cancer patients. Few would deny that patients sometimes receive excessive or inappropriate treatment; but having berated specialities, Inglis does not see that this is most likely to happen when cancer patients are treated by non-specialists. Inglis blames the medical establishment for the lack of progress in treating cancers of the lung and breast. Yet he makes no reference whatsoever to the successful treatment and cure of many paediatric cancers and leukaemia, Hodgkin's disease, choriocarcinoma or testicular cancer, which all result from the development of the aggressive forms of therapy which he so derides. True, these are rare types of cancer in terms of total incidence of malignant disease; but they are major causes of serious illness in children and young adults, with a high social and personal toll. There are common cancers too — of the skin, for example — for which diagnosis at an early stage undoubtedly reduces mortality very significantly. Inglis also entirely ignores palliative treatment, assuming that surgery, radiotherapy, chemotherapy or endocrine treatment invariably cause more suffering than leaving the cancer patient untreated by orthodox methods.

Inglis's account of cancer research funding policy is also seriously misinformed. He states that because the British cancer research charities "are largely controlled by specialists, naturally they favour projects which help them in their hospital work, providing them with better-equipped operating theatres, improved radiotherapy machines, more powerful drugs". This is nonsense, as no research project is more difficult to obtain funding for than one that smacks of a medical service role. Following the *British Medical Journal's* peculiar outburst two years ago, Inglis reiterates that less than 2 per cent of the British charities' expenditure is directed towards research into cancer epidemiology and prevention, an absurd underestimate even if one discounts the potential of basic research for future prevention. He thinks the public should be given more opportunity to influence the way in which cancer research funds are spent. This is a laudable sentiment, though difficult to implement;

moreover, "the public" will almost always choose to fund high-technology hardware, such as CT scanners, in preference to research into the psychosocial aspects of cancer that Inglis rightly wishes to promote.

In criticizing the medical management of the mental patient Inglis is on stronger ground, in that no single orthodoxy has emerged. From his account one does have the feeling that the theory and practice of treatment for mental illness has not advanced beyond the blood-letting era. Having heaped scorn upon the medical establishment's "obsession with diagnosis" for infectious diseases, Inglis here deplores the unreliable classification of mental disease, quoting large discrepancies between US and British psychiatrists. In fact, the WHO definition of schizophrenia can now be used to standardize diagnosis. As Julian Leff discusses in his recent monograph *Psychiatry Around the Globe: A Trans-cultural View* (for review see p.523), the incidence of schizophrenia is surprisingly uniform across different cultures, though its recognition as a disease state requiring treatment differs widely.

Inglis misses another opportunity for serious debate in his chapter on iatrogenic disorders. Quoting the Hippocratic dictum "At least, do no harm", he does not discuss whether the harm induced by treatment might be less than that of no treatment. Inglis justly reproaches the medical profession over drug abuse and carefree prescription, particularly in treating the symptoms of diseases of civilization without paying due attention to underlying causes. Yet in an earlier chapter he criticizes by-pass surgery for angina pectoris when chronic drug treatment might achieve the same result. One of the most notorious examples of iatrogenic disease (not quoted by Inglis) was the induction of leukaemia in patients treated with X-irradiation for ankylosing spondylitis. The radiotherapy undoubtedly caused enormous relief from the symptoms of a crippling, painful and eventually fatal hereditary disease; given the prospect of that relief, with the possibility of dying from iatrogenic leukaemia 15 years later, would Inglis have advised the spondylitis patient to spurn treatment?

Overall, Inglis has broached an important topic by questioning the basis of our current medical philosophy and its disregard for preventative health measures and social care. But I wish that he had not chosen to present orthodox medicine and research as the antithesis of genuine care and that he had researched his commentary more deeply. More importantly, I earnestly hope that any young man with testicular cancer or parent with a child suffering from leukaemia will not refuse orthodox treatment as a result of reading this book. □

Robin Weiss is Director of the Institute for Cancer Research, London.

Politics of pesticides

M.S. Swaminathan

Circle of Poison: Pesticides and People in a Hungry World. By David Weir and Mark Schapiro. Pp.99. ISBN 0-935028-09-9. (Institute for Food and Development Policy/Third World Publications: 1981.) \$3.95, £2.50.

Circle of Poison provides an insight into the process by which "someone in the underdeveloped countries is poisoned by pesticides every minute". The circle begins with the activities of leading multi-national corporations which dominate the seven-billion-dollar-a-year pesticide market. The links in the chain include loopholes in government regulations in the United States, the import policies of developing countries and the indifference of bilateral and multilateral donors, regional and international banks and UN agencies.

Weir and Schapiro argue their case cogently. For example they point out that at least 25 per cent of US pesticide exports are products that are banned, heavily restricted or have never been registered for use in the United States — "The Federal Insecticide, Fungicide and Rodenticide Act explicitly states that banned or unregistered pesticides are legal for export". Developing countries which receive hazardous pesticides recommend the application of such pesticides in a routine manner, partly due to ignorance and partly due to their being cheaper than less-toxic products. An instance has been cited where parathion is being used in Central America at a dosage 40 per cent greater than necessary. In contrast, through the adoption of better pest-management procedures, US farmers now use 35–50 per cent less insecticide than ten years ago, with no adverse effect on crop yield. An important consequence of the indiscriminate use of pesticides is the multiplication of pesticide-resistant insect species, leading to the use of still higher concentrations of the chemical, and so on.

At each stage in the process, the circle of poison has its victims — the staff in pesticide manufacturing plants, those who load and unload the chemicals, Third World peasants, workers and consumers, and finally everyone else in the world who eats food contaminated with pesticide residues. But undoubtedly the greatest impact is felt in the developing nations. According to some calculations, the rate of pesticide poisoning in such countries is more than 13 times that in the USA. The authors give examples from their investigations in Mexico, Central America, Pakistan, Indonesia and Papua New Guinea to illustrate how pesticides prohibited in the US reach the peasants of the Third World. Unfortunately, in these countries there are neither enough scientists to investigate the dangers arising from such pesticides nor is there a well-

Handlist for historians

The Science Museum, London, has recently published a vade-mecum for science historians, *Reference Books for the Historian of Science: A Handlist*. The bibliography has been compiled by S.A. Jayawardene with the intention of providing a volume to complement other bibliographic manuals, covering the primary and secondary sources of the history of science, by the inclusion of general reference books. The handlist includes some 1,000 titles, and is available from Library Publications, Science Museum Library, South Kensington, London SW7 5NH, price £2.50, £3 by post.

informed and well-equipped government machinery to prevent foreign pesticide makers from selling products which are banned in their home countries.

However the United States and other pesticide exporters also suffer the consequences of the dumping of banned chemicals in developing countries. According to the US Food and Drug Administration, about 10 per cent of the food items imported into the United States contain higher levels of pesticides than are permitted. Therefore, even on the basis of enlightened self-interest, it would be advisable for developed countries not to permit the export of chemicals which cannot be sold at home.

The authors also question the pathway of productivity improvement involved in "the green revolution strategy". By encouraging monoculture, losing genetic diversity and not promoting integrated pest-management schedules, the use of large quantities of pesticides has become essential. The authors suspect that the emphasis on this kind of high-yield technology is largely because of the interests of the multi-nationals — several of them are involved not only in the production and sale of pesticides, but also in the production and distribution of seeds and chemical fertilizers.

The circle of poison has become possible only because of a circle of collusion between national and international companies, banks and government and UN agencies, all playing a role in the spread of poisonous chemicals. Fortunately, in recent years, some steps have been made towards breaking the unholy triple alliance of pesticide manufacturers, importers and finance institutions. The authors propose several methods by which the fight against the proliferation of hazardous pesticides can be brought to a successful end. Action, they say, has to be taken both at national and international, and individual and institutional levels. Examples are cited of the kinds of effective checks being developed in the Philippines and Malaysia. The resolution of the United Nations General Assembly passed in December 1979, urging member states to exchange information on hazardous chemicals (and pharmaceuticals) that have been banned in their countries, and to discourage export of those products to other countries, is another move in the right direction. This has been followed by similar steps by OECD and other organizations. The Environmental Protection Agency in the USA is also becoming more vigilant.

David Weir and Mark Schapiro have rendered signal service by drawing attention to the deficiencies in existing regulations and practices in the trade of hazardous pesticides in both the exporting and importing countries. The book, therefore, deserves to be widely read by all connected with agricultural research and development as well as those involved in the development of public policies relating

to human health and environmental protection. Nonetheless, their account does have some flaws.

In the section entitled "More Food and Yet More Hunger", the authors try to place the blame for rural poverty mainly on developments in the improvement of agricultural production. This is not wholly correct since it is now widely accepted that the new technology involving the cultivation of management-responsive varieties is neutral to scale with regard to the size of the farm in which the technology is adopted. Hence, a small farm is not a handicap from the point of view of adoption of new technology. A small farmer, however, has many problems arising from the cost, risk and return structure of farming. The potential offered by a small farm for intensive agriculture can, therefore, be realized only by removing the constraints faced by small farmers. The action required is in the realm of public policy and not technology. Technology can only help to maximize

output from the resource endowments of each country; poverty can be minimized only through appropriate political decisions in the fields of land and livestock reform, asset transfer and social security. Unfortunately, terms such as "miracle seeds" have created the impression that new technologies can provide miraculous solutions to problems of poverty, social inequality and injustice. It would have been prudent to have avoided the temptation of making a few casual and over-simplified statements on rich-poor equations, since such problems deserve in-depth analysis. This would have lent greater authority and credibility to the principal message of the book — that the temptation to make profit out of poverty and ignorance can be countered only through widespread awareness of the techniques used for this purpose. □

M.S. Swaminathan is Director General of the International Rice Research Institute, Manila, Philippines.

Whence the power of the medicine-man?

Robert Ubell

The Clay Pedestal: A Re-examination of the Doctor-Patient Relationship. By Thomas Preston. Pp.226. ISBN 0-914842-68-4. (Madrona: 1981.) \$12.95.

THOMAS Preston, the author of this book on modern medical practice in the United States, is a cardiologist with his heart in the right place. Acutely aware of the way doctors play musical chairs with their patients, he rises to their defence, sympathizing with the patients, castigating the physicians.

Preston's analysis closely follows much of what many of us already know from sad experience. Divorced from their patients, concentrating on their business, toying with medical technology, doctors often alienate the sick and frightened with impoverishing bills, high-handed manners and bureaucratic mazes. He lays the blame for these failures on elite training at medical schools, authoritative and paternalistic attitudes, and the advantages of power, prestige and money. Arrogant doctors, he claims, frequently act decisively when hesitation and doubt are best; often they perform no better than quacks and faith-healers.

From greed, doctors tend to over-treat and over-test:

When a surgeon is faced with a choice between doing nothing for which he collects a thirty-dollar consulting fee, and recommending surgery for which he would get three thousand dollars, is he not going to be influenced in the direction of surgery? Only a physician would dare suggest impartiality under the circumstances.

Preston cites studies showing that Americans who come to their doctors for help are twice as likely to undergo surgery as their British cousins. Since the overall mortality rate in the two countries is roughly the same, either Americans are more prone to illness — which seems unlikely — or a vast number of pointless operations are being performed. And because of over-medication and useless therapies, many patients become ill — some even die — *because* they visited their doctor. Had some stayed away, allowing healing to take its natural course, they would have remained alive and well, unharmed by iatrogenic disease.

Preston's most cutting attack is against doctors who practice medicine as if it were a guessing game, relying solely on their subjective clinical judgement rather than proven scientific methods. The random, controlled trial is the only sound basis on which doctors can claim effective therapies; yet physicians continue to walk down unscientific paths. Preston shows that medicine without science is doomed to repeat its recent and dangerous errors — radical mastectomy, chelation treatment for arteriosclerosis, pure oxygen for premature babies, electroshock therapy for mental illness. Ironically, it was under the banner of improved scientific standards that physicians campaigned for and ultimately won control over the practice of medicine in the United States.

Preston draws parallels between American doctors today and ancient healers, taking us back to tribal communities where the shaman and the primitive