

## GoodHealth

By LUCY ELKINS

**F**AST becoming indestructible, they are responsible for millions of infestations each year — no wonder experts fear we have entered the era of the super head louse.

Whereas once they could be quickly destroyed with chemical lotions, now the lice are fighting back and have become resistant to even the most powerful formulas.

A recent report based on research carried out at the Communicable Disease Surveillance Centre in Cardiff found that almost 90 per cent of head lice are untroubled by permethrin and phenothrin, the most commonly used insecticide treatments.

The problem is so great that recently the Local Government Association claimed that each year in the UK there are 7.2 million head lice in circulation which are now resistant to chemical treatment, and warned that infestations were becoming a major source of disruption to schooling.

Worryingly, head lice have acquired resistance to these formulas with remarkable speed. Take permethrin, the chemical found in leading brands such as Lyclear. This chemical binds itself to the insect's nerve cells, causing a permanent nerve impulse. The lice eventually die of exhaustion.

When it was introduced back in the Eighties, permethrin had almost a 100 per cent clear-up rate. These days, one study published in the British Medical Journal found, it clears only 13 cases out of 100.

There have been similar results noted with another chemical, malathion, which also attacks the nervous system of the insect. In certain areas of the country, the chemical is effective only in one in 17 cases.

As the insects have become resistant to treatment, the number of infections has rocketed. In the Eighties, around one per cent of pupils were infected. These days around 720,000 schoolchildren a year are affected.

So how has this super louse come to be? 'It is a global problem, and rather than one reason there has been a chain of unfortunate events,' says Ian Burgess, a parasitologist and director of the Medical Technology Entomology Centre, a group that advises the NHS on parasitic behaviour.

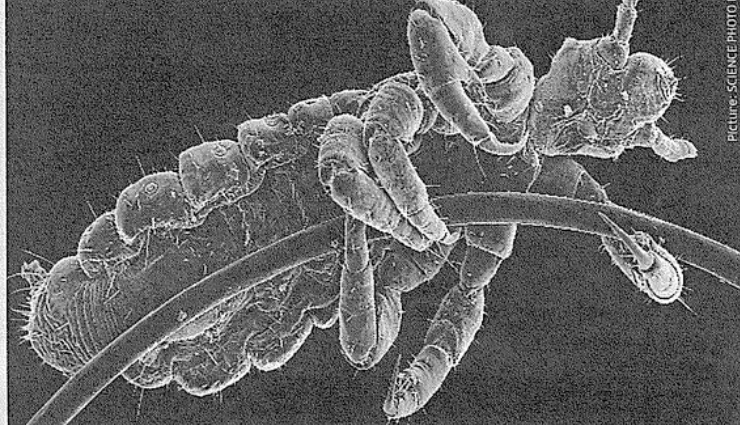
**H**E HAS been studying the march of the lice since the 1970s and first noticed they were managing to resist chemical attack in 1993. 'What happened is that people did not use the chemical products properly,' he says. 'Either they did not use enough of the product or did not leave it on long enough.'

'Consequently, the insects did not receive large enough doses of the chemicals to kill them. This had the effect of a vaccine on them — their bodies learn how to adapt so that the next time they encountered the chemical, they could break it down before it got to them.'

Now super lice have managed to evolve their nerve cells so that the chemical permethrin can no longer attach itself to them. With the chemical malathion, the resistant lice can produce an enzyme that blocks its action.

'What compounds the problem is that a lot of chemicals work in similar ways,' says Mr Burgess. 'So if

# SUPER LICE



Picture: Science Photo Library

We've never been cleaner or had more ways of tackling them. So why is a new breed of head lice running rampant through Britain's schools?

the lice become resistant to one, it does not take much for it to become resistant to similar ones.'

The problem of resistance is not a new one but the scale of it is. Until the 1970s, DDT was widely used to fight head lice, until scientists noticed that super lice were becoming resistant to it.

There have been health concerns about the use of chemicals, too.

DDT was banned from use on humans in the UK in 1973, amid fears that its use might be linked to cancer, despite patchy evidence. Similarly, there have been questions raised about the use of malathion and its possible effects on the nervous system.

Even though malathion has been ruled to be safe, many parents have been looking for an alternative to

chemical lotions. Yet it is not just synthetic chemicals that cause the resistance problem.

'Essential oils such as Tea Tree have very strong insecticide-like qualities, but we started noticing the head lice were forming a resistance to essential oils about five years ago,' says Mr Burgess.

'The consequence of all this is that we have lice which have built up

resistance to what were formerly among the most effective and easiest ways to attack them.'

The head louse is a blood-sucking parasite. Unable to jump or hop, it spreads by close contact. Infections peak among schoolchildren because this group has more head to head contact than any other.

Lice make their way to the nearest source of food. The head is perfect as the hair gives them something to secure themselves to, and provides the warm conditions they prefer. Once there, they pierce the skin and feed on the blood.

A head louse has an average life-span of 30 days, but as a female can lay around nine eggs a day, infestations can quickly get out of control.

'I have seen cases where some people have hundreds of thousands of head lice in their hair,' says Mr Burgess. 'Generally, this is in families where they have tried to kill them off, and failed, so they have decided just to accept the head lice as part of their lives.'

While head lice cause no threat to health, the numerous bite marks they cause can lead to secondary infections such as the skin disease impetigo. Another problem is that detection is so hard.

'Someone with head lice won't always suffer from an itchy scalp,' says Mr Burgess. 'The only way to confirm an outbreak of head lice is to catch a live one, but at their biggest they will be only 3mm long, so it can be very hard to do.'

'You need to part the hair and check the scalp or use a detection comb, but you do need to run it through the hair several times.'

**S**O WHAT can you do to fight off an infestation? Britons spend £30 million a year on head lice treatments, but is it money down the drain and are the insecticides in particular a waste of time?

The Health Protection Agency urges people to use chemical products only if they have found a live louse, as the unnecessary use of chemicals may increase resistance.

'Chemicals can be effective if the lice in your area have not become resistant to them,' says Mr Burgess.

'The only way to find out is to try them, but people should bear in mind that the more chemicals are used, the greater the chance of more lice building resistance.'

So what of the future? Will the march of the super louse be halted?

'The emphasis is on finding chemicals that work on the outside of the insect rather than on their cell chemistry, because this is how they have built resistance in the past,' says Mr Burgess.

'People are now reinvestigating chemicals used in cosmetics, for example, that when tested on head lice years ago had only an 80 per cent success rate. At the time that was thought to be unacceptable, but with other chemicals failing, this is becoming a more acceptable level.'

'We need something strong enough to kill the lice that will not hurt their human hosts — and that could be difficult.'

## From electric combs to coconuts, pick your weapon

■ **USING a comb** is a chemical-free way to get rid of head lice. A study by the London School of Hygiene and Tropical Medicine found that combs (specifically the Bug Busting comb kit) had a 57 per cent success rate compared to less than a 20 per cent success rate for chemical products. The Bug Buster comb kit costs £7.50, available via mail order: 020 7686 4321, [www.nits.net/bugbusting](http://www.nits.net/bugbusting); Nitty Gritty Nitfree comb, £9.99 available from chemists

■ **ALWAYS use a special louse-detection comb** — which has finer teeth than a conventional comb. Ideally, the comb should be used with conditioner in the hair, because this helps loosen the grip of the louse on the hair.

Combing should be done at three to four-

day intervals, and if unsuccessful the process has to be repeated.

■ **COCONUT oil** is said to suffocate the lice and make it harder for them to maintain their grip on the hair. A study at Bristol University found that using a coconut oil-based product called Lice Attack three times a fortnight proved 100 per cent effective after 14 days, and 92 per cent effective after 70. For best effects, use together with a comb.

■ **ELECTRONIC head combs** that buzz and stop each time a louse is detected and destroyed are available. However, these work best on short hair and sometimes cut out due to the presence of sweat rather than a louse. The comb needs to be used daily for about two weeks. Boots Electronic Head Lice Comb costs £19.99.

■ **THERE is a lotion** available that affects the exterior of the lice rather than the chemistry of their cells. This means the lice cannot build resistance to them. Hedrin coats the lice and causes them to dehydrate. A recent trial reported in the British Medical Journal found it to be 70 per cent effective. Hedrin costs £11.49 for 150ml, available from Boots or [www.hedrin.co.uk](http://www.hedrin.co.uk).

■ **NEEM oil-based products** have been found to have some effect. Neem oil is an insecticide made from the seeds of the neem tree. Studies on it have been small but encouraging. One found a neem-based shampoo to be as effective as a formulation containing the chemical permethrin. Neem products include Bioforce NeemCare Riddance, £6.75 for

100ml from health stores and pharmacies, or [www.Neemco.co.uk](http://www.Neemco.co.uk), and Nice'n' Clear head lice lotion, £5.99 for 125ml from chemists, or [www.lice.co.uk](http://www.lice.co.uk).

■ **IF YOU opt for an over-the-counter chemical-based remedy** then check with a pharmacist about which is best. Water-based liquids are more suitable than alcohol-based lotions for anyone with eczema or asthma, and products containing malathion may cause respiratory problems for children with asthma. Full Marks Lotion (alcohol-free) £9.99 for 200ml, available from chemists.

■ **IF ALL else fails**, a strong insecticide called carbaryl is available on prescription, but doctors will usually prescribe it only once other treatments have failed.