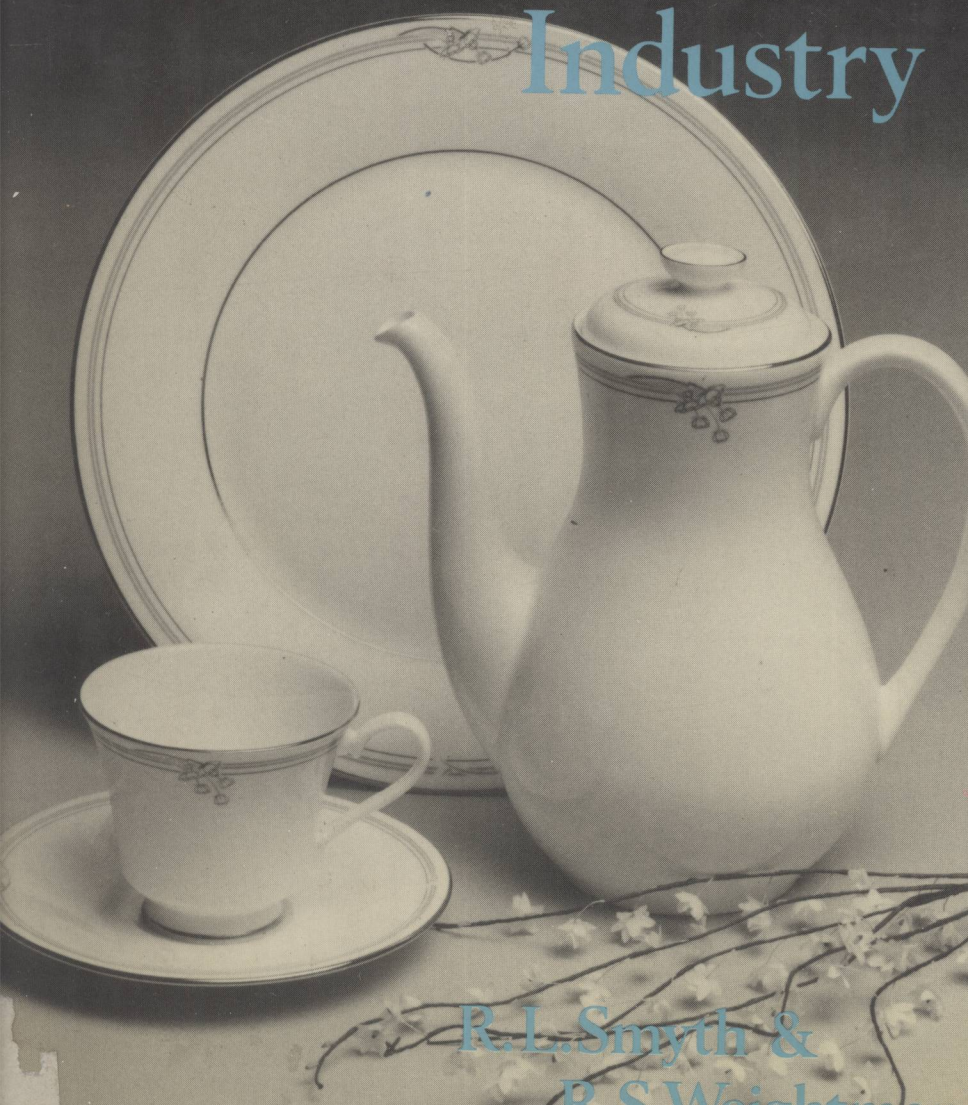


# The International Ceramic Tableware Industry



R.L.Smyth &

P.S.Wright

# The International Ceramic Tableware Industry

R.L. SMYTH and R.S. WEIGHTMAN



CROOM HELM  
London & Sydney

©1984 R.L. Smyth and R.S. Weightman  
Croom Helm Ltd, Provident House, Burrell Row,  
Beckenham, Kent BR3 1AT

Croom Helm Australia Pty Ltd, First Floor, 139 King Street,  
Sydney, NSW 2001, Australia

British Library Cataloguing in Publication Data

Smyth, R.L.

The International ceramic tableware industry.

1. Ceramic tableware industry

I. Title

338.4'7666 HD9620.5.T32

ISBN 0-7099-2352-X

Printed and bound in Great Britain by  
Biddles Ltd, Guildford and King's Lynn

## CONTENTS

Preface	1
Acknowledgements	2
1. MANUFACTURING PROCESSES, FUELS AND RAW MATERIALS	5
Ceramics	5
Glass	15
Plastics	17
Technological Change	17
Tableware and the Ceramics Industry	18
Developing Countries	19
2. CONSUMERS AND CONSUMPTION	22
Ornamental Ware	22
Hotel Ware	23
Fine China and Hand-Gathered Glass	24
Craft Potters and Glass Makers	25
Determinants of Consumption	25
Expenditure	28
Europe	32
Conclusions	38
3. MARKETING	39
Fashion	39
Retailing	41
Changes in the Structure of Retailing	42
Continental Europe	51
United States	52
Japan	55
Market Research	55
Prices	57
Advertising	59

## Contents

4. INTERNATIONAL TRADE	61
Exports	61
Imports	66
Export Performance and Import Penetration	67
Economic Policy and Export Performance	70
Japan	73
The Volume of U.K. Exports and Imports, 1970-1983	74
5. THE CERAMICS INDUSTRY, UNITED KINGDOM	77
Take-overs and Mergers	77
Competition	78
Labour Force and Productivity	79
Finance	82
Four British Companies	84
6. THE CERAMICS INDUSTRY: EUROPE, THE UNITED STATES, JAPAN AND THE FAR EAST	109
Europe	109
U.S.A.	123
Japan	128
Other Far Eastern Countries	131
7. CONCLUSIONS	133
Technology	134
Consumption	136
Distribution	136
Substitutes for Ceramics	137
Profits	137
Where?	138
De-Industrialisation	139
The Weak Economy	139
Bibliography	140
Index	143

## TABLES AND CHARTS

### Tables

1.1	Suppliers to the U.K. Ceramics Industry	12
1.2	Material Suppliers to the Ceramics Industry Japan, 1975	12
1.3	The Ceramics Industry in U.K. and Japan 1979	18
1.4	Production of Tiles and Sanitary Ware in European Countries in 1974 and 1978	19
2.1	Ornamental Ware Consumption as % of Total Consumption (1979)	22
2.2	Consumption of Ceramic Tableware in the United Kingdom and in Japan in 1979	27
2.3	Expenditure on Tableware in the U.K. 1980	28
2.4	U.K. Tableware Market 1980	29
2.5	Sales of Domestic Glass in the U.K. 1978-1980	29
2.6	Sales of U.K. Domestic Glass	30
2.7	Commodity and Service as a Percentage of Total Household Expenditure	31
2.8	Indices of Gross Domestic Product Per Head 1980	32
2.9	Consumption for 10 European Countries of glassware, tableware and household utensils, including repairs and the final consumption of households	33
2.10	Per capita volume indices for 1980 of expenditure on glassware, tableware, and household utensils, including repairs and the final consumption of households for 10 European countries in 1980	34
2.11	Per Capita Volume Indices of the Private Consumption of Tableware and other Household Durables (1980)	35

## Tables and Charts

2.12	Congress of the European Glass Federations 1981 Statistics	36
2.13	Consumption of Ceramic Tableware in Fifteen Countries 1980	37
3.1	Share of Retail Trade and Shop Numbers 1971-78, U.K.	43
3.2	United States 1977 Household China, Glass and Crockery. Wholesale Trade Sales	51
3.3	The Structure of Retailing in Nine Countries in 1980	53
3.4	United States Retail Stores selling Tableware etc, 1977	54
4.1	1980 Pottery and Glassware Exports as Percentage of World Trade	62
4.2	Pottery Exports 1980	63
4.3	Glassware Exports, 1980	65
4.4	World Exports and Imports of Fine China, Earthenware and Ornamental Wares 1979	64
4.5	World Exports and Imports of Household - Hotel etc. Glass 1979	65
4.6	The Composition of Domestic Pottery Exports by Country in 1979	66
4.7	The Structure of Exports of Domestic Pottery, 1979	66
4.8	Third World % of World Trade in Glass and Ceramics, 1971 and 1980	66
4.9	The Value of Imports of Tableware as % of Total Market	67
4.10	The Overseas Trade Performance of Selected Sectors of British Industries in 1979	68
4.11	The Overseas Trade Performance of British Industries in 1979	69
4.12	The Overseas Performance of the Various Sectors of the British Pottery Industry in 1979	70
4.13	Measures of U.K. Competitiveness in Trade in Manufactures, 1977-1981	71
4.14	Prices and Production Changes in Various Countries 1970-1981	72
5.1	Employment in the British Pottery Industry 1978-1982	81
5.2	Labour Productivity in Tableware Production in Western Europe 1977 and 1981	82
6.1	Ceramic Tableware Production and Employment in Western Europe 1977 and 1981	110
6.2	Sales and Profits 1977-1981, Royal Copenhagen and Bing & Grøndahl	122

## Tables and Charts

### Charts

1.1	Manufacturing Ceramic Tableware	20
2.1	Weekly expenditure on china, glass, cutlery and hardware, and gross nominal income of households, U.K. 1980	26
2.2	The Volume of Sales of Ceramic Table- ware U.K. 1971-1982	30
4.1	The Volume of Exports of Tableware from the United Kingdom 1970-1980	75
4.2	The Volume of Imports of Tableware into the United Kingdom 1970-1983	76
5.1	Wedgwood plc	90



## PREFACE

Butterworths published The British Pottery Industry by P.W. Gay and R.L. Smyth in 1974, both authors were lecturers in the Department of Economics, University of Keele. It was a study in industrial economics and it was concerned with all sectors of the industry and, except for consideration of export markets, its scope was restricted to the United Kingdom. Now, ten years on, I am privileged to introduce my second book on pottery. This time, however, my co-author is from the industry and not the University: Raymond Weightman, retired recently from being a Director of Royal Worcester-Spode, before that he was a Director of Allied English Potteries and Chairman and Managing Director of Ridgway Potteries, one of its subsidiaries. This book is primarily concerned with management, so Raymond's contribution, based on the experiences of having actually managed, is invaluable. The book is one of Croom Helm's series on durable consumer goods, so the production and marketing of tableware is described and appraised as an international activity; in addition to the United Kingdom, we are concerned with the United States, Japan, Germany, France, Italy and other countries too.

The origin of the book lies in Chapter 4, 'International Trade' which is based on the statistics contained in the Yearbook of International Trade Statistics. In the chapter are presented detailed statistics of trade in various types of tableware by countries, all standardised. Unfortunately we were not capable of sustaining the standardisation when we considered output, employment, profits, productivity, distribution, industrial organisation and consumption. We have based our arguments on limited series of data gleaned from trade associations and private and public surveys and, in near desperation,

## Preface

a few gaps in the data were filled by means of 'informed estimates'. We do not apologise for the inadequacies of the data; they were a challenge which made the writing hard-going at times. However, they help to explain why this is the first book on the commercial and management aspects of tableware production and consumption.

We present a fairly detailed account of the production and consumption of ceramic tableware and ornamental ware in the United Kingdom and a less detailed one of plastics and glass. Our account of the three industries in other European countries, the Far East and the United States is less detailed. To document the activities of pottery manufacturers, retailers and consumers, country by country, would be boring in the extreme, our aim is to inform and entertain our readers, not to bore them. To the same end footnotes are few, we believe that readers will quickly discover where we came across a point of view or a statistical series from the Bibliography. The book is intended for practitioners in production and marketing who will skim through Chapter 1 on production methods and raw materials. General readers, and we hope there will be many, will read Chapter 1 and marvel to learn how tableware is manufactured.

## Acknowledgements

We are grateful to Mr. Sam Jerrett, until recently the Director of the British Ceramic Manufacturers' Federation, for putting us in touch with each other and for his help and encouragement; we are also grateful to pottery managers in many firms and countries for sharing their experiences with us. It is invidious to mention only a few, none the less we are pleased to thank Ann Linscott the head of Royal Doulton Tableware information services and Derek Halfpenny who is Public Relations Director of Wedgwood plc. The Chairman and Managing Director of Royal Worcester-Spode, Mr. Davies, also deserves our grateful thanks. So does John Newcombe a member of Staffordshire Potteries new marketing department.

We are grateful for the information supplied by the management of:-

Bing & Grondahl, Copenhagen.

Royal Copenhagen Porcelain Manufactory, Copenhagen.

Grupo de Empresas Alvarez, Vigo.

Dexam International Limited (Lladro).

J. Chomette & Son Limited (Pillivuyt).

## Preface

Fabrica de Porcelana Vista Alegre LDA, Lisbon.  
Villeroy & Boch Mettlach.  
Haviland Limoges.  
Bernadaud Porcelaines de Limoges.  
Faienceries de Luneville Badonvilles et Saint-Clement Luneville.  
Robert Haviland et C. Parlon Limoges.  
A. Raymond et CIE Limoges.  
Porzellanfabrik Mitterteich AG Mitterteich.  
Christian Seltmann GMBH Weiden.  
Hutschenreuther Selb.  
Rosenthal AG Selb.  
FEPF, Brussels.  
Mr. Yoshito Mimura, Managing Director, Japan Pottery Exporters' Association, Nagoya.  
Mr. Kozo Mitsui, Advisor, Japan Pottery Manufacturers' Federation.  
Lenox China Company, Trenton New Jersey.  
Pickard Inc., Antioch Illinois.  
Shenango China, Newcastle Pennsylvania.  
Syracuse China Company, Syracuse New York.  
Hall China Company, East Liverpool.  
Majestic Trading Company, London (Far East Trade Service).  
Watts, Blake Bearne & Company plc, Newton Abbot, Devon.  
Maryland Cup Corporation, Sweetheart Division.  
Corning, Consumer Division, Sunderland.

I am grateful to my colleague John Proops for permission to use his charts. Tableware International have generously supplied me with free copies of their admirable journal for the past ten years, I hope that when they read this they will not send a bill! We are grateful to Monsieur A.P. Thill, the Permanent Secretary of the Bureau de Liaison des Industries, Céramiques du Marché Commun for his help. I am grateful for the help and critical encouragement of the Head of my Department, Professor Leslie Fishman.

We are grateful to the Department of Employment for supplying unpublished data from the Family Expenditure Survey, and The Manchester Business School for permission to quote from The U.K. Market for Ceramic Tableware, 1980. Mintel Publications Ltd., publish a wide range of market surveys including China and Glass Ware, they generously granted us permission to reproduce some of their tables, and we are most grateful. ICC Business Ratios, a division of Inter Company Comparisons Ltd., provided us with a copy of their Ceramics Manufacturers Business Ratio Report, Ninth Edition (1982) which we relied

## Preface

upon in our section on finance. The Glass Manufacturers' Federation and the Plastics Advisory Service were most helpful in providing both technical and marketing information and arranging for us to interview some of their members. The China and Glass Retailers' Association also provided us with introductions to some of their members. We are grateful for information supplied by The Craftsmen Potters' Association and the British Ceramic Research Association. The Ceramic and Allied Trades Union approved of our account of industrial relations in their industry. Finally, we are grateful for the assistance of Dr. Francis Celoria, the Curator of the Gladstone Pottery Museum.

Leslie Smyth,  
Fellow of the University of Keele,

## Chapter 1

### MANUFACTURING PROCESSES, FUELS AND RAW MATERIALS

#### Ceramics

In the beginning when men and women ate and drank, they improvised rather grubby and smelly receptacles with their hands. As time went by things improved, sea shells, leaves, slate and pieces of wood were used. We may not refer to primitive receptacles as tableware; tables came later. Perhaps the first bowl was manufactured by a bored brickmaker, then again it may have appeared after a cooking pot collapsed in the fire. Thousands of years ago, men rolled damp clay strands or ropes to make containers which were hardened in fires or in strong sunlight. Pottery is an ancient craft. Superbly made vases have been found in the tombs of Ancient Egypt and Persia, Peru, China and Japan. We must not forget the excellent pots produced in Europe during the bronze age.

The earliest pottery was earthenware (literally made from the earth) and in the nineteenth century the following recipe was perfected to produce a dependable body.

Ballclay 25 parts by weight.  
China clay 25 parts by weight.  
Flint 35 parts by weight.  
Stone 15 parts by weight.

The stone is crushed and ground and the flints are calcinated before being crushed and ground. The stone determines the extent of vitrification (a perfectly vitrified pot would not absorb water). The flints provide whiteness to the body and render it easy to dry, it is also used to control the compatibility of the body and the glaze (a glaze is a film of glass and, unless proper compatibility is

achieved, it will crack or even peel-off). Ball clay provides strength and springiness so essential for forming and holding shapes. Ball clay is more plastic than china clay, the latter, however, adds whiteness.

Earthenware bodies are normally fired at a temperature of about  $1150^{\circ}\text{C}$ . their porosity (the proportion of air space in a material to air space plus solid particles) is 10-15 per cent. Stoneware, in contrast, is more dense, its porosity is lower and it is first fired at a temperature between  $1150^{\circ}\text{C}$ . and  $1250^{\circ}\text{C}$ . Stoneware bodies use various combinations of clays and flints etc. A possible recipe would be:

Stoneware clay	50	parts	by	weight
Ball clay	20	"	"	"
Flint	10	"	"	"
Feldspar	20	"	"	"

The third category of ceramic tableware is porcelain. European continental porcelain consists of:

China clay	40	parts	by	weight
Ball clay	10	"	"	"
Feldspar	30	"	"	"
Flint	20	"	"	"

Feldspar melts to glass at  $1300^{\circ}\text{C}$ . and it acts upon the clay to achieve fusion. Flint adds hardness. The ball clay renders the body easier to throw and mould, however, too much would decrease the whiteness of the fired body. Some porcelain bodies may be fired at only  $1000^{\circ}\text{C}$ . Subsequently vitrification is achieved in a glost kiln, after it has been glazed, at a temperature of  $1400^{\circ}\text{C}$ . Porcelain signifies perfection: it is translucent, it can be rung like a bell and its porosity is low.

Bone china is English porcelain. It was perfected by Josiah Spode (1754-1827). Spode's recipe was:

Bone Ash	52	parts
Cornish stone	24	"
China clay	24	"

Bone ash acts as a substitute for the ball clay, however, a little is added to achieve the desired plasticity. When it is fired at  $1250^{\circ}\text{C}$ . it is at the threshold of being molten.

Chart 1 shows the series of processes which

constitute the manufacture of tableware. Three firings are shown, however, it is possible to merely dry the ware after making, decorate it, glaze it, then fire it once only. Once-fired ware is not uncommon, it can be attractive, robust and hard-wearing and be sold at particularly low prices.

Design. The chart does not include the design department which includes modellers and mould-makers. Design is vitally important in an industry which sells both art and craft. Designs may be purchased on the market from consultants and from the manufacturers of ceramic transfers. Large firms, however, prefer to attract good designers by insisting that their chief designer be a director of the company.

Slip House. Clays and other raw materials are purified, standardised and are mixed and blended in the slip house. Firms could obtain their slips (suspensions of clay particles in water) by tankers from outside suppliers, but they usually prefer to operate slip houses because a perfect slip is essential for all subsequent operations. All craftsmen prefer to work with properly prepared materials and pottery manufacturers conform to this requirement. The dry materials are purchased from materials suppliers who are specialists in mining, grinding, milling, etc. Blunging is the term used when solids are dispersed into liquids to form a slip and blungers are obtained from pottery equipment manufacturers. Magnets are used to eliminate metal particles which would discolour finished products. Then surplus water is removed by filtration under pressure. What was once a labour intensive process, has now been mechanised. Before the body is used, all air must be removed, and this is achieved by means of pugging machines. They are large mincing machines which shred the clay, eliminate the air and extrude a solid plastic slug from their nozzles. Imperfect wares, provided they have not been fired, can be re-pugged and re-used.

Slip for casting operations is prepared by mixing clay from the filter presses or the pugging machines with water and deflocculants. The latter enables a thick slip to flow as readily as a slip which contains much more water. Cast articles are produced by pouring slip into plaster of paris moulds, they absorb water and cause a film of clay to be built up on the inside of the moulds.

Research is being undertaken in Japan, Europe and the United States to make tableware by means of

dry dust instead of plastic clay. Slip is pumped into a spray drier which produces dust from spray droplets rapidly dried in hot air. Tiles are made from dry dust but curved bodies are more difficult to manufacture. Dry dust would simplify the production process and reduce costs, it is expected that commercial production will be undertaken before the twenty first century is upon us.

Ideally, a central supplier could make four slips in a central slip house; earthenware, stoneware, porcelain and bone china, and transport them by tankers to the manufacturers. Reports that centralised slip houses are being operated in Taiwan and South Korea add weight to the belief that the two countries will succeed in substantially increasing their exports in the near future.

Making. The art of forming plastic clay into three dimensional shapes is one of straining the clay in such a manner during making that the structural changes that take place do not cause the article to go out of shape during firing. In other words, clay must be worked-up properly to its final shape, if the clay should be abused or ill-treated in the forming process then it is liable to distort or crack in the kiln. Large and awkwardly shaped pieces such as coffee pots or sauce boats tend to be made by shaping in plaster of paris moulds; however, the bulk of the ware is now made either by jollying or jiggering. Both processes achieve symmetry by means of rotary motion on a wheel. Moulds and profile tools are substituted on the machines for the hands and fingers of the craftsman potter. Jollying refers to the making of hollow ware, such as bowls, and cups, and jiggering refers to flat ware such as plates and saucers. In jollying, the mould gives the ware its external shape. On a semi-automatic flat making machine, a slug of pugged clay is pre-formed to a flat pancake on a batting out machine. The operative throws the pancakes accurately and firmly onto the surface of the mould, with which it is essential that firm contact be made to prevent air being trapped between the clay and the mould. After the plate has been jiggered, it is transferred to a drier still on its mould. Machines are now operating which feed themselves automatically with slugs of clay and finally feed the formed ware into a drier. The making processes are completed by drying and fettling. Drying is both a sophisticated and a complicated process. Waste heat from the kilns may be used for the process. A vast range of



driers from specialised suppliers are now available on the market for manufacturers to choose from. If drying is not properly carried out, then water trapped in the body could cause pieces to explode in the kiln or in other ways damage the ware. After drying, ware is fettled to remove surplus clay and smooth rough edges and surfaces. Machines have been devised which speed-up fettling considerably. The formed, dried and fettled 'green' ware is now ready for firing in a biscuit kiln.

Biscuit firing. Biscuit kilns are large pieces of equipment which, to justify their high cost, must be kept in operation at a high level of utilisation for years on end. They are long brick tunnels through which truck loads of ware slowly travel on rails, the rails and wheels being in a comparatively cool, sealed-off portion of the kiln. The temperature gradually builds up towards the centre of the kiln where the ware is kept for a few hours at its maximum temperature and then it cools off again at the exit where the trucks are unloaded. Great care is taken in loading the trucks to ensure that obstructions are not created within the kiln. Also, if ware is not placed correctly it can become crooked and care must be taken to avoid large dust particles adhering to the ware. It is the capacity of the biscuit kilns which, in large measure, governs the short-run production plans of particular firms. Because of steady improvements of firing techniques, burners and fuels, most firms have considerably increased the capacity of their existing tunnel kilns. It is not essential, however, to use only large tunnel kilns for biscuit firing. Small tunnel kilns may be used or, instead, intermittent kilns may be installed. An intermittent kiln is one which is not continuously fired. Firing of ware is thus carried out on a batch basis, the kiln being loaded with ware, heated to the required temperature, maintained there for the appropriate time, and then allowed to cool. The traditional coal fired bottle-kilns were of course intermittent, and were largely replaced by continuously-fired tunnel kilns, fired by gas, oil or electricity, in the period 1935-1960. New types of intermittent kilns, relying mainly on gas and electricity as fuels, have been developed in an attempt to avoid some of the disadvantages (e.g. high capital cost and relative inflexibility in use) of tunnel kilns.

A highly efficient 'top hat' kiln has been developed. Two refractory bases, A and B, are built on