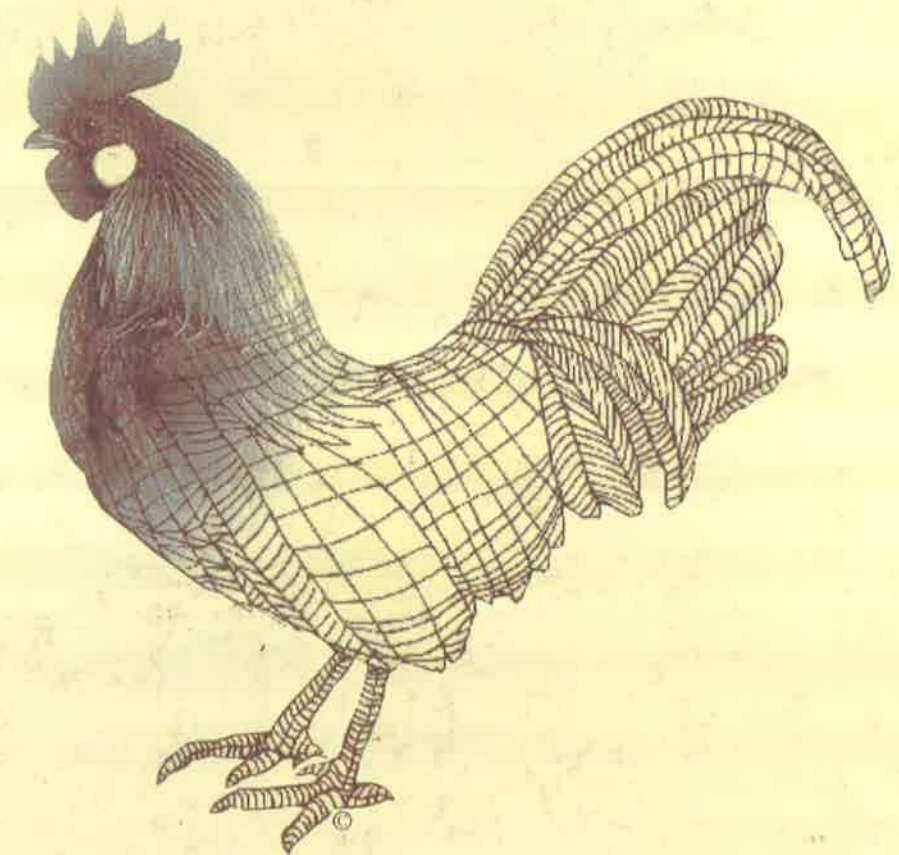


Poultry Products Processing

An Industry Guide



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Shai Barbut

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Exclusively distributed by:

Researchco Book Centre
25-B/2, New Rohtak Road,
Near Liberty Cinema
New Delhi-110 005

CRC PRESS

www.crcpress.com

TX609

ISBN 1-58716-060-9



9 781587 160608

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CRC PRESS

Boca Raton London New York Washington, D.C.

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THIS book provides comprehensive coverage of the modern poultry processing industry for people currently working in the field and students or newcomers wishing to learn about this rapidly developing industry. The book covers all areas of modern further processing, starting with catching and hauling poultry, the operation of a primary processing plant, inspection, grading, meat processing (including chapters on equipment, formulations, preservation, and breaded products), poultry meat microbiology, sanitation, HACCP (including a detailed description of new guidelines for raw, cooked and breaded products), reviews of poultry meat color (including a trouble shooting guide), flavor, sensory, functional properties and by-products. In addition, there is a chapter on basic avian anatomy and muscle biology, to assist the reader in understanding the fundamental aspects of meat quality and processing.

The goal of this book is to provide a thorough review of the world poultry industry today. Coverage includes the major poultry meat producing species, chicken and turkey, and also duck, geese, pigeon and ratite meat. There are numerous cross-references and a list of additional reading at the end of each chapter. New trends, such as machine vision for automated grading, are discussed in order to help the reader understand the basis for past and future development.

It is hoped that this book will provide a valuable resource for personnel working in the dynamic area of further processing, including management, quality control, and sanitation personnel, food technologists, meat specialists, ingredient and equipment suppliers, as well as students and others new to the field.

I would like to thank a number of individuals who assisted me during the process of writing the book. First, to my friend and colleague, Howard Swatland, for his continuous support and encouragement to write the book. I would also like to thank the people who reviewed parts of the book and provided valuable comments: Larry Binning, Wayne Brightwell, Valerie Davidson, Ian Duncan, Chris Findlay, Carolyn Hamilton, Ed Halford, Chris Haworth, Theo Hoen, Walter Knecht, Mohan Raj, Robert Rust, John Summers, Uwe Thode, Bethany Uttaro, and Diane Wood.

I would like to make special mention of Kim Rawson whose continuous help in entering data, illustrations, revisions, and editing has contributed so much to the production of the book. I would like to thank Alex Galvez for providing the front cover artwork, Ori and Gal Barbut for illustration work and the editors at the Technomic Publishing Company for their support and guidance.

Overall, the development of the poultry processing area has been a team effort involving many talented individuals. It would be impossible to mention them all here, but one of them is my former advisor at the University of Wisconsin, the late Arthur J. Maurer, whose enthusiasm and guidance were invaluable to the development of my career.

If you have any comments/suggestions, I would appreciate hearing from you. You can contact me at my home page—<http://surf.to/poultry>.

Poultry Meat Processing and Product Technology

INTRODUCTION

POULTRY meat is consumed all around the world and, over the last few decades, has increased in popularity in many countries. Among the reasons for this increased consumption are the relatively low costs of production, the rapid growth rate of poultry, the high nutritional value of the meat and the introduction of many new further processed products. Overall, the poultry industry has changed dramatically over the past 50 years. In the early 1900s, most poultry in the western world was produced in small flocks mainly to supply eggs to support small farm units, and the eggs and live birds' by-product of the egg enterprise were sold live in local markets. Today, the poultry industry is highly integrated and managed by a number of large corporations. Computers are used to formulate diets (e.g., least cost feed formulations), forecast market trends, control meat processing equipment, and lately, also to operate machine vision used for automatic inspection and grading. The Internet and E-commerce are starting to play a major role in marketing. For example, in the summer of 2000, some of the major North American meat processors created on-line business-to-business marketing for poultry meat.

In the early 1900s, the same chicken breed was used for both meat and egg production, with little or no selection. Over the years, the poultry industry has grown and specialized in meat production and egg production breeds, as will be discussed later in this chapter. In addition, farmers have started to specialize in certain aspects of raising poultry and, today, it is common to find operations specializing in only one phase of the growing stage (e.g., breeding, hatching or meat production). Modern growing operations are usually fairly large and house a few hundred thousand to a few million birds at one location. Such operations require precise management control and must run efficiently in order to be profitable. Vertical integration of poultry operations has been another major change in the structure of the poultry industry. Such an integration usually starts with the hatchery, moves through to the growing operation, which includes the feed mill, and moves to the processing plant. This helps to streamline the operation and makes production more cost effective

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