In spite of shortcomings, I find the book very interesting and informative. It would be of value to physicists interested in foundations of field physics. Also to those who believe that the direction taken by the authors is a retrograde step, it offers challenge to find consistent explanations of the experiments reported in the cited papers within the present day conventional physics.

The get-up of this reasonably priced paperback is good.

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Science for a Polite Society (Gender, Culture and the Demonstration of Enlightenment). Westview Press Inc., 5500 Central Avenue 391, Boulder, Colorado, 80301-2877, USA. 1995. Price: $35. 391 pp.

The book is about the Science of Scientific Revolution during the seventeenth and the eighteenth century France. It presents social and cultural history of the birth of new Science during the reign of Louis XIII, XIV and XV. It explains in detail about the 'intellectual community' who practised what they usually called 'natural philosophy' and 'natural history', and throws light on the influence, with respect to the literary and cultural context, of the new Science developed by them on the polite Society. The book, as the title suggests, depicts the gentle attributes of natural philosophy in the seventeenth and the eighteenth century Paris. These attributes proved to be crucial to the way in which the field entered into the intellectual world. The book explains how social elite in Paris accepted Science as valid and interesting. French accepted Science as the basis for their enlightenment because of their personal fascination with the philosophy of nature and the history of its creatures. It is the larger faith in the philosophy of the natural world, a kind of widely based movement in elite culture that is being presented.

The book proceeds with what the author calls a standard story of steady and rational progress of Science, according to which the birth of new Science represented the discovery of immutable truths about the nature. It begins with the astronomical system of Nicholos Copernicus who in his book *De Revolutionibus* (On the Revolution of heavenly bodies) published in the mid-sixteenth century, produced a mathematical model for the motion of planets around the stationary sun. Following his mathematical framework for heavenly bodies, a generation of natural philosophers like Galileo Galilei, Kepler, Rene Descartes and Francis Bacon came into limelight, who with their observational skills and mathematical elegance of their theories, gave alternatives to the cumbersome Christianized Aristotlian world-view. This lead to a continuous and unified progress in Science with a large school of experimentalists doing systematic investigation of the natural phenomena by inventing more and more sophisticated instruments, and also some gifted mathematicians formulating their corresponding mathematical models. During the last decades of seventeenth century 'incomparable' Isaac Newton in his *Principia* provided three universal laws applicable to both terrestrial as well as heavenly bodies. Newton's work was followed by a host of mathematicians working out the details and the applications of his theories.

According to the standard story, the eighteenth century consolidated the advances of the seventeenth century. The new Science became popular because it provided a source of amusement and spectacle through demonstration-cum-lectures, (and also through their proceedings published (and distributed) weekly by some special Institutions, e.g. 'Bureau d'Adresse' run by Renaudot in Louis XIII France). According to the author, the interest in Science arose not from some patriotic duty or self-imposed discipline but rather from sheer enjoyment that the practice of Science brought to its amateurs. With the triumph of science came a sort of intellectual prestige that made it a model of what rationality should be. The enlightenment of the eighteenth century took scientific thought as the basis of human progress. The scientific community believed that the application of the methods and techniques of scientific theory could reform political and economic thought.

I shall now discuss some of the aspects incorporated by the author in his book which make it different from other traditional accounts of the history of Science. The author has presented the kind and gentle face of Science in the Ages of Reason and Enlightenment, which is more feminine than is usually highlighted by the standard historians of Science. The author has discussed in some detail the significant role played by women in the acceptance of new Science by a polite society, or in other words, the feminine or the feminist side of the Scientific Revolution has been explored. The influence of women, especially, during the reign of Louis XIV and the early period of the rule Louis XV, on who practised science and how they practised it has been described. Their involvement ranged from the serious study of Mlle de Chetaignaires or Mme du Chatelet, the academy of Mme de Guedreville to simple attendence at the Rohault's or Nollet's lectures or the reading of Fontenelle's *Conversations on the Plurality of Worlds*. Even though, in general, women were not the permanent members of 'academic' institutions like 'Academie royale des science', the author draws attention to their active participation in essentially every philosophical or experimental venue, giving suggestions on how to make science more amusing, fascinating as well as enlightening. This aspect which proved crucial in popularizing Science, is not in general discussed in standard literature on history of Science.

The author has described in detail about the work of intellectuals ranging from Renaudot, Descartes, Chapelain, Huygens, etc. to Nollet, Leibniz and Newton. He has also discussed the famous disputes among the Cartesians, Newtonians and Leibnizians. The competing theories came to be accepted either at the demonstration lectures or in some academic institutions, e.g. the reconciliation between Cartesians and Newtonians became explicit at Mme du Chatelet's 'Institutions de physique'. This in turn, according to the author, represents the feminine side rather than masculine side of the Scientific Revolution.

The demonstration lectures which proved crucial in making the new Science popular have been explained in detail which helps the reader to get a 'feel' for the nature of these demonstrations and their impact on the general audience. The author describes the demonstration lectures (with pictures of

apparatus) ranging from Rene Descartes' explanation of natural phenomena, Poliniere's 'fountain in vacuum', Haukshee's electric machine, etc. to the apparatus describing parabolic nature of trajectories and Nollet's several electric experiments.

The author also points out in his book about the relation between the Church and Science. The great conflict so frequently portrayed between Church and Science, between stultified authority and ingenious reasoning simply did not show itself during Louis XIII. The French catholism never felt particularly challenged or threatened because of development of new science. According to the author, the conflict between ancient and modern learnings occurred not in the field of science but in the field of literature which is rather not so common.

This is an excellent and informative book for those who want to study the history of Science, and get a 'feel' for how it was developed in a polite society like that of France during Louis XIII, XIV and XV era. The only flaw that I could find in the book was that it is 'heavy' reading for those who are not students of the history of science.

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Quantification and the Quest for Medical Certainty. J. Rosser Mathews. Princeton University Press, 41 Williams Street, Princeton, New Jersey 08540, USA. 1995. 195 pp.

The least one can say is that this is a fine book. It tells us the story of people who passionately involved themselves in doing the right thing for their times as well as for the future. Introduction of statistical reasoning in medicine, as an obligatory need to know if we are really helping the patient by our remedies, has been no small exercise. I have no doubt in recommending this book to any one who is reasonably interested in biomedical research/profession and biometry in any form. I will paraphrase the ideas that the book spurred in my own thinking to illustrate how current such an account can be. Moreover, a review should not be a potted book. I would say, there is much to learn for the contemporary medical man in this. There is even more to learn for the statistician, who often is ignorant of the travail that goes into the treatment of a disease or the research associated with it. What impressed me in this book is the ability to evoke many parallel thoughts without forcing them on to the reader in an otherwise historical account of quite a technical nature.

The concluding chapter highlights the professional concerns of the author. There is the parallel between the Kuhnian revolution in the dominant paradigm of the feel for the nature of objectivity... amidst the disciplinary, the procedural, the dialectical and the absolutionist notions. Relevance to contemporary problems like AIDS has also been touched upon. But there is more.

First there is this question of the primacy of the individual in medical profession as opposed to the patient merely representing a number. Does representation of individual suffering and anguish as a part of statistics dehumanize the essence of medical practice? The debate starts there with the French school. If Hippocrates forbade the use of knife on a man with stone, what misery, what anguish has gone in to record this to posterity as a solemn oath that all of us have taken? Balance this against the imperative of public health, the desperation of an epidemic or the illness and death associated with squalor and deprivation. A few have identified themselves with the need to bridge the gap between mathematical sciences and medicine which were otherwise quite separate in those days, and even today. It takes a commitment of a different kind to fight for a method and a principle, ignoring immediate job satisfaction that the physician/surgeon has. The Halsteads were apparently no exception to succumbing to the particular and forget the general and the statistical.

Much has been stated about this Calvinist enthusiasm in the birth of science in the old continent. Again the revolution, an year after beheading Marie Antoinette, gave the primacy to physical examination, autopsy and statistics in the management of medical matters. The fight has been right. If Louis, the protagonist of the number game is to be believed, the mean value between competing therapies would tell us the merits of each. But then mean value did not tell us something about the uncertainty associated with it. Then came the Poisson ratio of 212:1 or 0.9953 as a standard of certainty (tending to unity). The odds became too high. There is nothing more pleasurable than to attack your opponent with his own figures. And medical history, as with science, has been full of such instances.

The drama is not restricted to only fights about numbers. Attitudes and personalities have all been touched upon. If Karl Pearson would rather sack Pearl from the editorship of *Biometrika* than allow him to commit heresy against his own pet theme of Eugenics, it sounds all too familiar. These lows are also accompanied by highs. If Greenwood would rather spend time in the newly instituted Medical Research Council (started as MR Committee at Hampshire) educating the ignorant bureaucracy in medical epidemiology and statistics, Pearson would rather have one attend to important research than attend to educating the minions; the conflict of perceptions becomes obvious. The stoicism involved in spurning a cushy research position to a more prosaic posting in public health becomes all the more appreciable when we realize that the efforts at helping build MRC did not go in vain either. This reminds one of what Effraim Racker once said: even if the government forces you to do applied work, if you proceed logically enough, you will soon be doing very basic work. Ultimately the movement across the old and new continents culminated in the pathbreaking work of Hill in the design of a randomized clinical trial, borrowing and building upon Fisher's random block design which was so successful in agriculture. This led to safety for the public that an untested drug shall not be bestowed upon us, thalidomide notwithstanding.

It is beyond the scope of the book and, perhaps, the author's expertise that he did not touch upon the relevance of the study on contemporary issues. I will mention just a couple of instances wherein this book would give much for thought. The increasing frustrations in pharmacoeconomics require that the cost of drug testing be brought down. The obvious area would be in the clinical trials. The testing is so expensive that the drug throughput is largely minimized by the prohibitive costs and time in drug testing. Also, as gentler drugs that improve quality of life are being thought of than cure in many instances, what does the investigator do in