

and observations as well.

Though the book is embellished with several figures, diagrams and maps, unfortunately the details are not legible because of the size of the maps and this is a real constraint in understanding the maps and the text especially. Figure 5 : India-Resource Development Regions : RDR, taken from the Planning Commission, makes an interesting reading. The first order, second order and third order regions have been analyzed in detail and form the basis of the suggested new federal structure involving more states than what they are to-day.

Overall, the book breaks a fresh ground in understanding the historical, cultural and socio-economic aspects of India. Fig. 3, which depicts tribal regions, cultural course and industrial complexes, is quite noteworthy. It is hoped that the book will inspire other geographers and economists to think about regionalization in the new context of modern India and its economic development.

*P. R. Karmarkar*

*Geography of Minerals of the Oceans* : Atar Singh Yadav; Concept Publishing Co.,

New Delhi, 1992; pp. 103, Rs. 200/-.

This booklet based on articles, pamphlets and books gives a summary account of the geography of oceans, their biotic and abiotic resources, exploitation of ocean minerals and the Indian efforts, both scientific and techni-

cal, to exploit the resources of the oceans. The book is handy and makes an easy reading. For its size it is over-priced.

*K. R. Dikshit*

*BIHAR : Geographic Information System* : Manosi Lahiri; Popular Prakashan,

Bombay 1992; pp. 197, Rs. 200/-.

The book, which one may also call an atlas, is the outcome of painstaking research by its author Ms Lahiri. Unlike other state planning and resource atlases, the present one has involved a far greater enterprise in developing the Geographical Information System (GIS) and Cartographic Data Base (CDB) of Bihar, from the stage of conceptualization to the installation of necessary hardware, choosing suitable software packages and finally developing the requisite GIS and presenting them cartographically, through a series of graphs, maps, cartograms and thematic

maps. The project, funded by International Development Research Center (IDRC), an agency of the Government of Canada, and centred at Kirori Mal College, Delhi, where Ms Lahiri has a full time teaching assignment, has been well designed, meticulously executed and sets a model for all those interested in the study and application of GIS system. The reviewer has not come across any other book of this kind and hopes that this becomes a trail blazer to be followed by books presenting India and individual states through the GIS system.

The book is all about location oriented storage, retrieval and presentation of data in a GIS system, through computer cartography, as applied to the state of Bihar. Two of the frequently used terms are GIS and CDB, the former defined as a whole set of procedures and tools that works within a computer environment, manipulating a CDB to produce graphic and non-graphic output, and the latter as the one 'which is created from atleast one or more of these sources : maps, aerial photographs and satellite images.

The book is divided into three sections, the first two sections containing nineteen chapters, followed by appendices, references and other readings in section III. The first two chapters discuss the organization of the research including the need for GIS, a very valid point indeed, the preparatory arrangement like the choice and the acquisition of the necessary hard and software, and the importance of GIS in planning. The next two chapters briefly outline the policy considerations and the development of CDB for Bihar and Chapter V highlights the problems of changing spatial boundaries and reliability of data. Section II of the book is a set of diagrams, graphs, cartograms and thematic maps of Bihar, related to demography, urbanization, health, education, banking, power supply, postal services, transport, communication and telecommunication and certain other aspects of land, people and economy of Bihar. The appendices in section III include the specifications of computer hardware and software, the addresses of developers, manufacturers and vendors and the data dictionary, and some information in the tabular form. The appendices could be of help to those who plan developing a computer lab and starting similar projects. Besides, the series of maps on each theme is preceded by not too long a text, that supplements and even helps grasp the cartographic information better.

Orthographically error-free, the book is well produced and carries an aesthetic appeal. The quality of paper, printing, page formatting, binding, cover-designing and jacketing—every aspect of production carries a stamp of professionalism, for which Popular Prakashan are so well known and have lived upto their reputation. They deserve our compliments.

The cartographic section of the book contains 119 plates, some of them carrying more than one map. Thematically, most aspects of the land and people of Bihar are represented. Yet, there are some serious gaps. Some of the most vital aspects of the economy are hardly touched, and not even broadly represented through thematic maps. There is, for instance, hardly any thing related to the primary sector of the economy; neither agriculture nor mining nor forestry. Of landuse, irrigation, use of HYV seeds and agricultural productivity, one does not find any mention except giving Bihar's position in comparison to three other states, arbitrarily chosen, with respect to area, production and yield, of wheat, rice, maize and oil seeds (6-15, 16, 17). Ms Lahiri does not expect the readers to know things like intra-state variation in land use, and the production and yield of different crops that might indicate the area where efforts have to be concentrated. So also is the case with industries and industrialization. There is not even a simple map of industries, let alone employment, production, capital investment or new ventures proposed to be launched. What one finds in the name of industry related presentation of either data or maps, in the book, is a plate (6-12) with two histograms, comparing 'factory employment' and 'value added in factory sector' in Bihar with other states, the scale on the 'Y' axis in the latter case obviously bungled. How else can one explain an addition of only Rs. 5000/- as the value added in factory sector in Maharashtra in 1985?

Why some of the important aspects of the State's economy are excluded from the Cartographic database is not clear. To this reviewer, these are serious omissions amounting to flaws.

As for the cartographic representation, despite the accuracy and authenticity, one misses the elegance of manually executed maps. The computer does not possess the intelligence to manipulate, particularly in case of terrain profile, the inter-point curve. The choice of symbols and colours, though technically correct, don't always make the desired visual impact. To quote an instance, the comparison of decadal growth rate of population could have been far more impressive by juxtaposing two chorochromatic maps, or dividing the districts into two groups and colouring them, showing an increase or decrease in the population growth rate as in fig. 8-5. How is the map (8.2) showing decadal addition of number with no reference to the base population significant?

There are other aspects like transport and communication links and accessibility to places which are very thoroughly investigated and presented through neatly drawn maps. In fact,

the impression of this reviewer is that the author has paid far greater attention to tertiary sector of the economy. This may reflect the ease of data availability or the scale of priority of the author. It may be that the planning of service sector is of greater immediate importance touching the life of every individual in the State, is non-controversial, and does not involve much of policy decision.

In an overall assessment, the book has tremendous merit and has appeared at a moment when the Indian geographers were still debating the value of GIS, and some were even reluctant to adopt it. This sets the trend for similar effort for a GIS system of India, more elaborate and on a much larger scale.

The book, a trend setter in as much as it is the first of its kind is a most welcome addition to geographic literature on India. It opens a new vista to spatial data processing and thematic cartography. Ms Lahiri is to be congratulated for undertaking this arduous task, requiring enterprise and constant monitoring, and producing such a splendid book on Bihar, using the geographic Information System.

*K. R. Dikshit*