

The Ghost in the Atom, Ed. by P.C.W. Davies and J.R. Brown, Cambridge University Press, (1986), Distributed by Foundation Books, Rs. 175.

The Golem, Harry Collins and Trevor Pinch, Cambridge University Press, (1993), Distributed by Foundation Books , Rs. 150.

Advances in Gravitation and Cosmology, Ed. by B.R.Iyer, A.R.Prasanna, R.K.Varma and C.V. Vishveshara, Wiley Eastern Ltd. , (1993), Rs. 450.

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One of the casualties of the boom in Popular Science writing that started with F. Capra's "The Tao of Physics" has been clarity and accuracy about the nature of science. In trying to simplify abstruse concepts of modern science for the lay reader, most of the authors have trivialized the subject with the result that the readers are left with erroneous notions about science. The huge commercial success of a variety of "pop popular science" has only contributed to the flooding of the market by all manner of books about quantum physics and dancing particles, mysticism and alternate worlds, etc.

Fortunately, the books under review avoid this pitfall. "The Ghost in the Atom", is a book which has grown out of a series of interviews broadcast over B.B.C. It is, as the subtitle says, "a discussion of the mysteries of Quantum Physics". Quantum Mechanics and the Theory of Relativity are the two revolutions which shook Physics in the beginning of the century. Not only are they immensely successful as physical theories in explaining diverse natural phenomenon, but they have also altered in a profound sense, our view of the natural world.

The enviable success of Quantum Mechanics has however been somewhat marred by the deep conceptual problems which it throws up. Of course, for most practicing scientists, the successful explanation of physical phenomenon is enough to accept quantum mechanics as the correct theory of the microscopic domain. But right from the time of its inception, there have always been physicists who have been very uncomfortable with the puzzling philosophical underpinnings that the theory has. Among them have been the founders of quantum mechanics like Bohr, Schrodinger, von Neumann and others like Einstein.

P.C.W. Davies and J.R. Brown have done a superb job in bringing together the views of eight practicing scientists on the mysterious nature of quantum phenomenon. From John Bell to Alain Aspect, each one of them have not only contributed significantly to the development of the subject but has also definite views on the conceptual foundations of this intriguing field.

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These views range from the "accepted" official view, the so called "Copenhagen interpretation" , to the seemingly bizarre Many Worlds Interpretation. There is an excellent short and lucid overview of the subject in the introduction by Davies where he again proves that he is undoubtedly one of the finest popularizers of the subject. The introduction provides the non-specialist reader with enough background to appreciate the interviews with the scientists. The interviews themselves are incisive and bring out the differences amongst the people who are at the forefront of the field about the nature of the Quantum Physics. There is a helpful glossary of technical terms and a short list of further reading material which is of use to the reader who wants to follow up from the book. In sum, this is a thought provoking, excellent introduction to the many mysteries which still surround the most successful theory known to humanity, even after almost three quarters of a century.

As opposed to Davies' book, "The Golem" is a book not about science but really about the sociology of science. There has been a very active debate in recent times about whether science is "good or bad". The views of most people in the debate have usually been polarized; some people cite antibiotics, electricity, and other such benefits which science has bestowed upon humanity while others point to Star Wars, Bhopal among others as evidence of the destructive nature of science. The authors are of the view that whatever be the case, science is too important to be left to the scientific establishment. Science and technology invade all aspects of our existence and hence it is imperative that we understand it's working.

In order to provide an insight into how science is practiced actually, seven case studies are presented which are taken from subjects ranging from Physics to Microbiology. The case studies are presented as episodes without too much reflection on the scientific method which allows one a view of things as "they really occurred" without the benefit of hindsight. The studies themselves cover a vast canvass, from the detection of gravity waves to the sex life of the whiptail lizard. Unfortunately, some of the topics are somewhat abstruse and the lay reader may not fully appreciate the argument which the authors are making. They claim that these episodes illustrate that the actual practice science, is as full of controversies as any other field of enquiry. The authors assert that ultimately, science is practiced by human beings who are not above normal human failings. The myth of the perfectly rational and unbiased scientist is precisely that, a myth build up over years.

The title of the book is taken from Jewish mythology where Golem is a powerful humanoid which will follow your orders but is clumsy and dangerous without adequate control. Today, when technology is all pervasive, a better public understanding of science is certainly highly desirable for a more democratic functioning of our society. As numerous incidents have shown us, without adequate control from the public, science can certainly produce disastrous results. The book is a timely reminder of this very real danger.

"Advances in Gravitation and Cosmology" , is a volume of conference proceedings of the II International Conference on Gravitation and Cosmology held in Ahmedabad in 1991. The papers collected in this volume are all contributions in frontline areas in the fields by very reputed physicists and astrophysicists. Some of them are in the nature of quasi -review papers but by and large most of them are research papers. The book is well produced and has some excellent cartoons by one of the editors, C.V. Vishveshwara. Unfortunately, like the papers in the volume, these illustrations are also meant to be for the specialist reader who is working in the field. The level of the papers is much too advanced for the non-specialist. But for the students and researchers in the area, this is an excellent compilation of recent work in the field.

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