ing and promotion, and to regulate how and where cigarettes are sold.

The administration's investigation, along with internal industry documents leaked to the press, has resulted in several class action lawsuits being filed against the industry. One of these is a multi-billion dollar class action by 50 leading plaintiffs' firms, each committing \$100 000 (£66 666) for the first year of litigation. The suit, based on alleged misrepresentation of the risks of smoking by the industry, seeks to establish a national trust for the lifetime medical costs of smokers funded by a share of the industry's future profits.¹⁹

In an unprecedented event in April the chief executives of the seven major American tobacco companies appeared as witnesses under oath before Waxman's subcommittee to answer questions about the Food and Drug Administration's allegations and their own leaked documents. Then, in May, several members of Congress asked the Attorney General, Janet Reno, to investigate whether industry executives were guilty of various criminal offences, including conspiracy to defraud the public and perjury before Congress. Reno later told the press that the Justice Department was looking into the allegations.

The states have also entered the fray. Three states—California, Massachusetts, and Michigan—have approved ballot initiatives that increased tobacco taxes and dedicated millions of dollars of tax revenue to tobacco control. Florida and Massachusetts recently approved legislation allowing those states to sue tobacco companies to recover government health care spending for disease attributable to smoking. Three other states—West Virginia, Mississippi, and Minnesota—have sued tobacco companies to recover such costs without specific enabling legislation. In 1993, \$50 000m (£33 333m) spent on medical care nationally was attributable to smoking, 43% of which derived from public funding.²⁰

Despite this feast of antitobacco proposals, pronouncements, and publicity the proverbial cup is still only half full. Most of the recent proposals are not yet final, and legal challenges to government actions are expected. The federal tax on cigarettes is still low (\$0.24 (16p) per pack), and proposals to increase the tax to fund reform of the

health care system have been scaled down drastically. Bills to ban tobacco advertising have languished for years. And the prevalence of smoking has levelled off recently (at 26% of adults) after a quarter century of steady fall.²¹

Delegates to next week's conference will share information and strategies on how to reduce tobacco use in countries such as the United States and Britain, where smoking has wreaked enormous harm. Another major focus of the conference will be the prevention of an epidemic of disease attributable to tobacco in countries where tobacco use is not yet widespread or longstanding.

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A requiem for Reg

Qualitative research can stop tobacco advertising that appeals to children

See article on p 933

English soldiers captured by the French during the hundred years war often had their index and middle fingers cut off by their captors to render them useless as archers. Those with fingers still intact would taunt the French across the battlefields with the two fingered salute. For many young people today smoking carries a similar message. This message is evocatively captured in the qualitative research reported on pages 933-7.¹

"Reg," the humorous caricature used to advertise Imperial Tobacco's Regal brand, was withdrawn for appealing more to children than to adults. Children interviewed in the Glasgow phase of the study described Reg as conveying the right "attitude." The importance to teenagers of projecting exactly the right attitude is shown by their clothing, hairstyles, music, and language. Why should anyone be surprised if their use of cigarettes is equally bound up in their image?

Much cigarette advertising can be seen as commercialising cultural mythologies.² Hans Christian Andersen's tale of the ugly duckling that turns into a swan has its contemporary parallel in Marlboro's promise to transform the bored and socially impotent into independent and tough cowboys.

The anthropologist Claude Lévi-Strauss showed the principal psychosocial functions of myths.^{3,4} Myths offer vicarious resolutions of such tensions as those between our insecurities and the expectations of social life.⁵ The images of cigarette advertising are a catalogue of social identities, each matched through market research to the anxieties and aspirations of different sections of the market, especially teenagers. As Williamson has argued, "You do not choose in the shop, but in response to the advertisement, by recognising yourself as the kind of person who will use a specific brand."⁶

The Glasgow study shows the importance of not smoking the wrong brand to avoid "getting a slagging" from friends and risk not conforming. The child who described placing cheap unacceptable cigarettes into the box of an acceptable brand shows us that it is the image of the cigarette that preoccupies young people. By contrast the adults in the study regularly switched brands and were indifferent to what being seen with any brand might convey to others.

Cryptic copy in tobacco advertising has a long history, epitomised by the Benson and Hedges and Silk Cut campaigns, which have no text. Like the Reg campaign such advertisements go on working long after the page has been turned or the billboard passed. They succeed in tantalising the viewer to discuss them with friends, discriminating between those who "get it" and those gormless souls who don't.

Health professionals' views of the likely appeal of health education messages frequently differ from those of their intended audiences.⁷ Teenagers are unimpressed by sports stars and wholesome pop singers who announce to no one's surprise that they don't smoke.

The paper by Hastings *et al* is a classic example of how research can scupper tobacco advertising.¹ Similar partnerships between researchers and policy advocates have led to campaigns popular with children being banned. The comic actor Paul Hogan was barred from advertising Rothmans' Winfield cigarettes in Australia after research showed that he was immensely popular with 12-14 year olds.⁸ Philip Morris's attempts to popularise small affordable packs of 15 cigarettes with a campaign showing the pack tucked into the underwear of a lissome girl were also halted when researchers in Adelaide showed that 57% of young smokers had bought a pack in the previous month, compared with only 8% of adult smokers.⁹

American teenagers seem similarly susceptible to cigarette advertising. A study by the US Centers for Disease

Control and Prevention found that the three most heavily advertised brands of cigarettes had 86% of the teenage market but only 35% of the overall market. Nevertheless attempts to get Joe Camel (Reg's hipper transatlantic cousin) removed from advertisements for Camel cigarettes have so far failed.¹⁰

For all its pious rhetoric about being disinterested in the youth market, the tobacco industry must know the considerable effect that advertising has on children. Young people represent its commercial future. It has gone into paroxysms over proposals to have all cigarettes sold in plain, generic packs following research showing that children find such packs unappealing.^{11,12} Reg has been shuffled off. But as long as tobacco advertising remains there will be many equivalents of Reg. Tobacco advertising will continue to appeal to teenage aspirations in ways that the somnolent authors of voluntary codes of advertising restraint never dreamt of.

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Oxytocin and sexual behaviour

A new chapter in psychopharmacology may be beginning

See p 929

Like many other neuropeptides, oxytocin was known until quite recently only as a peripheral hormone, secreted from the pituitary gland. But immunocytochemistry has shown that oxytocin is present in a range of neurones and axons in the brain. These are mostly in the limbic system but also in the brain stem and spinal cord.¹ Oxytocin receptors are also present on other neurones.² Clearly oxytocin must have actions other than the familiar ones of promoting parturition and ejection of milk.

About 10 years ago it was found that infusing oxytocin into the brains of non-pregnant female rats rapidly induced maternal behaviour towards young pups.³ This was striking as treatments that attempted to mimic the supposed endocrine conditions of late pregnancy (treatment with oestrogen and progesterone, sometimes with added prolactin) had proved relatively ineffective. Similar findings have been reported in ewes, which are also hostile to offspring other than their own.⁴ It seemed that the central (behavioural) effects of oxytocin might correspond to its peripheral actions—and represent a chemical "code" synchronising behavioural and physiological mechanisms for the important adaptive role of maternity. This inter-

pretation was strengthened when similar coordinating roles became apparent for other neuropeptides, as more and more were found forming chemically identifiable neural systems in the brain.⁵

But there is more to the oxytocin story. Reports began to appear showing that mating increased blood oxytocin concentrations transiently in animals and humans.⁶ Sure enough, when oxytocin was infused into the brains of oestrogen treated female rats (which are not very sexually receptive) their sexual activity was considerably stimulated.⁷ A compound that blocks the action of oxytocin was claimed to reduce sexual responsiveness in rats given hormones (oestrogen and progesterone) that otherwise promote responsiveness.⁸ Similar, though less convincing, results have been reported in male rats.

Reflecting, perhaps, the need to reconcile oxytocin's effects on both sexual and maternal behaviour (and the fact that males also secrete oxytocin), the proposal was made that it promoted "bonding." Attempts have been made to show that the brains of species of vole that are habitually monogamous have higher concentrations of oxytocin (or its receptor) than polygamous species.⁹ The temptation to