Although enterochromaffin cells have attracted the attention of investigators for almost a century there is much about these cells that continues to be intriguing and calls for investigation. The majority of recent investigations on the subject deal predominantly with histochemistry. The recognition of the probable association of these cells with 5-hydroxytryptamine has renewed interest in them. However, a study of the literature shows that apart from histochemistry there is much about these cells that is still obscure and deserves investigation. Firstly, the prenatal development of these cells in the human gastro-intestinal tract has been inadequately studied and inferences have hitherto been drawn mainly from work on animals. Secondly, there is surprisingly little definite information on the distribution of these cells in the human gastro-intestinal tract. Thirdly, the relationship between the so-called 'argyrophile' and 'argentaffin' cells is far from being completely understood. The elucidation of this relationship acquired importance from the recognition of the fact that some carcinoids may contain only argyrophile cells.

It has therefore been considered desirable to reinvestigate
the enterochromaffin cells from an embryological and morphological standpoint. The findings of these investigations are presented and discussed in this thesis. During the course of these investigations it has been found necessary to modify some well known staining procedures and to develop some new ones. These methods, and special techniques for quantitative estimation of the enterochromaffin cells are also presented as part of this thesis.

To make for continuity, and in order to avoid numerous back references in dealing with a number of more or less independent sections, the relevant literature, methods, observations and discussion pertaining to a particular aspect of the study are grouped together in one chapter.

This series of studies on enterochromaffin cells were begun in October 1961 at the Anatomy School, University of Cambridge. Professor J.D. Boyd suggested the investigation. I am greatly indebted to him for his guidance, for placing valuable material at my disposal, for constant encouragement and for numerous acts of kindness during my one year stay at Cambridge as a fellow of the World Health Organisation.

The investigations were continued for a short while at the department of Anatomy, Medical College, Amritsar, and later at the department of Anatomy, Medical College, Rohtak. Both at Amritsar and at Rohtak I have had the good fortune of having inspiring guidance and encouragement from Principal Indarjit Dewan. It was only his zeal that made it possible for a full fledged research
laboratory to be set up from scratch at Rohtak, in a couple of months; and he has spared no time nor effort to procure all necessary equipment. My decision to submit this work for the Ph.D degree of the Punjab University is largely due to his initiative and encouragement.

The sections dealing with prenatal development, the alleged presence of non-argyrophile cells, Bodian silver impregnation and ultrastructure method were completed at Cambridge. The material for the section on distribution of enterochromaffin cells was prepared at Cambridge but was studied in detail at Rohtak. The remaining sections represent work done at Rohtak.