Bookreview

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ENVIRONMENTAL SCIENCE METHODS

Chapman and Hall, London and New York 1982, 404 pp., 166 Figs., 57 Tab., Price £ 9.95 (Pb).

The so-called environmental sciences is a conglomeration of many individual sciences and it has a relatively young history. It has developed intensively, supported by a great technical progress, during the last fifteen years in relation mainly to the quickly progressing deterioration of the environment and to the increasing needs for new natural resources. Environmental science utilises methods of physics, chemistry, biology, geography and others, and it sometimes seems difficult to build a consistent methodology as well as a theoretical background. It is further complicated by the fact that physicists prefer physics, chemists chemistry, biologists biology. This situation, is also apparent in the textbook reviewed here. The emphasis lies on physical geography methods with biological ones almost absent.

The text is divided into eleven chapters, each dealing with individual groups of closely related methods. We can start to read the textbook without any previous knowledge, because really basic principles are explained for all particular sets of problems.

The first chapter is devoted to basic problems of measurement (systems of units, accuracy of measurement, sampling). Three very important chapters follow: Mathematics, Statistics, and Computing. These three chapters form nearly one half of the book. It is very useful that the most important methods of mathematics and statistics are explained from the elementary principles; thus, the reader lacking mathematical knowledge can easily read these parts. The chapters can also serve very well as a introduction to the use of mathematical methods in some other fields. The next chapter "Laboratory techniques" gives only a short survey of some methods, particular possibilities of their use in environmental science could have been stated more frequently. The sixth chapter, "Microscopy" focusses too narrowly on geology, namely on the determination of the rock-forming minerals. Very important and interesting is the chapter "Remote Sensing". This branch has been developing rapidly in connection with technical progress and surely has a great future. The methods of aerial photography are widely discussed, some other methods (echo-sounders, radars) are also briefly mentioned. The practical use of all methods is emphasised, e.g., for forecasting. Chapter 8 describes the types of map projections and map utilisation in environmental science employing examples of geological and weather maps. Chapter 9 deals with data surveys for map constructions. Chapter 10, on "Social Surveys" is very interesting especially for investigators in natural science although it only briefly summarizes the relevant problems. The last chapter on "Project Evaluation" points out two analytical techniques evaluating the impacts of different human activities on the environment on the basis of economic principles. These techniques can support rational decisions taken by the authorities and can help to find compromises between economic and ecological interests.

The textbook gives an interesting survey of environmental science methods despite the fact that it does not cover all branches of the field. Biologists in particular will miss many biological methods and interpretations. Some important methodologies are omitted—for example monitoring, an important part of contemporary environmental science, is not mentioned explicitly. But these remarks do not reduce the value of the textbook. It may be recommended to all readers interested in field investigations.

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