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## BOOK REVIEWS

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**Metamorphic Tectonites of the Himalaya:** Editor: P. S. Saklani, (Today and Tomorrow's Printers and Publishers, New Delhi). Pages 370. Price: Rs. 250/-

Metamorphic Tectonites of the Himalaya is the IV Volume in the series, 'Current Trends in Geology'. This volume carries 16 articles contributed by well-known geoscientists from India and abroad. The series are published not only to popularise Himalayan geology but also to highlight trends of latest researches of relevance to the Himalayan Geology.

Brookfield (pp. 1-14) in his article on metamorphic events in Ladhak region of the N-W Himalaya presents sufficient evidence to show that the types of metamorphism can be related to the tectonic characters of the zones in which they are developed. Saklani and Daval (pp. 15-26) have shown, how metamorphic history of Ghuttu Garhwal reflects the multiple Himalayan orogeny and the imprints of deformation are well documented in the metamorphites of the area. Tectonics and structures of the Pamir metamorphics (pp. 27-42) by Ruzhentsev and Shvolman show that deformations, folding intensity, etc., are rather similar to the 'Alpine lines'. The low grade metamorphites of Garhwal Nappe have been studied by Gairola and Saxena (pp. 43-62). Bedi and Prasad's (pp. 63-88) contribution on the metamorphism in the aureole of Dhauldhara batholith (H.P.) with petrographic notes and chemistry and the discussion related to physical conditions of metamorphism is significant. The study of the two overlapping crystalline thrust sheets of the lesser Himalayan region in Himachal Pradesh by Viridi (pp. 89-100), related to low and high grade metamorphism is highly interesting. Rao and Kumar (pp. 101-110) record mineralogical and textural characters and discuss the migmatization of the pelitic rocks and amphibolites in Jutogh (Simla Hills). Uranium in metamorphites of Tehri Garhwal by Narayandas *et al.* (pp. 111-122) is of great economic importance in the region. The rocks exposed near the Main Central Thrust (MCT) Zone are most promising for uranium exploration. Varadarajan and Rawat (pp. 123-134) discuss in their article, metamorphism, lithostratigraphy, structure and age of metamorphites lying between MCT in the north and Naini Thrust in the south. Structure of Almora crystallines is a good contribution by Srimal and Pati (pp. 135-154). Metamorphism of rocks around the Manali-Rohtang Pass area of N-W Himalaya by Kumar (pp. 155-174) includes the study of mineralogical and chemical changes involved, temperature-pressure environments and metamorphic events. Barrovian metamorphic

zones have been demarcated. Maruo and Kizaki (pp. 175-230) in their detailed paper on structure and metamorphism in Eastern Nepal have shown that three metamorphic phases, synchronous with the deformation, affected the rocks of the area. They feel that multiple thrust movements in the Himalaya might have affected the nature of metamorphism in the rocks of Nepal and other Himalayan regions.

Lal *et al* (pp. 231-278) have described the metamorphic characteristics of the rocks of Takdah (Darjeeling). Five prograde metamorphic zones have been indicated (chlorite to sillimanite). The textural discontinuity between core and rim of garnet, according to them can result from continuous reactions. Their data suggest that the MCT was a locale of high heat flow with associated high grade metamorphism. Sinha-Roy (pp. 279-302) opines that inverted metamorphism of the central crystallines in the Himalaya is caused by intracontinental underthrusting along the MCT at a fast rate. Saxena (pp. 303-348) thinks that the Kashmir region of N-W Himalaya represents a relict of Permo-Triassic island arc. According to him the Himalayan and Tethyan geosynclines came into existence on the sagged sialic crust. The rocks of these geosynclines experienced metamorphism and deformation in precambrian times. The metamorphic history of Garhwal and Kumaun region with reference to 'Inner Schistose Series' has been dealt with by Pande (pp. 349-370) and is highly interesting.

The editor intends to bring out a separate brochure under the title 'Critical Notes on Metamorphic Tectonites of the Himalaya'—a companion to this volume.

This book, I am sure, will enable the readers to reap the advantage of a cohesive and comprehensive picture of present the trends on the subject.

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**Rothamsted Experimental Station—Report for 1980, Part I and Part II** (Rothamsted Experimental Station, Harpenden, Herts, AL5 2JQ U.K.) 1981, Pages 315, 155. Price: £8/- for two parts (not sold separately).

The Report is in 2 parts, priced at £8. Part I deals with the biochemistry, botany, Broom's barn experimental station, entomology, farms,



nematology, physics, plant pathology, soil microbiology, soil survey, soils, plant nutrition and statistics.

New impetus was given to genetic manipulation of plant species and the scientists regenerated (for the first time in Britain) potato plants from isolated protoplasts using the commercial tetraploid cultivar, Maris Bard.

The knock down resistance (kdr) to pyrethroids, is possibly due to alteration in the properties of membrane lipids in the house fly. Pyrethroids, like deltamethrin, being rapid in action on aphids, may be useful in restricting virus transmission. The electrostatic spraying system has been further improved to spray oil or water based formulations. Mechanical methods of separating worms from pig and other wastes are being improved to provide farm scale methods of breeding worms from pig manure to supplement proteins needed for a herd generated from their own waste. Investigations are underway on the alarm, queen and nasanov pheromones and viruses infecting honey bees.

Part II deals with soils of Rothamsted farms; the effect of changes in crop rotation and manuring on soil pH, P, K and Mg, the agricultural benefits of Rothamsted aphid bulletin; synoptic monitoring of migrant insect pests in great Britain and Western Europe; establishing expected values for species content, population stability and phenology of aphids and moths; the species of alate aphids sampled at Insect Survey suction trap at Tastrup, Denmark between 1971 and 1976; the use of fertilizers in England and Wales in 1980, and the Twelfth Annual Rothamsted Insect Survey. These two volumes are very valuable for any agricultural research station and they have been produced with the meticulous care that has always characterised the research and publications from Rothamsted Experimental Station.

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**From Chance to Purpose** by Clifford Grobstein (Addison-Wesley Publishing Company, Massachusetts, USA), 1981. Pages: 207. Price: \$17.50.

The birth of a baby in July 1978 in England from a union of sperm and egg outside bodies of the parents heralded a new era with its concomitant problems of ethics, morality and human rights. The Department of Health, Education and Welfare (HEW) of United States appointed a Committee in September 1978 to report on the HEW support of research involving human *in vitro* fertilization and embryo transfer. The Committee composed of experts from medical, legal

and other disciplines submitted its report in May 1979, which is reproduced in this book, in full, in the form of an appendix. The report is a valuable document and discusses in a considered manner various aspects of extra corporeal fertilization in humans.

An interesting issue to which attention has been drawn by Dr. Grobstein is the new era that has dawned in Life Sciences. Biotechnology is making inroads, exploiting the potentiality of living cells to make molecules by design. Man has started meddling with living systems. Creation of total organisms in the laboratory by using the gametes, appropriately matured and maintained is a significant advance. At present it is offered as a mean to overcome sterility in women with nonfunctional Fallopian tubes. However, the principle can be used for other situations e.g. making of embryos from egg and sperm contributed by unrelated partners. Gestation can be hosted by "foster" and not actual mothers. The technology can and is likely to be of use in breeding of farm animals.

The mechanics of the act are as follows. Mature egg is removed from a donor by a simple surgical procedure just prior to ovulation. Ovulation may be allowed to take place by natural hormonal rhythms or induced by treatment. Sperm obtained from the other partner are "capacitated" by procedures already known. Sperm-ovum interaction takes place readily in a dish in simple but defined medium, and the embryo at an early stage of development is transplanted back into the uterus which should be hormonally prepared and synchronized to receive it. In spite of these apparently simple steps, the success so far attained has been fairly low. In England 79 sterilized women were subject of studies. Out of these 45 yielded preovulatory eggs, 35 of which were fertilized successfully, 32 cleaved normally and implanted. Only 4 became pregnant and out of these 2 aborted. Thus the success rate was 6.3% of those receiving embryo transfers and 2.5% of those accepted for treatment. The Australian Group of Wood and Trounson have modified the procedure in some ways leading to an overall efficiency for live birth of twice as high as earlier efforts. Clearly there are technical manipulation problems and to some extent they will be resolved with experience. However, this also reflects the degree of partial knowledge that we have of the reproductive events. Mouse, hamster and rabbit have been the principal animals of study in the laboratory. There is by and large dearth of information on the precise requirements for successful fertilization and implantation in the primates.

This Book is primarily written for the general public and not for the gynaecologists or reproductive biologists working in the area as it fails to give scientific details. It does however evoke a pertinent issue.

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