

**A  
Compilation  
of  
Research Contributions.**

**A HUMBLE TRIBUTE**

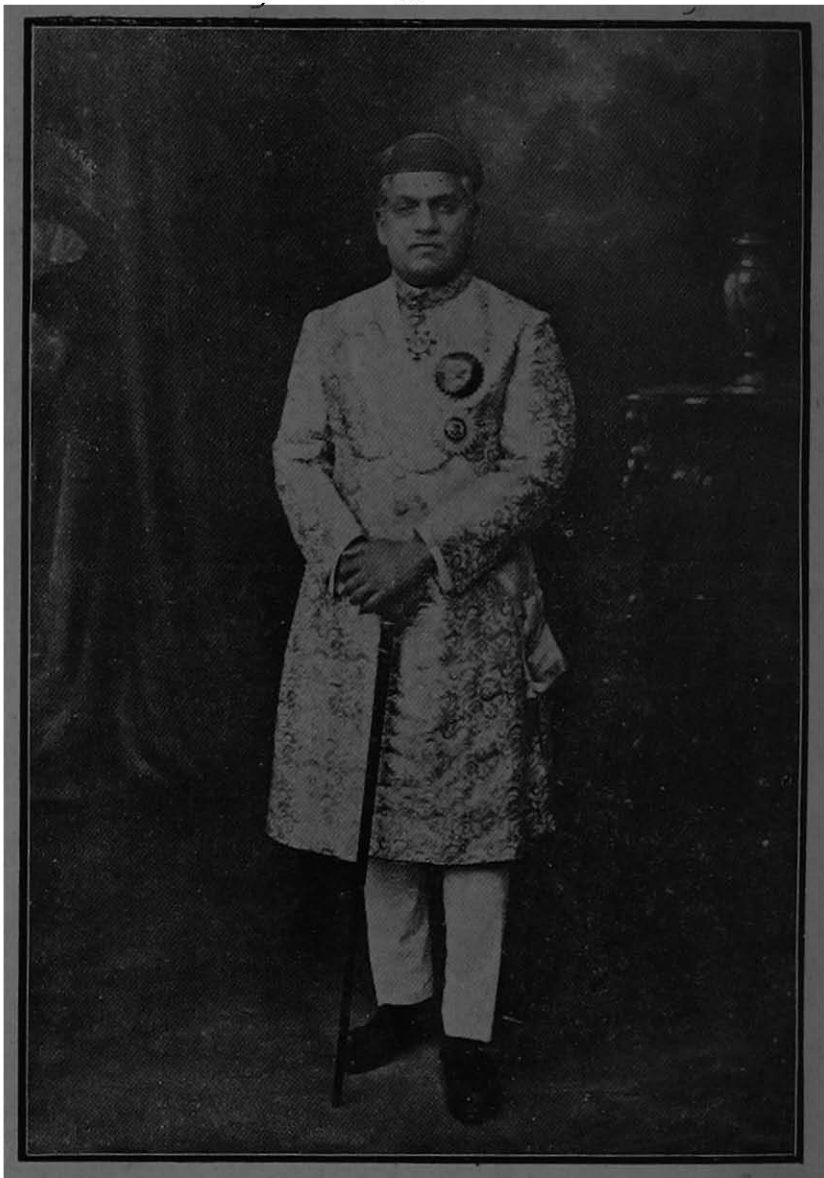
**TO**

**HIS HIGHNESS THE MAHARAJA SIR SAYAJIRAO GAEKWAR III  
Sena Khaskhel, Samsher Bahadur. G. C. S. I., G. C. I. E., LL. D. ETC.**

**In Commemoration of the  
DIAMOND JUBILEE CELEBRATIONS.**

**FROM**

**The Staff and the Students of the  
Science Departments, Baroda College.**



HIS HIGHNESS THE MAHARAJA SIR SAYAJIRAO GAEKWAR III  
Sena Khaskhel, Samsher Bahadur. G. C. S. I., O. C. I. E., LL. D. ETC.

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## FOREWORD.

This volume consists of reprints of research papers published by members of the science departments of the College. They are collected from various scientific journals and represent original work done alone or in collaboration with students and other workers. Some of this work was done in laboratories in Europe but the greater portion of it was done in the Chemistry laboratories of the College under the guidance of Dr. K. G. Naik. Starting in a modest manner with limited facilities after his return with a D. Sc. degree from Europe in 1922, Dr. Naik has built up a strong school of research, and the output, both in quantity and quality, would be a credit to any institution. Many of his students as a result of the research work they did here, now occupy responsible positions in university colleges, technical institutes and factories.

The authors desired that these papers should be collected in one volume, for they feel that this record of their work may be regarded as a fitting tribute to His Highness the Maharaja Sahib whose constant encouragement of all educational effort has alone made such work possible.

Now that the opening of the Jubilee Science Institute gives far greater facilities for scientific work than the College has hitherto possessed it will be the aim of all our science men to make the utmost use of the opportunities offered, and to ensure that the delicate plant of research will flourish and become a vigorous tree.

Baroda, 30th Dec. 1935.

**S. G. BURROW,**  
Principal, Baroda College.

## INTRODUCTION.

The object in compiling the Research work done in the Science Departments was to present to our Ruler His Highness Sir Sayajirao Gaekwar III, Maharaja of Baroda, a small brochure containing the papers which are already published in the recognised Journals of Europe, America and India, as a humble tribute on the occasion of His Highness's Diamond Jubilee and the opening of the Sayaji Jubilee Institute. The papers embodied comprise the research work of the members of the staff either by themselves or in collaboration with their co-workers or students.

When the undersigned joined the Baroda State service in 1918, the Science Departments had scarcely enough accommodations and fittings for adequate full grade teaching. But under the sympathetic and fostering care of His Highness's Government, more accommodation and better fittings were soon coming forth. The struggles to do research work really began in 1922, after the return of the undersigned from Europe. Since then quite a number of students took their M. Sc. degree by Research. Of these, one got the Moos Medal and two got the R. R. Gold Medal, for the best research work in chemistry in their respective years. Nine out of the nineteen chemistry students who got their M. Sc., went to Europe at their own expense, and got their Doctorates, Ph. D. or D. Sc. degrees of London, Paris, Leeds, Berlin, and have done work which has been well spoken of by the leading chemists in Europe and America. Four of these young men are in the Baroda State service and are actively engaged in research. The other five are in the staff of other Colleges and the University of Bombay. The research work done by the staff of the Physics Department deals with problems in difficult subjects like, spectroscopy, ultra-short waves and atomic physics, for which degrees of M. Sc. and Ph. D. (London) have been conferred. Unfortunately the Head of the Department of Biology is ill and is in hospital. The



H. E. Sir V. T. Krishnamachari,  
Dewan Saheb. BARODA STATE.