

legitimisation, and advice on setting up and running a group.

The way forward lies in self help groups and health care workers being willing to learn from each other. Doctors are unhappy that self groups are to them an "unknown quantity," but they may feel easier if they are told about the groups by "linkworkers" who are employed either by health authorities or by the self help groups. Linkworkers may also start self help groups; this has happened in Nottingham, where the workers have helped at every stage from identifying a need in the community, planning a programme, getting key people to participate, supporting the groups in their early days, and eventually letting their fledglings fly. Information on the vast network of self help groups is available through Help for Health, a database provided by Wessex Regional Health authority.

Despite few doctors attending the conference and despite the criticisms aimed at doctors, most of those in self help groups want to work with doctors, and the fact that some doctors are very positive about the groups was illustrated by the mother of a child with Down's syndrome. She proudly told the story of how her relationship with a paediatrician had changed completely: he had thought self help groups "a waste of time," but he now introduces her to his students, saying "This is Mrs Wallace, who knows more about Down's syndrome than I do."

MARY E BLACK

Registrar in Bacteriology,  
Hammersmith Hospital,  
London W12 0NN

## Three hundred and fifty years of the Peruvian fever bark

The curative virtues of the bark of certain trees growing in Peru became known in Europe about 1630, but no one knows for certain who first discovered them. The legendary story of the cure of Lady Chinchón, wife of the Viceroy of Peru, who was later supposed to have brought the bark to Spain, has been disproved<sup>1</sup> and it seems most likely that the secret of the indigenous remedy was discovered by Spanish missionaries observing the practices of local Andean herbalists. Cardinal Juan de Lugo promoted its use in seventeenth century Spain, and the powdered bark, known as Jesuits' powder, *Pulvis cardinalis*, *Pulvis patrum* or other names, became widely used in Europe.<sup>2-4</sup>

The first written record of its use in England was in 1656 by John Metford of Northampton,<sup>5</sup> but the new remedy acquired the widest acceptance after 1672, the year when Robert Tabor (or Talbor), an apprentice apothecary, successfully treated King Charles II for a persistent ague with a secret concoction of Peruvian bark. For this Talbor was knighted, appointed Royal physician and, to the disgust of the official medical profession, protected by the King from interference with his practice in London. In 1677 the bark was included in the third edition of the *London Pharmacopeia* as *Cortex peruanus*.<sup>1</sup>

It was not until 1712, however, that Francesco Torti of Modena pointed out that when using the bark the physicians must distinguish true intermittent agues from other fevers, which would not respond to the specific treatment.

In 1742 the great Swedish naturalist Carl Linnaeus produced the first scientific description of the famous plant. Wishing to immortalise the name of Lady Chinchón, he gave the tree the generic name *cinchona*, misspelling her name.<sup>1-3</sup> He added to the botanical description of the plant a common, supposedly Quechua, name quinquina, which the early French naturalists mistakenly gave to the Peruvian balsam plant (*Myroxylon peruiferum*), known since the beginning of the sixteenth century.<sup>1,5,6</sup>

The rising demand for the new remedy started a series of botanical expeditions to distant lands of the New World, where the fever bark trees could be found. This demand increased still further during the nineteenth century after two French chemists, Pelletier and Caventou, isolated two different alkaloids, quinine and cinchonine, from samples of cinchona barks.<sup>7</sup> With the greater use of quinine the search for its natural sources increased by leaps and bounds. Steps were taken to set up plantations in several parts of the world and particularly in India, Ceylon, and the Dutch East Indies. The role played by the Royal Botanical Gardens at Kew in these ventures was of the utmost importance, yet today is little remembered.<sup>8,9</sup> Nevertheless, the credit for locating the variety which produced the best yield of quinine belongs to an English trader in Peru, Charles Ledger.<sup>10-12</sup>

Ledger had an Amerindian servant whose knowledge of local flora was remarkable. At Ledger's behest this man made an expedition to the Andean region of Bolivia to collect cinchona seeds, eventually returning with 14 pounds of seeds, which were offered for sale to the British government. Negotiations fell through, and in 1865 the Dutch bought Ledger's seeds, which were later planted in Java.<sup>10</sup> Within a few years it was found that the bark of this species, later named *Cinchona ledgeriana*, had a remarkably high quinine content of around 11-13%, compared with the more usual yield of less than 3%.<sup>9</sup> By 1877 some 20 000 trees were growing and the bark of the new species was selling in Amsterdam at a price higher than any other barks; such was its success that soon most of the private plantations in British India had come to an end; and they were converted to tea, though a few government plantations survived for small scale production.<sup>10,11</sup> By the end of the nineteenth century the manufacture of quinine had passed into the hands of large profit making enterprises, and in 1918 the Second Quinine Convention gave the Dutch complete control of the quinine industry.

No trees have ever had so much scientific attention, intelligent care, or financial outlay as the cinchona plantations in Indonesia.<sup>10</sup> However, the outbreak of the Second World War and the Japanese occupation of Indonesia forced the rapid development of synthetic antimalarials, which had begun in the 1930s with the German discovery of mepacrine. Huge quantities of this drug were produced in 1943-44 by the Allies for use in the Pacific theatre of war, and it is no exaggeration to say that it changed the recent course of the world's history by maintaining thousands of men in fighting condition.<sup>13,14</sup>

The past 50 years of cinchona production have been marked by a decline in Indonesia's dominant position, due to the extensive use of synthetic antimalarials developed to meet the growing threat of drug resistance. The present annual production of dried bark varies between 5000 and 10 000 tonnes, meeting an annual demand for quinine of 35-40 000 kg.<sup>10</sup> Some 30-50% of quinine production is converted into quinidine for antiarrhythmic treatment, and altogether the medical applications account for 60% of the production,

while 40% is used by the food and drug industry as a bittering agent.<sup>13</sup>

The revival of interest in quinine and quinidine for treating falciparum malaria resistant to synthetic compounds shows how far we still are from discovering an ideal antimalarial drug.<sup>14 15</sup> Nevertheless, the present intense scientific activity ranges from exploring various combinations of known alkaloids of cinchona to the discovery of new plant species, such as *Artemisia annua* (qinghaosu) or some Simaroubaceae, with significant plasmodicidal effects. Particular interest has been aroused by preliminary success in maintaining cinchona cultures in vitro to adapt them to large scale growth in bioreactors, even if the present yields are still too low for industrial production.<sup>16</sup> Thus, it seems that the fever bark is far from dead.<sup>17</sup>

L J BRUCE-CHWATT

Wellcome Tropical Institute,  
London

- 1 Jaramillo-Arango J. *The conquest of malaria*. London: Heinemann, 1950.
- 2 Duran-Reynals MG. *The fever bark tree*. New York: Doubleday, 1946.
- 3 Missouri Botanical Garden. *Proceedings of the celebration of the 300th anniversary of the first recognised use of Cinchona*. St Louis, Missouri, 1930. (Several important historical studies.)
- 4 Guerra F. The introduction of Cinchona in the treatment of malaria. *J Trop Med and Hyg* 1977;80:112-8 and 135-9.
- 5 Metford J. *Observations et curationes*... MS Sloane Coll 2812. British Museum. (Quoted after Jaramillo-Arango).
- 6 Haggis AW. Fundamental errors in the early history of Cinchona. *Bull Hist Med* 1941;10:417-59 and 568-92.
- 7 Holmstedt B, Liljestrand G. *Readings in pharmacology*. Oxford: Pergamon Press, 1963.
- 8 Blunt W. *In for a penny: a prospect of Kew Gardens*. London: Hamish Hamilton/Tryon Gallery, 1978.
- 9 Brockway GH. *Science and colonial expansion; the role of the British Royal Botanical Gardens*. New York, London: Academic Press, 1979.
- 10 Taylor N. *Cinchona in Java*. New York: Greenberg, 1945.
- 11 Markham CR. *Peruvian bark: A popular account of the Cinchona cultivation in British India*. London: John Murray, 1880.
- 12 Gramiccia G. *Alpacas and quinine: the life of Charles Ledger*. London: Macmillan, 1988.
- 13 McHale D. The Cinchona tree. *Biologist* 1986;33:45-53.
- 14 Bruce-Chwatt LJ, ed. *Chemotherapy of malaria*, 2nd ed. Geneva: World Health Organisation, 1985.
- 15 World Health Organisation. *Advances in malaria chemotherapy*. Geneva: WHO, 1984. (Technical Report Series No 711.)
- 16 Scragg AH, Allan EJ. The potential of plant cell culture for the production of quinine. *Acta Leydensia* 1987;55:45-52.
- 17 Bruce-Chwatt LJ. *The history of cinchona and of its alkaloids*. London: Oxford University Press (in press).

## Seizing the initiative on compensation

Anxiety about our outdated, inefficient, and unjust system for compensating people injured through medical care is building up to the point where something will have to change. Members of the public, or at least some sections of the media, are greatly concerned that patients allegedly injured by benoxaprofen and tranquillisers are meeting insuperable legal difficulties in gaining adequate compensation. Doctors are anxious that their subscriptions to medical defence societies are increasing exponentially, while the defence societies themselves are fretting about their long term financial viability. Health authorities are worried that sums paid out in compensation are denting ever deeper their overstretched budgets. The Treasury is waking up to the fact that ultimately it funds much of the expenditure. And drug companies are worried less about the economic implications—because legal action against them is so rarely successful—but more about how the publicity surrounding compensation issues is tarnishing their already poor public image.

So what might happen? Last week saw the launch of the

Citizen Action Compensation Campaign, which would like to hasten Britain down the American path. The Consumers Association, the Law Society, Action for the Victims of Medical Accidents, the Opren Action Group, and various other organisations have got together under the chairmanship of the successful campaigner Des Wilson, with Lord Scarman as president, to call for radical changes in the legal system that would, they think, make it easier for people to gain compensation for personal injury. They want a compensation advisory board to boost levels of compensation, a wider availability of legal aid, and an opening of the door to contingency fee lawyers, who take on a case without a fee and take a substantial share in any damages paid. The campaign also wants class actions, which means that plaintiffs—for example, those allegedly injured by tranquillisers—could lump their cases together, so that they could be compensated more economically and efficiently. In other words, the solution proposed is one of more lawyers and more legal process, which is unsurprising as over half of the members of the advisory committee of the campaign are lawyers. (The only doctor is Dr Andrew Herxheimer, the editor of *Drug and Therapeutics Bulletin*, which is published by the Consumers' Association).

The route of more lawyers and more legal process seems the worst possible way to take to resolve the real difficulties of compensation—not only for the doctors and health authorities but also for the public. Firstly, the scheme may not work even in the way that the organisers imagine. Consider, for instance, the proposal to introduce a contingency fee system. British lawyers may be unwilling to take the risk of a contingency fee when cases are much harder to win than in the United States and the awards are much smaller; and still (again as in the United States) many patients who are not severely injured will not be able to get legal representation because lawyers will not be tempted by a share in what will inevitably be a small award. Wider availability of legal aid might help these people, but currently the government is squeezing rather than encouraging legal aid.

More importantly, many of the substantial criticisms that apply to the existing legal system will still apply—and some will be enhanced. It will still be a slow, adversarial lottery that ordinary people will find hard to get through and that will hinder recovery. Worse, it will still fail to compensate many of those who are injured, because most are not injured by negligence.<sup>1</sup> And, as in the United States, the system itself will swallow over half of the money that might be available for compensation; in other words, much of it will end up in the wallets of lawyers. Health services will be further impoverished not only by having to pay more and larger awards but also probably by the increased costs of defensive medicine—radiographs for everybody arriving in casualty after an accident and caesarean sections in the face of the slightest doubt. No wonder one of the Commonwealth's most distinguished lawyers, Justice Owen Woodhouse, described the legal response to compensation as a "fragmented and capricious response to a social problem that cries out for co-ordinated and comprehensive treatment."<sup>2</sup> Even in the lawyer dominated United States people are increasingly realising that fancy legal refinements to an inept system do not get to the root of the problem.<sup>3</sup>

The alternative to this American nightmare is a no fault scheme combined with an efficient complaints system, rigorous audit, and excellent rehabilitation. Purists might hanker after a system where everybody disabled by whatever cause (disease, cigarettes, cars, work, medicines, gunshot wounds, negligent surgery) is compensated adequately by