of pioneering work, and this upon levels rarely attained, with intercrossing tracks still commonly held and treated as distinct—in physics, in physiology, both vegetable and animal, and even in psychology. Pioneering too in all these fields, not in virtue of mere variety of interests, of mental versatility, and of inventive faculty of the rarest kind, though all these are present, but also as guided, inspired, even impassioned, by an endowment more than usually deep and strong of that faith in cosmic order and unity which is the fundamental concept of each and all the sciences. So it has come to pass that we have in this single and long solitary worker 'a mind working in long sweeps—and attracted alike by gulfs which separate, and by borderlands which unite,' and successful to a high and rare degree in such high intellectual adventures. Hence his contributions are from their very outset towards the unification of whole groups of phenomena hitherto explored separately. But here is not



simply a physicist of fine experimental skill, and of full subtlety, but also a naturalist of the keenest interest in life-processes and life-movements, and these among the most perplexing and intricate. His special and characteristic lines of pioneering have thereby arisen. With this dual outlook and equipment, as physicist he brings to the physiologist his intellectual and experimental resources with fruitful results to knowledge, and henceforth with transformation of laboratories of physiology and their standards of observation and research by the refinement of his new methods and appliances. Rarer still, he has not only divined in matter, as sometimes did physicists before him, 'the promise and potency of life,' but has experimentally demonstrated, as in seeming inert metals, not only a strangely life-like passivity to environment, but a yet more 'life-like reactivity to it as well.

Here, then, is offered some account of pioneerings in discovery, and of the type and personality of the pioneer also. In science we need more and more of both, in the East no doubt, but in the West likewise. Hence the present outline of main scientific results and biographic sketch together.

And though alike in scientific summary and in biography the less the writer obtrudes himself the better, a few words of personal explanation are permissible, even customary in any preface. Though primarily of biological interests and trainings, I felt in student days the wonder and call of the physical sciences, and realised something of their bearings on physiology. As for some forty years a teacher and investigator in botany and more of physiological and evolutionary interests than of traditional ones, I have constantly felt my limitations in vegetable physiology in general, and with regard to plant-movements in particular; and thus to some extent realised the interest of Bose's work when I first met him nearly twenty years ago, and when later I read a volume he sent me. But in the press of other work and without actual acquaintance with his

new and strange devices and apparatus, the impression gradually faded. And only in the last two or three years, in Calcutta and at Darjeeling, have I gradually come to know more and more of Bose and of his researches, of his Institute, and of its aims.

All the sciences and all their scientific men are social products, and must be studied as such in the sociological way. This book, though originally planned in its simplest and most direct aspect and purpose—as an exposition of a life-work—is thus something of a sociological study also; and as such, one of its purposes—that of incentive to encouragement and emancipation of the student, of science in general, and in India in particular—may be more clear. For here is, at any rate, no conventional rhapsody on a 'genius,' but an endeavour to see what may be the conditions favourable to life and conducive to full mental stature and productivity; and what the adverse conditions which may arrest, yet may also provoke to, their surmounting. And it is this latter which I wished to make specially clear from the study of Bose's life, so that others also may be encouraged to face their difficulties, and to overcome them as far as may be, towards something greater than merely individual end.

Enough then of preface. Any dedication should be to those in memory or still with us, who as we shall find have best helped the hero of this tale upon his life's adventure. Nor should we forget his old teachers, his friends and fellow-workers in science, nor yet his assistants and pupils, by whom his work has also henceforth increasingly to be continued; nor that active youth of the Indian Universities to whom it is so largely addressed.

P. G.

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