

## BOOK REVIEWS\*

### WORLD ATLAS OF GEOLOGY AND MINERAL DEPOSITS

Elaborated by Duncan R. Derry, published by Mining Journal Books Ltd. London, 1980. 110 pages, size 330 mm × 254 mm, price 46 US dollars.

The publication consists of two essential parts – descriptive chapters and the world atlas proper.

The main descriptive part has 24 pages and includes an introduction and a few concise sections. In the first section the most important information about landscape and geological processes having a basic influence on it, are included. A few examples are given. The second section, entitled "Structure and history of the Earth", deals with several items such as the methods used in dating rocks, the internal structure of the Earth's crust, the mantle and core, and the migration of continents. The plate tectonic concept is particularly precisely described, supplemented by current ideas involved in this concept. This chapter is elaborated with great care, illustrated by lucid diagrams showing the geological clock, plate boundaries of the world, preCambrian basement and foldbelts, and the stages of global tectonic history. The study of plate tectonics has shown the relationship of some ore deposits to plate boundaries.

In the next section we can find a review showing the distribution of earthquake epicentres and volcanic activity. In the fourth section the evolution and expansion of life in relation to the time divisions of Earth history since Precambrian, is pointed out. The influence of life on mineral deposits, the dependence of living organisms on the precipitation of metals, the close association of life with metalliferous solutions are also incorporated.

In the next section the distribution of mineral resources on the surface of the Earth's globe is briefly characterized.

The second principal part of the Atlas begins with introductory comments to the map sheets. Seven double and three single page map sheets are included. Each sheet is accompanied by a short description that summarise the geological history of the corresponding part of the world and the most significant geological events connected with the origin of mineralization. In addition some notes

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\* Starting from volume 12 of *Mineralogia Polonica* books concerning various branches of mineralogical sciences will be reviewed. Consequently foreign publishers are kindly requested to send new publications on mineralogical, geochemical, petrological, and related subjects to the address of the Editorial Board.

are placed on the maps themselves to draw attention to special geological features. On the map sheets areas of mineral deposits are marked in red by the corresponding atomic symbols in the case of metals and by full names of non-metals. The map sheets are made very distinctly, legibly, and printed in strong colours.

The world mineral resources and recent (from 1978, 1979) production in the principal countries for major non-metals, metals, and fuels are included in the third part of the Atlas. These data are very useful for economic mineralogists.

In the final part of the Atlas is given the most important bibliography on general geology, geology of mineral deposits, and global mineral production and reserves which might be a useful addition for readers. There are also listed, under headings corresponding to the individual map sheets, the addresses of the Geological Institutes where maps and reports can be obtained. A comprehensive glossary of over 100 words and expressions is given especially for the reader who may not be familiar with geological terminology.

There is one unfortunate typographical error where Lubin appears instead of Lublin. The former is a copper area while, of course, Lublin has coalfields.

At first sight it would appear that the index of geographical names has been omitted. Although for many readers its presence would certainly be useful, the title clearly implies that this is not a geographical atlas, which explains its absence.

To summarize, anybody interested in short geological features concerning the most important mineral deposits of the six continents will be well satisfied with this atlas. It is intended for students of geology in universities, and senior secondary school pupils, for travelling amateurs, and also for the professional earth scientists. This new concise world atlas of geology and mineral deposits provides highly topical information.

Barbara Kwiecińska

#### F. CALLOT: WORLD PRODUCTION AND CONSUMPTION OF MINERALS IN 1978

Translated from *Annales des Mines*. Mining Journal Books Ltd., London 1981. 108 pages, 18 figures, XXVIII tables, 51 supplementary tables, 2 appendices.

In 1953 the *Annales des Mines* began to publish periodically books on the balance of world production and consumption of minerals. The first to appear was a balance for 1950, followed in 1956 by one for 1953, both edited by F. Blondel and E. Ventura. In 1961 F. Blondel and F. Callot presented a similar publication for 1958, and the subsequent ones were published by F. Callot in 1956 (for 1953), 1971 (1968) and 1975 (1973). The last balance for 1978 was also published in English by the *Mining Journal Books Ltd.* in 1981.

The book contains 9 chapters and two supplementary sets of tables. One set consists of 51 tables giving information on the volume of domestic and world production of minerals, the average annual prices obtained in non-socialist markets, and on the total value of world production. Each table contains a list of all producer countries. In the case of crude oil, off-shore production is also taken into account, and for rock salt, the production of salt-works. The tables end with data on the years 1950 and 1973, treated as the retrospect. To provide an illustrative case, data concerning the production in Poland in 1978 are given (Table 1).

Table 1

Production of minerals in Poland in 1978.

Acc. to F. Callot 1981

Mineral	Production			Place on the list of world producers
	Unit	Volume	Value mln US dol.	
Hard coal	thous. t	192,422	6,735	4
Brown coal	thous. t.	40,879	712	4
Silver	t. Ag	775.5	135	6
Copper	th. t Cu	318.0	350	8
Iron ores	th. t. Fe	158.0	3.7	44
Nickel	th. t. Ni	2.8	9.5	18
Lead	th. t. Pb	49.6	27.5	15
Zinc	th. t. Zn	218.5	65.6	8
Bentonites	th. t.	50.0	1.4	12
Barite	th. t.	90.3	3.1	17
Feldspars	th. t.	30.9	0.8	23
Kaolin	th. t.	66.0	3.2	22
Magnesite	th. t.	27.0	1.2	13
Rock salt	th. t.	3,834.0	49.1	13
Sulphur	th. t. S	5,081.0	229.0	3

On the basis of these data, F. Callot calculated the value of domestic and world production of minerals, taking into account average annual prices obtained in non-socialist markets. The production value was also calculated for each continent, making a division into countries with state-controlled economy, free-market economy, developing countries, etc. Summing up this part of the book, F. Callot gave comparative data on the production value of minerals in the years 1950 - 1978:

	mln US dollars
1950 -	25 900
1953 -	47 000
1958 -	50 000
1963 -	59 000
1968 -	78 000
1973 -	159 000
1978 -	478 900

and characterized the structure of the production value in 1978:

	mln US dollars	
fuels	416,903.8	- 87.05%
metals	44,615.1	- 9.32%
other raw materials	17,399.0	- 3.63%

In 1978, at the top of the list, both in respect of production volume (2,986.7 mln tons) and value (226,140 mln U.S. dollars), was petroleum before hard coal (2,596.1 mln t., 77,602.2 mln \$), natural gas and iron ores (493.6 mln t. Fe, 11,560.2 mln \$). It is interesting to note that between 1973 and 1978 the produc-

tion value for gold shifted from the sixth to seventh place (1973 – 1340.6 t., 6138.7 mln \$; 1978 – 1212.4 t., 7524.1 mln \$), whereas the growth of production of uranium was record-breaking, its value changing from the twenty-first place in 1973 to the tenth place in 1978.

An analysis of the price movement of minerals in the years 1973–1978 shows that the average index in 1978 increased to 186.4 compared with 1973 (increase at an annual rate of 13.3). A wide differentiation of prices was also noted, a rise in some prices being accompanied by a drop in prices of other minerals, e.g. of mercury, nickel, zinc.

On the basis of these primary data, a list of countries was made according to the decreasing production value of minerals. In the years 1973–1978, a change occurred on the list: the USSR outstripped the USA, attaining 19.89% of the world production value. In 1973 the situation was different as the production of the USA in value terms was estimated at 18.74% and that of the USSR at 17.62% of the world production value. The place of Poland in this respect was as follows: 1950: 2.16% – 8th place; 1973: 1.55% – 15th place; 1978: 1.72% – 14th place.

Most interesting is the relation between the variety of minerals produced in various countries and the 51 discussed raw materials of international traffic. The USSR comes first as a producer of 43 minerals, the USA is second with 42 raw materials, Australia and Brazil come third with 35 minerals each. Further on the list are India (33), Republic of South Africa and China (32), Spain (31) and Canada (30). Viewed in this light, Poland holds a distant place as a producer of 18 minerals.

The following chapters give a many-sided analysis of the geographical distribution of production and its relation to the country area, population density and national income. For Poland the latter index was estimated at 6%, which places Poland in the group of industrialized countries with a well-developed domestic raw material base. Some developing countries were also included in this group.

The publication of F. Callot, director of the Bureau of Mining Documentation of the French Ministry of Industry, deserves to be rated high and recommended to those interested in mineral raw materials management as an excellent source of general information. That it is thought of highly by specialists is evidenced by the fact that it is published in French and English. It will be noticed, however, that the reader would look in vain for information on the international trade in minerals, their consumption in individual countries, or at least on the trends in their utilization. When, for example, chromite is discussed, no information is provided on the distribution of its production among metallurgical, refractories or chemical industries. In this respect, the contents of the book do not correspond with its title. The undisputable merit of the book is that it gives an excellent general survey of the production of minerals and their value.

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