# Plastics and Rubber
# World Sources of Information

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E. R. YESCOMBE, M.B.E., F.L.A., F.P.R.I.

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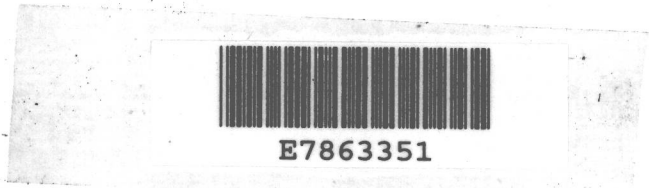


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# FOREWORD

Many times in the past I have had occasion to seek guidance from Mr Yescombe in my search for some item of information. Almost invariably my confident request was rewarded, as he led me unerringly to its source. The ease and certainty with which he found his way there obscured the great skill and knowledge which enabled him to do his job.

But most seekers after information in the world of plastics and rubbers did not have a Yescombe at their side. For them this book is the next best thing to the personal service. In the face of the information explosion it helps little to cry 'stop the world, I want to get off'! You have to get your head down and track the quarry through the thickets even while the undergrowth proliferates under your very feet. Mr Yescombe's labours, brought to fruition in this 'up-dating' of his previous monograph, will be a great help to those of us looking for information.

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# ACKNOWLEDGEMENTS

I should like to take this opportunity to thank the Polytechnic of North London for facilities and encouragement to enable completion of this new guide to plastics and rubber information. Help given by many friends of the National College of Rubber Technology, the British Plastics Federation and the British Rubber Manufacturers' Association, the Plastics and Rubber Institute, the Rubber and Plastics Research Association of Great Britain, and also the many other organisations, librarians and information officers in the UK and overseas, is gratefully acknowledged.

ERNEST RAYMOND YESCOMBE
*The Polytechnic of North London,*
*Library and Information Service*

# INTRODUCTION

## THE INFORMATION EXPLOSION: PLASTICS AND RUBBER LITERATURE

Unlike most of the world's natural resources, which are being depleted, the world's information sources are growing at an alarming rate. The problems of finding the required information, wherever it appears in documentation, when it is needed, and ensuring its accuracy, have assumed proportions which were not dreamed of a generation ago. In the chemical field alone the number of articles has trebled in fourteen years. Plastics and electronics have a very high information exponential growth rate and are multi-disciplinary. Rubber, which is now more closely linked with plastics, saw great information expansion between 1940 and 1960 due to the rapid development of synthetic rubbers [1, 2].

Since the publication of the author's *Sources of information on the rubber, plastics and allied industries* (International Series of Monographs in Library and Information Science, vol. 7), Pergamon, Oxford, 1968, many changes have taken place in the literature; organisations and external information services have taken on new dimensions, hence the urgent need for a 'progress volume tertiary guide' to plastics and rubber, which form a major part of 'polymer literature'. C. A. Farnfield (ed.), *Guide to sources of information in the textile industry*, 2nd ed., Textile Institute, Manchester, 1974, 130 pp., covers other aspects of polymer literature and information not covered by this monograph.

Far-reaching developments due to advances in mechanised data processing have led not only to improvements in

conventional abstracting and indexing services, but also to new forms of alerting, retrospective searching and by-product publications for plastics and rubber information. Improved reference locating tools have produced a marked change in the emphasis of industrial information work towards a greater reliance on bought-in services, but owing to the increased range of options now open, the cost-effectiveness equation has become very complicated [3].

The literature 'information spectrum' and the explosion of both primary and secondary information on plastics and rubber, as well as nomenclature and information retrieval developments, are examined in ensuing chapters. Specialist chapters deal with materials, polymer science and properties; plant and process technology; standards and testing; applications and product development; and safety and health aspects. The equally important need for commercial, economic, statistical, marketing and management information has received special attention. An extended list of international organisations, together with national organisations in over 60 countries, includes some of special interest to developing countries (Chapters 20–22).

This book serves the reference needs of those who are familiar with plastics and rubbers and those who are not, and, where possible, international literature coverage is given. Examples of more costly publications or services should be checked before ordering.

No guide of this kind can now hope to be exhaustive, but every effort has been made to include important sources and to describe them accurately up to the time of going to press. Many of the titles and references cited can be borrowed, or photocopies obtained on pre-payment vouchers, or through libraries, from the British Library Lending Division, Boston Spa, Wetherby, West Yorkshire LS23 7BQ, whose facilities include over 43,000 current periodical titles [4] and over one million unclassified reports. Information facilities and other services of the Rubber and Plastics Research Association of Great Britain (RAPRA), Shawbury, Shrewsbury, generally

recognised as being unique in the world's polymer industry, are available to UK and overseas members.

## THE POLYMER INDUSTRY

The materials which we know as plastics, resins, rubbers, and natural and synthetic fibres can all be called *high polymers* or macromolecular products.

The dividing line between the different members of the high polymer group is becoming less and less distinct as polymer science develops and illuminates the essential unity of the group, whilst the technologies have a great deal in common. The plastics industry has matured to be more in line technically with the rubber industry, although there are no big plastics converters comparable to the major rubber companies.

The polymer industries of the world, comprising plastics, rubbers and synthetic fibres, have grown more rapidly this century than any other branch of the chemical industry. World

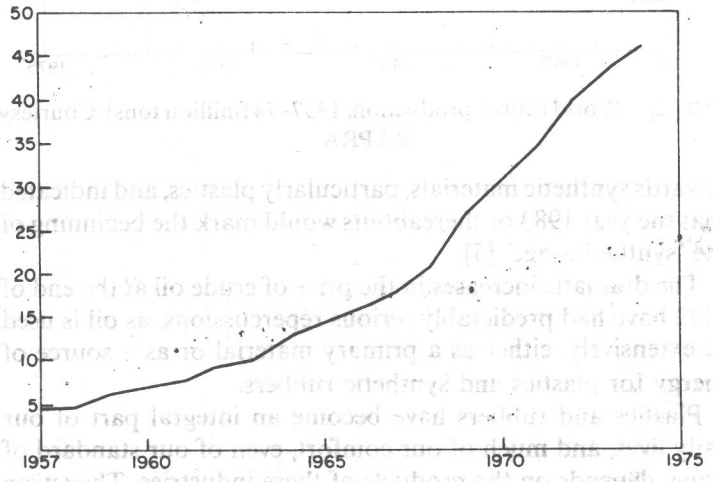


FIG. 1. World plastics production, 1957–74 (million tons). Courtesy RAPRA.

figures of plastics production are truly astonishing. Production has expanded from a total of 2·9 million tons in 1955 to 46 million tons (1974 estimate) (see Fig. 1), whilst combined totals for natural and synthetic rubbers are over 10 million tons (see Fig. 2).

TNO forecasts by R. Houwink (1965) showed a gradual change in the balance of world consumption away from metals

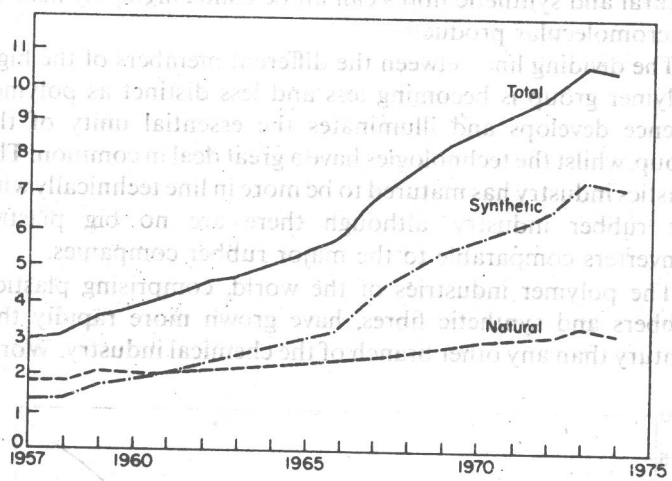


FIG. 2. World rubber production, 1957–74 (million tons). Courtesy RAPRA.

towards synthetic materials, particularly plastics, and indicated that the year 1983 or thereabouts would mark the beginning of the 'synthetics age' [5].

The dramatic increases in the price of crude oil at the end of 1973 have had predictably serious repercussions, as oil is used so extensively, either as a primary material or as a source of energy for plastics and synthetic rubbers.

Plastics and rubbers have become an integral part of our daily lives, and much of our comfort, even of our standard of living, depends on the products of these industries. They were instrumental in the development of transport and communications. Designers, engineers and architects are increasing

their use of plastics and rubbers as basic structural materials to take their place along with metal, glass, wood and paper. Important as plastics are today, they will be even more essential in the world of the future. Their special contributions will be necessary to achieve better housing and more efficient food production and storage, to facilitate transportation, to provide clothing and to exploit the oceans. Indeed, in the view of Mienes, the use of plastics will be vital to the very survival of living standards of the world's future population. Through plastics the community has profited from science to a major degree. It is up to the industry to see that society both understands this and receives these benefits in full measure [6].

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# PART I

# Literature and Information Pattern

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# Literature and Information Patterns

CHAPTER 1

# PRIMARY AND SECONDARY INFORMATION: LITERATURE OUTLINE AND CONTRIBUTION OF THE PERIODICAL

## LITERATURE PATTERN

The *primary literature* represents new knowledge or new interpretations of old knowledge, and includes the latest available information. These 'communications' form the key to the formal network of information transfer and are published in a variety of forms, which are not necessarily exclusive to primary publications. These include: conference proceedings; patents; periodicals (many of these are solely devoted to reporting original work); research reports; standards (*see* Chapter 16); theses and dissertations; and some trade literature.

Much information still remains unpublished and outside the mainstream of scientific progress, but occasionally becomes accessible later in its original form, and may be consulted for its historical interest.

*Secondary sources* are compiled from the primary sources and are usually arranged according to some definite plan. They repackage information from the primary literature in a more convenient form, and may also guide the worker to original documents. By their nature they are often more widely known than the primary sources, and often more self-sufficient, but are usually outdated. These include the following literature types: abstracting, indexing and retrieval services; periodicals (a number of these specialise in interpreting and commenting on developments reported in the primary literature); reference