SUGAR CONFECTIONERY MANUFACTURE

Edited by E. B. Jackson

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Sugar Confectionery Manufacture

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Preface

This book is written for food scientists and technologists in the sugar confectionery manufacturing industry, and will also serve as a useful source of reference for ingredient suppliers and equipment manufacturers and those working in academic and research institutions. It complements the book *Industrial Chocolate Manufacture and Use*, edited by S.T. Beckett (Blackie, 1988). The authors have been carefully chosen and are recognised as experts in their subjects. They are from both manufacturing industry and academic research, and have been working in the field of sugar confectionery for many years. I would like to thank them for the care that they have taken to provide a varied and instructive compilation of chapters. I also wish to thank Cerestar UK Ltd for their help and support, my wife and family for their forbearance during preparation of the manuscript, and the publishers for giving me the opportunity to edit this book.

EBJ

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Contributors

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Barry Beacham was educated at King Edward's High School, Birmingham, and Birmingham College of Further Education where he studied chemistry. In 1948 he commenced a 5 year apprenticeship in the Quality Control Laboratory at Cadbury Bros Ltd. He joined Beecham Foods at Brentford in 1956 working in the Product Development Department on Murray Confectionery products. In 1965 he moved to become Chief Chemist of W.S. Shuttleworth Ltd. In 1972 he joined Givaudan Flavours as Manager of the Technical Centre at Mitcham, responsible for application, creation, legislation and health and safety. At present he is Technical Controller of Givaudan Flavours at Whyteleafe, responsible for the growing areas of food legislation, labelling and health and safety. He represents Givaudan on the Technical Committee of the British Essence Manufacturers Association (BEMA) and is a member of the Institute of Food Technology (Chicago), the Institute of Food Science and Technology (UK), the Institute of Packaging, and the Royal Society of Health.

J. Beacham *George Payne plc 5 Percy Road, Mitcham Junction, Surrey CR4 4JW*
Jayne Beacham started her career in food technology in 1976 when she joined the Food Research Association at Leatherhead. For seven years her work involved research into the properties and applications of raw materials in a variety of areas including oils and fats, general food analysis and confectionery. Her work included the development of new products for the UK and overseas clients and as a secondary role, researching specific client problem areas and advising accordingly in a 'trouble-shooting' capacity. Following one year at Tunnel Refineries Ltd setting up confectionery application facilities, Jayne became the Product Development Technologist with George Payne and Co. Ltd in 1983. Her duties extended to the improvement of existing products, including the application of new raw materials with emphasis on both quality and cost aspects.

E.T. Best, MFC, C.Chem., FRSC, FIFST *Nestlé-Rowntree plc, PO Box 204, York Y01 1XY*
Eric Best started work in the colour, fibre, frozen, pharmaceutical and grocery food manufacturing areas before becoming Senior Scientist in confectionery. Roles included Research and Development Manager, Chief Confectioner, and Technical Services Manager at various locations throughout Europe. He achieved one of the first HNDs in Food Technology. Part-time education continued and he became an Honours Chemistry Graduate and was later awarded the fiirst Masters degree in Food Control. On the way, he also gained a Graduate Diploma in Food Science (Credit) and was a pupil on the Confectioners Diploma course at Solingen, West Germany. He has served on innumerable European trade, administrative, legislative, research and professional councils and committees.

I.M. Billcliff *Thorntons Ltd, Derwent Street, Belper, Derbyshire DE5 1WP*
Ian Billcliff is presently Technical Manager of Thorntons plc. His career started in the Quality Control laboratories of Glaxo plc, and he was mainly concerned with pharmaceutical analysis until he entered the confectionery industry in 1971 as Works Chemist with Hall Bros. (Whitfield) Ltd. He became Chief Chemist with Smith Kendon Ltd (subsequently Callard & Bowser Group) in 1976, before taking up his present position in 1985. He is a Charted Chemist and Member of the Royal Society of Chemistry, and obtained a Diploma in Management Studies from Manchester Polytechnic in 1975. At the time of publication he is Secretary of the Food & Drink Sector Committee of the British Quality Association and also serves on the Legislative Standards Committee of the Biscuit, Cake, Chocolate and Confectionery Alliance.

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David Bullock is Laboratory Services Manager for Thorntons plc. He joined the Company in

1966 as Quality Assurance Manager and installed their first laboratories. Previously, he was Works Chemist for Diversey (UK) Ltd having started his career as an assistant analyst with Boots Pure Drug Co. Ltd. He was educated at Swanwick Hall Grammer School, and Nottingham and District Technical College, where he studied Chemistry and Advanced Analytical Techniques. He is a Licentiate of the Royal Society of Chemistry and a Member of the Institute of Food Science and Technology. He is a Committee member of the Confectionery Panel of the Leatherhead Food Research Association and has served on the Scientific Committee and the Legislative Standards Committee of the Biscuit, Cake, Chocolate and Confectionery Alliance.

C.S. Cummings *Hall Bros (Whitefield) Ltd, Morris Street, Dummers Lane, Radcliffe, Manchester M26 9QT*
Colin Cummings has been New Products Development Manager for Hall Brothers Limited (an affiliate of the Warner Lambert Company) since 1980. His responsibilities include product regulatory compliance for all markets and product registrations. For the previous fourteen years he was Quality Assurance Manager for the same company, including a period as Production Manager. His earlier confectionery experience was with the Barker & Dobson Group and in the starch and glucose industry with CPC Ltd (now Cerestar). He gained food manufacturing experience with James Keiller & Sons (Crosse & Blackwell/Nestlé) and food and drug analytical experience with a Public Analyst.

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Ralph Early qualified as a Dairy Technologist at Seale-Hayne Agricultural College and subsequently obtained a BA (Science and Technology) degree from the Open University. Prior to joining Dairy Crest Foods in 1980, he gained experience in cheese, yogurt and chocolate crumb manufacture. He is currently Project Manager responsible for Dairy Crest Food industrial product development. He has delivered a number of lectures on various aspects of dairy technology, and in particular, recombination technology with which he has much experience. He also holds a patent for a cream powder. A member of the Institute of Food Science and Technology, he is also UK representative and chairman of the International Dairy Federation Group (B39) for Spray Drying, as well as UK and Ireland representative on the Technical Working Group of the Association of Lactose Manufacturers.

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Maureen Edmondson graduated from Queens University Belfast in 1971 with a B.Sc. (1st Hons) in Food Science followed by a Ph.D. in Agricultural and Food Bacteriology in 1974. She worked in University and Government positions in the UK and Australia before joining the Mars Corporation, where she is currently Scientific Affairs Manager for Europe. Maureen is chairman of the Health and Nutrition Sub-Committee of the Biscuit, Cake, Chocolate and Confectionery Alliance (BCCCA).

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Ivan Fabry has 35 years' experience in sugar and chocolate confectionery technology. From 1955 to 1968 he worked for Chocolaterie Jacques, Eupen in Belgium, where he was master of the candy department. In 1969 he joined the Zentralfachschule der Deutschen Sußwarenwirtschaft (Central College of the German Confectionery Trade) as teacher for confectionery. Since 1983 he has been Technical Director of ZDS Solingen and responsible for the organisation of seminars and practical courses as well as research and development activities. He is co-author of *Le Guide Technologique de la Confiserie Industrielle* Published by Sepaic, Paris.

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John N.S. Hancock trained as a physicist at Sir John Cass College, London and at Reading University. He joined Rowntree Mackintosh as a research scientist where he worked initially on the physical properties of confectionery raw materials and products. As manager of the Oils and Fats Section, he developed a keen interest in fat based systems and led a team of technologists working on the processing of chocolate and couvertures. He later became Chief Chemist for the

York factory of Rowntree Mackintosh. Dr Hancock is currently Technical Director of Anglia Oils Limited, who supply a full range of refined oils and fats for the food industry.

R.D. Howling *Cerestar UK Ltd, Trafford Park, Manchester M17 1PA*
David Howling obtained his degree in Chemistry at the University of Loughborough. He began his career in the pharmaceutical industry in new product development at Boots. He spent three years working in enzyme research at the Unilever laboratory at Colworth House during which time he obtained his Ph.D. Following a period of production management experience at Procter Gamble he joined CPC (UK) Ltd (now Cerestar UK Ltd) as technical development manager. He is responsible for all the technical aspects of the Cerestar business in the UK including quality assurance, new product development and technical service. Dr Howling has spoken widely on the subject of starch and its derivatives in Europe and US, including the Interpack Symposium at Solingen. He is a fellow of the Royal Society of Chemistry.

E.B. Jackson *Cerestar UK Ltd, Trafford Park, Manchester M17 1PA*
Brian Jackson has 40 years' experience in the confectionery industry. He qualified in Food Science at Manchester Polytechnic and Salford Technical College, and later in Nutritional Studies and Cocoa Sugar Confectionery. He spent two years in the Royal Air Force as Instructor, Food and Nutrition, four years at RHM, and six years at CWS in Product Research & Development. He has worked in India concerned with the production of chocolate and chocolate products, in West Germany at three or four different factories, and had a period of time in Scandinavia doing technical work. Brian Jackson is at present employed by Cerestar UK Ltd in the capacity of Technical Adviser in Food and Sugar Confectionery Industries. Over the last 29 years this job has embraced the United Kingdom and Europe. Brian has 21 years of teaching experience at the Solingen School and has presented more than 35 technical papers at this establishment. He has also been a part-time lecturer at Salford Technical College, the Leatherhead Food Research Association and the South Bank Polytechnic, London. He has addressed the Interpack Symposium, IFF Cambridge (1984), PMCA, Lancaster, USA (1986) and FIE London (1988). He has been a panel member of Leatherhead Food Research Association for 25 years and a committee member for 4 years; he is a member of the American Association of Candy Technologists, and a Founder Member, IFST. He was co-author of *Sugar Confectionery and Chocolate Manufacture* (Leonard Hill, 1973).

D. James, B.Sc., ARCS, C.Chem, FIFST, FRSH. *Tate & Lyle, Plaistow Wharf, London E16 2PG*
Douglas James is Senior Food Technologist at Tate & Lyle Sugars, London. He qualified in chemistry at Imperial College and entered the food industry with J. Lyons & Co. He spent more than 20 years in the confectionery industry with E.S. Morton Ltd and Clarnico Ltd, where he was Chief Chemist and Technologist. Employed now by Tate & Lyle Sugars he works on food product and process development. He has been a member of the Leatherhead Food Research Association Confectionery Panel for over 30 years and has lectured and written articles on sugar and sweet making.

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Maurice Jeffery is President of Jeffery Associates, Consultant to Hershey Foods Corporation and to the Chocolate Confectionery Industry. Formerly, he spent 30 years with the Cadbury Company, 20 years of which were in England with Cadbury Ltd in various technical capacities, as Group Process Development Manager. In 1979 at the takeover of Peter Paul he transferred to the USA, as Director of R&D/QA. He was responsible for the Cadbury North American Operation for all research and quality matters. He obtained an Honours Degree from the University of London. He is an Associate of the Royal Institute of Chemistry and Fellow of the American Institute of Chemistry. He is currently Chairman of the American Cocoa Research Institute and Chocolate Manufacturers Association Scientific Committee, as well as being Chairman of the PMCA Research Committee.

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Conrad Knewstubb studied chemistry at Cambridge University, from where he qualified in 1964.

After a short period spent in the Quality Control department for a major food/pharmaceutical company, he transferred to food product development. In 1976 he moved into Technical Services, specialising in colourants, vitamins and nutritive sweeteners for the food industry. He is currently Technical Sales Manager at Overseal Foods Limited.

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Charles Nelson is currently a Manufacturing Executive working within the Fox's Biscuits Division of the Northern Foods Grocery Group, responsible for implementation of a number of special projects. Prior to this, he fulfilled a number of roles within the Barker and Dobson Confectionery Division, including Factory Management, Special Projects and finally, as Divisional Technical Manager, he was involved in many aspects of product, process and packaging developments. He spent the early part of his career working with Nabisco Brands, working on chocolate moulding lines and on the development of coatings and processes in various operational/technical functions.

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and sugar confectionery products. After 12 years with Rowntree, he joined Barker & Dobson Ltd as Group Chemist where he was involved in the development and production of a wide range of gum and jelly products, toffees and boiled sweets under the Keiller, B&D, Benson and Fryers brand names. In 1987 Alan joined Burton's Biscuits Ltd at their Blackpool factory as Technical Manager, where a range of biscuits and confectionery products, including mallows and Liquorice Allsorts, are manufactured. In addition to his experience in product development, Alan has a special interest in Quality Assurance, BS 5750 and Food Legislation.

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Derek Stansell started his career as a chemist but has spent nearly 40 years in confectionery production and research. Fifteen years in industry were followed by eight years at the Leatherhead Food Research Association and since then he has been development manager with Callard & Bowser, now part of Terry's group. He is currently chairman of the Food Research Association Confectionery Panel Committee.

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