

## BOOK REVIEW

Hans Heinz EMONS and Hans Henning WALTER: *Mit dem Salz durch die Jahrtausende (Geschichte des weißen Goldes von der Urzeit bis zur Gegenwart)* VEB Verlag für Grundstoff-industrie, Leipzig 1984., 226 p., 24 colour plates, 166 pictures

The authors of this book are the professor of inorganic chemistry and technology of the Mining Academy of Freiberg and his co-worker; they present the path of common salt from ancient times to the present. Common salt, sodium chloride is the commonest inorganic chemical, widespread in nature, indispensable biologically for humans and as a raw material for industry. Its production was started in prehistoric times. It is mined in some places as a solid, obtained from aqueous solutions formed by dissolution of salt-containing rocks and in the greatest amounts by evaporation of sea water. One should believe that manufacture is not very complicated; however, this very thorough book evidences that evaporation technologies underwent an important development during history. Their origin dates back to the stone age. Researchers attempted to reconstruct the most ancient methods of evaporation from fragments of equipment. Energy cost always played an important part, and as soon as in the Middle Ages, wood appeared too expensive a fuel. In order to reduce costs, the salt solutions were let to trickle through bundles of straw or through faggots of blackthorn to concentrate them. For this purpose, large and high barns were built, some of which can still be found as industrial monuments in Europe. In China, natural gas was used as fuel for salt evaporation many hundreds of years ago. Coal came into use for salt evaporation only in the 18th century just like in metallurgy, and slowly only, after battling with many prejudices.

Salt manufacture was a craft passed from father to son in many small plants, and an organization working with a defined technical hierarchy—similar to mining—in the large plants established rather early. Salt was always an essential article, and this fact was utilized by the mighty for their good: production and commerce of salt was the privilege of the king, the state or the feudal lords almost everywhere. Taxes on salt existed in pharaonic Egypt and ever since existed and still exist in many countries. In China even money was made of salt: using a particular technology, coin-like, non-crumbling pieces wearing the emperor's stamp were fabricated. The routes of salt commerce have also been established by history. Salt was used as auxiliary agent in various industries such as tanning, textile dyeing and separation of noble metals as early as in antiquity. The manufacture of hydrochloric acid was invented in the Middle Ages, using common salt as raw material, and thus salt became a primary raw material for the chemical industry. Its part in this domain became eminent in the 18th century, salt being the raw material for the first large-scale industrial chemical process, the Leblanc soda process. Common salt is the indispensable raw material for manufacturing sodium hydroxide, chlorine and through these basic chemicals, for the vast number of chemicals of modern times; without common salt, no large-scale industry could exist.

Owing to its importance, salt occupied a symbolic part in history, in the Bible, in Greek philosophy and in proverbs. Many people consider offering bread and salt a symbol of friendship. The attribute *salsus* marked wittily, smart people in Roman times, and the adjective has a similar meaning in many languages. (It is not mentioned in the book, but the expression

“saltless” means an insipid, flat person in Hungarian.) The Romans also used the adjective *salax*, to mark people in love, and this too has remained alive in many languages, in phrases like the cook being in love if the soup is oversalted.

All this and much more is reported in this beautifully made-up book which covers, besides the technological history of salt, its cultural history too. The history of German salt production is in the centre of the book and other countries are only tangentially mentioned, like Hungarian salt mining significant in the past and dealt with in a few sentences only. The authors explain this by having found that the richest historic material, documentary and bibliographic sources concerning salt production are those on German production. Since mining of solid rock salt and evaporation of sea water was of minor importance in Germany, the book deals mainly with the historic and technological development of salt production by evaporation of natural salt solutions occurring in the region of Halle. It seems likely that in the past centuries this production was in fact top-ranking in the technological development of the world.

The intent of the authors was to write a popular scientific book. It is, however, on a much higher scientific level, and for this standard it is regrettable that it contains no references; the list of the literature utilized is no substitute for references, e.g. in the case of the many interesting quotations.

F. Szabadváry

John R. KOSAK *Catalysis of organic reactions* Chemical Industries/18, Marcel Dekker, inc. New York and Basel 1984., 504 p.

The text contains the proceeding of the Ninth Conference on the Catalysis of Organic Reactions held in Charleston, S. C. in 1982.

The goal of the Conference was to present a collection of papers dealing with catalysis as applied to organic synthesis (see also Volume 5 of this series).

The book, similarly to the others of this series, is very valuable. Using the way and forms of conference's papers, some of them give a survey of the given field some dealing with selected problems. Some papers, especially in Chapter II. are directed to industrial field.

The book consists of 477 pages and is a very useful tool for those who are interested in problems of homogeneous and heterogeneous catalysis.

The shortened Contents of the book, given below, gives a detailed survey of the topics.

### Homogeneous catalysis

Aspects of enzyme catalysis

Transition-metal-catalyzed synthesis of heterocyclic compounds

Asymmetric hydrogenation of prochiral olefins

Vicinal glycol esters from synthesis gas

Metal clusters (not their fragments) as thermal and photogenerated catalysts

Homogeneous metal catalyzed homologation of benzyl alcohol to penethanol

### Heterogeneous catalysis

Fischer-Tropsch CO-hydrogenation as a means for linear olefins production

The physical characterization of industrial catalysts: novel techniques developed by the Johnson Matthey Research Centre

Catalytic hydrodechlorination of polychloroanilines in the liquid  
Computer-controlled screening of catalysts  
Evaluation of hydrogenation catalysts in batch reactors  
Preparation of aryl nitrones using urushibara catalysts  
Selective catalytic hydrogenation of nitroaromatic acetylenes: synthesis  
A new and improved synthesis of isoquinuclidine  
Solving development problems  
Tertiary amine preparation by reductive alkylation of arylamines with ketones  
The hydrogenation of aromatic nitro compounds to aromatic amines

### **Selected topics**

The catalytic reduction of nitrate to hydroxylamine  
Ammonia oxidation—an alternative route to caprolactam using cyclohexanone  
(ammonia)oxide  
Catalytic aminomethylation of olefins  
Catalytic decomposition of formic acid in acetic acid  
A computer-based filing system for a high-pressure facility  
Thermodynamic modeling of catalytic processes

*J. Petró*