

## The Panacea: Ginseng

THE NUMBER OF PLANT REMEDIES used in orthodox medicine (they range from psyllium seeds for constipation to opium poppy derivatives for severe pain) is these days far exceeded by the range of 'alternative' herbal nostrums that have no scientifically proven effectiveness at all. The power of belief in healing is well understood by those who trade in potential treatments. Evaluating the way plants might influence disease, with its complex entanglements of mind and body, is a different kind of process from considering them as sources of food. Malaise and remedy aren't coupled as self-evidently as hunger and food. Filling an empty stomach is easy. Almost anything will do. If you have made a bad judgement about edibility, your body will quickly inform you of the mistake. Quieting a stomach ache is another matter, and the chains of cause and effect are far from obvious. By way of compensation the mind can play tricks with pain that it can't with hunger. Imagination and belief have played huge roles in healing systems where neither the disease nor the hopefully curative agents are properly understood. Intricate skeins of magical divination and mythic taxonomies have been spun to link disease and plant, and to make up for pharmacological deficiencies with legerdemain and persuasion. In the vulnerability of suffering, hope and hokum have always fed off each other. What is ironic is that in both indigenous societies, which value plants and believe in their 'spirits', and in pre- and post-scientific European communities plant-based medicinal systems have been uncompromisingly anthropocentric. Their common

## THE PANACEA

assumption is that plants don't cure human sickness by happy accident. It is the purpose of their existence on the earth.

But, in the margins, and over the past two centuries increasingly centre stage, the harder business of patient observation and meticulous trial and error have added a real-world corrective. The story of one plant, *Panax ginseng*, encapsulates the development of the medicinal plant's image, as it absorbed scraps of classical mythology and sympathetic magic, was rebranded by the Church, subjected to the more severe inquisitions of science, and then taken up by the consumer marketplace, the new generator of persuasive symbols. In the late 1960s and 70s ginseng became the most fashionable plant remedy to emerge from the decades' fascination with oriental traditions and mysticism and become a legendary cure-all. Its champions boasted that it would boost sexual performance, counter fatigue, aid memory and put your bodily and mental processes back 'in balance'. It became the late twentieth century's panacea, even though the majority of its users were quite unaware that this was, in a way, its original name.

That a genus of unprepossessing herbs from China and America was dubbed *Panax* by Carl Linnaeus in 1753 is of some significance. The name *Panax* derives from panacea, a classical name for a universal remedy. Originally, the term was used purely for medical remedies. Nowadays we talk of panaceas for everything from economic crises to adolescent alienation. Panacea was the daughter of Asclepius, the Roman god of healing, and the cure-all, early medicine's grail, was named after her. In the Middle Ages finding the panacea was one of the goals of alchemy, and there were many candidates. Classical authors such as Theophrastus applied the term *Panax* to various Syrian umbellifers, such as 'Hercules Woundwort or All-heal' (*Panax heracleum*). Other vaunted contenders were the 'Balsam of Fierabras' (Fierabras was a Spanish superhero from the time of Charlemagne), Prince Ahmed's Apple (a fruit purchased at Samarkand in the *Arabian Nights* tales), even the humble weed yarrow, *Achillea*. None of them worked as miracle drugs – though yarrow isn't bad as a styptic for small cuts.

When Linnaeus was revolutionising the classification and naming of

## THE CABARET OF PLANTS

plants in the mid eighteenth century, he decided to award the generic name of *Panax* to a group of quite different plants, related to the ivies. One species, *P. ginseng*, is a slow-growing perennial from South East Asia. The Chinese name *schinseng* means ‘man shape’, and refers to the distinctive forked and fleshy roots, with their phallic and limb-like outgrowths. It had been part of the Chinese *materia medica* for at least 2,000 years before it arrived in Europe in the seventeenth century. The Jesuit priest Athanasius Kircher was the first to refer to it in Western literature, in his *China Illustrata* of 1667. In 1679 the Norwich physician and naturalist Sir Thomas Browne cited Kircher’s botanical description when he reported that ginseng was being sold in London, though he never tried it himself, despite his famous and intractable melancholy. In the early eighteenth century a fuller and more heartfelt account was given by another Jesuit, Pierre Jartoux, who had been travelling as a missionary in China. He’d been given the tincture of a root to help ward off a spell of exhaustion, and was impressed by its effectiveness. He began to investigate ginseng’s role in local culture, and found that it was then the most prized – and most expensive – medicinal plant in China. Its active part, the root, was used for a huge range of conditions. It was prescribed for cholera, colic, convulsions, depression, earache, fever, gonorrhoea, impotence, laziness, rheumatism and vertigo, but most commonly for fatigue and lack of sexual drive. There are steroid-like chemicals in the plant that have a direct, if mild, biochemical effect on some of these conditions. But the plant had suggestive and symbolic power too. The root’s fanciful resemblance to the human form suggested it had been ‘signed’, by God or nature, as powerfully therapeutic for the whole body.



The idea that the physical form of a plant or its mode of existence in its own world are clues to its likely impact on the human body or spirit is one of the fundamental principles of pre- (and post-) scientific medicine. It is the part of the system known as sympathetic magic, which is often described simplistically as ‘like cures like’, but is really part of a more

## THE PANACEA

complex view of natural creation, in which all components are connected and have resonances with other components of a similar form or seasonal rhythm or position in a cosmological hierarchy. If you see the world as a connected whole, then exterior resemblances may indicate similarity in internal processes and effects. Sometimes sympathetic magic was indeed a simple case of 'like cures like': in Europe yellow flowers were given for jaundice, spotted leaves for rashes. But it could also be 'like *promotes* like' (red fruit to revivify 'tired' blood). In the complex mythology of the Tukano Indians in Colombian Amazonia, *uacú* trees (members of the pea family genus *Monopteryx*) have powerful sexual associations resulting from the V shapes between their buttress roots and their abundant sap. If the men decide to fell a *uacú* during clearing a patch of forest for cultivation, they build a platform around the tree, and cut the trunk with their axes. At a certain depth a sudden spurt of yellowish liquid will form a three-foot-long horizontal jet, and the men will jump under this shower, attributing it with the power to promote muscular strength and sexual potency. Sympathies can also be predicated on time or the seasons – night fevers being treated with night-flowering species, for instance, or by plants gathered in the dark. Eastern US Cherokees regard ferns as a sympathetic remedy for arthritis, because the young fronds are cramped, curled up, and gradually unfurl as the plant matures.

As well as the medicinal culture of its indigenous peoples, the American East Coast was a repository for Old World plant mythology and folklore. In the redoubts of the Appalachian mountains especially, herbal nostrums, folk recipes, fundamentalist beliefs and outright plant magic had been packed as cultural baggage with the cows and cooking pots by early settlers, and survived intact in isolated mountain communities well into the twentieth century. Southern Appalachia isn't a cultural backwater, a museum where the quaint folkways of old Europe are given a southern drawl; modern medicine increasingly works alongside traditional lore. But a core of ancient plant magic persists. The bark of the peach tree is still a folk remedy for diarrhoea. But the root of the tree must be scraped *upwards* in the gathering – against, so to speak, the direction of the runs. Similarly, before a woman went

## THE CABARET OF PLANTS

into labour, a sharp object 'was placed under the bed to "cut" (diminish) labor pains, and prevent or stop hemorrhaging. If an axe was used, some midwives insisted that it had to be one that had been used to cut down hundreds of trees, proving its power. It had to be placed under the bed sharp side up.'

In England, the cut tree itself was believed to have a directly sympathetic effect on healing. Gilbert White, in *The Natural History of Selborne* (1789), describes an extraordinary custom which had died out only in the previous century. (It persisted in Appalachia till the early twentieth century.) In the village of Selborne there was a row of pollarded ash trees which, by the long scars down their sides, had evidently once been split open. 'These trees,' White reported, 'when young and flexible, were severed and held open by wedges, [and] ruptured children, stripped naked, were pushed through the apertures, under a persuasion that, by such a process, the poor babes would be cured of their infirmity. As soon as the operation was over, the tree, in the suffering part, was plastered with loam, and carefully swathed up.' If the broken parts of the tree coalesced and healed, so would those in the child.

But in Europe during the sixteenth and seventeenth centuries, the principles and practices of sympathetic magic – sincerely believed in, if bizarre to our modern eyes – were refashioned into something more contrived, and known as the Doctrine of Signatures. In one respect this was another offshoot of the Genesis myth, and the arguments about what had happened in, and to, the Garden of Eden. Had there been diseases (and pests – also God's creatures) before the Fall? If so, had there been curative plants inside the Garden's walls? Or had disease – like agricultural toil and the pain of childbirth – been another of God's punishments dealt out to a disobedient humanity? It was widely believed that God would not have abandoned his children without at least the possibility of remedies – though these would have to be found with difficulty and with faith, otherwise the punishments were weightless. The difficulty was in identifying which plant was intended for which disease. The faith lay in a belief that God had 'signed' all plants with indications of their curative properties. The signatures just had to be 'seen' and understood. The Doctrine was a pharmacology based on decryption,

## THE PANACEA

a search for Intelligent Design in, so to speak, the plants' packaging motifs. The latitude this gave for ingenious personal interpretation was generous. Remedies for bad or aching teeth were seen, for example, in the tight-packed white seeds of pomegranate, the scales of fir cones and the ivory-coloured flowers of toothwort. As for ginseng, the manikin that could be glimpsed in the forked roots suggested it was a 'catholicon' for the whole body.

The epitome of Signaturism's convoluted thinking was the walnut. The nut – a bony shell containing a kernel lobed like the human brain – was given as a specific for disorders of the head. It hadn't developed to that perfection of form, Signaturists argued, for the sake of the tree, so that it could efficiently propagate its own kind, but for *us*, to remind us of our brains, and the superior understanding of the ways of the world God had planted there.

Many Signaturists' cures worked (and still work) for particular individuals, and their chosen plants must have acted powerfully on the placebo response. Just as modern pharmacologists know from their clinical research that the colour of a capsule can add to or diminish its physical effects, a plant whose leaves were shaped like a liver or a lung would have galvanised a patient's auto-suggestive, self-healing processes.

It's easy for us, with our privileged but far from complete scientific understanding of how curative plants work, to ridicule the propositions of sympathetic magic, whether it's practised in an Amazonian tribal community or an Appalachian trailer park. But they were a gesture, at least, towards the belief in a joined-up world, in which the components were connected either magically or physically. And how else, before the development of chemical analysis and monitored scientific trials, were genuinely curative plants to be found? One possible answer, usually overlooked, lies in the behaviour of our biological ancestors. Humans evolved from a 3-billion-year-old lineage of organisms which needed no conscious effort in deciding whether a plant would do them harm or promote their well-being. Those that chose badly died out, the others evolved, with a new piece of information stored in their

## THE CABARET OF PLANTS

genetic memories. Evolution by natural selection is trial and error in slow motion, and though we usually associate it with such physical features as body shape and beak sizes, it was also a process of development for instinctively recognising toxic and beneficial plants. Colour and pattern recognition would have been part of this discrimination, but volatile chemicals – the vaporous messages we call scents when we are consciously aware of them – were the most important mediators. A highly refined sense of smell has become redundant in modern humans, crowded out of brain space by the overwhelming use of visual imagery. But it persists in our animal relatives. Watch a wild herbivore, a deer, say, in a field or a garden, sniffing its way round the forage, choosing one species, ignoring another, avoiding the ragwort which is sometimes the downfall of domesticated stock, picking out pink tulips, chewing off buttercup flowers but not the more corrosive leaves. Plants producing fructose, fruit sugar, a significant source of energy, can be smelt by many terrestrial animals. It's no accident that most plant species whose fruits are both large and sweet are also non-toxic to mammals, so that their seeds can be safely ingested, excreted and spread about. Chimpanzees with infections have been observed sniffing out and eating plants which contain antibiotic chemicals. Gorillas in the Central African Republic rake through elephant dung for the seeds of jungle sop (*Anonidium manni*) for its potent alkaloids, which seem to act as a sedative in digestive problems. The sensory systems through which animals analyse their environments are part of our genetic inheritance, for example in our intuitive wariness of plants which are black or smell of rotten meat or have acrid tastes. But it's a long step from these broad instinctive reflexes to deliberately choosing remedial plants for specific illnesses when the true nature of both may be obscure. Animals don't instinctively 'know' plant remedies for, say, heart failure or a new respiratory virus.

Beyond this there is the commonsense business of trial and error. It's a reasonable assumption that emergent humans added to their genetically inherited lexicon of food and healing plants by conscious testing. The popular myth envisions the process as a life-risking reality show, and history as littered with the corpses of tribal tasters who made a bad

## THE PANACEA

choice. Experimental ingestion of plants must have taken place at all stages of human development, with unpredictable results. But it would probably be a mistake to imagine this – at least before the eighteenth century – as a methodical or even deliberate business, a case of ‘let’s try this plant to see if it affects this condition’. Accidental discoveries are more credible. The fruits of common buckthorn, for example, are powerfully purgative, and were widely used as such at least as far back as the Middle Ages. When the latrine pits of the Benedictine Abbey at St Albans were excavated, quantities of buckthorn seeds were found stuck to old rags the monks used to wipe their bottoms. The fruits are simple black berries in which even the most imaginative Signaturist would have been hard pressed to glimpse any cryptic indications, and doubtless their purgative powers were discovered much earlier, in the traumatic aftermath of an ill-advised fruit supper.

There is another possible route to therapeutic revelation. In many indigenous communities shamans claim to be able to identify curative plants during trance states. Trances can be induced by chanting and rhythmic dancing, but in Amazonia the most used and respected route to knowledge is via drugs, especially the potent mixture of hallucinogenic herbs known as *ayahuasca*. The two commonest components of this are leaves and twigs from the vine *Banisteriopsis caapi*, which contain chemicals similar to monoamine oxidase inhibitor (MAOI) anti-depressants, and the coffee family shrub *Psychotria viridis*, whose active component is the powerfully psychoactive dimethyltryptamine (DMT, a controlled drug in Europe and America). In *ayahuasca* rituals, brews of these plants are drunk communally, the ceremony being guided by an attendant shaman, who also helps interpret the experience. An inevitable but psychologically important prelude to the visionary stages is the copious vomiting that follows soon after drinking. This is seen as a necessary purification of both mind and body. The consciousness altering follows in an hour or two. Western ‘spiritual tourists’, with their particular expectations, tend to describe their hallucinations in dramatic but nebulous terms. They talk of a sense of rebirth, or glimpsing ‘the meaning of the universe’, or of a personal revelation – of finding, as one

## THE CABARET OF PLANTS

experimenter told me, 'a place of safety I could always return to'. Anthropologists who have studied the reactions of indigenous people find their descriptions less personalised and more grounded. They never have visions of 'strange beings, monsters or alien landscapes; there is nothing new, so to speak. They see the land, peopled by recognisable ancestors, the well known animals, the familiar trees and rivers. The difference from ordinary reality is that the dead now speak and admonish, teach dances and songs, spells and cures.' Gerardo Reichel-Dolmatoff, who has spent much of his life working with the Tukano Indians in north-west Amazonia, explains how the shaman interprets the visions of medically active plants. During trances plants and animals

tell the visionary how they want to be treated and protected so they can better serve him; how they suffer from carelessness, over hunting, the cutting down of trees, the abuse of fish poisons, the destructiveness of firearms. Seen from this perspective we must admit that a *Banisteriopsis* trance, manipulated by shamans, is a lesson in ecology, in the sense that it gives nature a chance to voice its complaints and demands in unmistakable terms. Since everything seen and heard in the trance state is already known from traditional shamanic teaching, the trance only proves that shamans had been right all the time when they said that the ancestors, the plants and the animals, the forest and the river, were a living presence.

What anthropologists portray in their accounts of the structure and workings of these indigenous communities tends not be the hierarchy-free utopia imagined by some Westerners. Amongst the Runa people in Ecuadorian Amazonia, Eduardo Kohn found a kind of spirit feudalism, in which the spirit masters are envisioned as large-scale farmers of the forest, who for their part, view the wild birds, animals and plants as their domestic poultry, hunting dogs and food crops. The Tukano, though deeply and ecologically aware of their environment, imagine it as an extension of themselves. They don't perceive the universe as a living organism, Reichel-Dolmatoff explains, rather, that humans participate in the cosmos and their immediate forest environment through an energy circuit 'which includes all plants and animals, together with all

## THE PANACEA

sense data ... But the universe or our earth are not thought to be alive as a system as such. What gives it life are humans incorporating what we call nature, into the human scale' – a belief not far removed from that of some European philosophers and theologians in the seventeenth and eighteenth centuries.

How the shamans themselves attain their knowledge of medicinal plants is a more testing question. Their own answer is that the plants 'speak to them', or at least inform them directly, though just how is never made clear. In the much-touted book *The Cosmic Serpent* (1998) one-time Stanford University anthropologist Jeremy Narby elaborated an extraordinary theory, that through the revelations of *ayahuasca* shamans are able to make direct spiritual contact with the DNA and genes in plants, and thus divine their pharmaceutical effects. DMT has been popularly called 'the spirit molecule' for its seeming ability to give the human brain the simultaneous powers of telepathic communication with plants and the penetrating vision of an electron microscope.

Shamanism is a cryptic and complex business, inseparable from the cosmologies of pre-industrial peoples, and does not translate easily into the thought structures of modern rationalists: if you're sceptical about humans' possession of souls, you will find it even harder to believe that plants have 'spirits' and wish to communicate their beneficence to us. Paranormal explanations such as Narby's dreamed-up theory do no service in helping to communicate the objective workings of indigenous plant medicine. A high proportion of Amazonian plants contain physiologically active and toxic compounds, and it's no surprise that local inhabitants have discovered a good number, despite having arrived in South America from Asia maybe as recently as 15,000 years ago. Their knowledge of curative plants for parasites and psychosomatic disorders is especially refined. On the other hand, they aren't omniscient, and have proved powerless to deal with contagious diseases introduced by Europeans colonists, such as measles, smallpox and syphilis, which decimated South American native populations.

Reichel-Dolmatoff suggests more down-to-earth routes to plant knowledge. *Ayahuasca* makes no direct contribution to this. The drug, with its uniform effects underlined by the shaman, seems chiefly to be



A shamanic portrait of a Korean mountain deity, Sansin, holding a root of wild ginseng.

## THE PANACEA

employed as a way of enhancing social harmony and promoting shared values, especially the etiquette of respect for the forest. But it may have a role in enabling cognitive short cuts, based on a deep sensory appreciation of plants and their interdependent animals. This echoes the intuitive process – ‘a feeling for the organism’ – used by Barbara McClintock after long hours communing with maize plants through an optical microscope, ‘a story of eyesight, and of the continuity of mind and eye’. The Tukano can apparently cure themselves of minor illnesses by simply entering the forest, while concentrating acutely on sounds, odour, colours, the behaviour of insects and the temperatures of different layers of vegetation. Since, in Dolmatoff’s words, ‘the literal and the metaphorical are inseparable in their world-view’ they are able to see ‘the forest [as] a memory device in which all sensorial perceptions are registered and trigger associations, awaken memories which help solve personal conflicts’. He describes one example of how symptoms of physical fatigue combined with claustrophobic agitation (perhaps the beginnings of a migraine?) are imagined by the sufferer as a basket, woven tightly from twigs, which is enclosing the sufferer’s head. By entering the forest – ‘a huge basket full of everything’ – the lesser basket is humbled, and the patient recovers. This is classic sympathetic magic, but informed and made coherent by an intense awareness of the physical details of the environment.

In the West, cognitive behaviour therapists treat tension headaches by coaching sufferers in imagining, then relaxing, the ‘tight bands’ round their head. Four hundred years earlier their professional forebears would have recommended doses of walnut. For better or for worse, across centuries and cultures, metaphorical images of plants and vegetation have been a fundamental ingredient in their power to heal.



Five thousand miles north of Colombia, Native American peoples also had theories of disease. The Cherokee believed that humans were free of illness until the animals created them in retribution for the lack of respect humans had shown to nature – a pagan version of the

## THE CABARET OF PLANTS

punishments of the Fall. But the plants felt the animals had been too harsh, and volunteered themselves to provide a cure for all the illnesses the animals had created (a myth obviously created before plants too began to be shown similar disrespect). In Canada, one of the remedies recommended by Iroquois medicine men was the root of a small and unassuming plant, rarely more than sixteen inches, which grows right down the eastern side of North America, from Quebec and Manitoba to Alabama and Arkansas. This is American ginseng, *Panax quinquefolius*, a species which clearly shows the ginsengs' kinship with the ivies. It likes shady deciduous woods on rich soils, puts out greenish yellow flowers followed by clusters of red berries reminiscent of the small fists of ivy fruits. The manikin roots take eight years to form and usually have more limbs than an octopus. The Cherokees have used it for much the same range of complaints and inadequacies as the South East Asians use their species.

When news of the oriental panacea first reached Europe in the eighteenth century, a new market for the plant opened up. The reputed boost it gave to sexual potency was its most marketable feature, and demand grew to such an extent in Europe that the price for a perfectly, suggestively shaped root rose to ten times that of the same weight of gold. Entrepreneurs began to look out for other sources of the plant, for home consumption and also for export to China, where stocks were in increasingly short supply.

The first written evidence that Europeans had cottoned on to Native Americans' ginseng habit is in the correspondence of settlers in the late seventeenth century. They kept the herb for what they prudently called 'private use'. The Virginian planter William Byrd wrote a titillating account of his morning cup of ginseng tea, made just as the Chinese did, by simmering the root in a silver pot over a charcoal fire:

It gives an uncommon Warmth and Vigour to the Blood, and frisks the Spirits beyond any other Cordial. It chears the Heart even of a Man that has a bad wife, and makes him look down with great Composure on the crosses of the World ... In one Word, it will make a Man live a great while, and very well while he does live ... However 'tis of little use

## THE PANACEA

in the Feats of Love, as a great prince once found, who hearing of its invigorating Quality, sent as far as China for some of it, though his ladys could not boast any Advantage thereby.

Again it was a Jesuit, Fr Martineau, working as a missionary in what was then French Canada, who made the benefits of the American species public, and soon the French were shipping large quantities direct to China, using Native Americans as collectors.

The harvesting of American ginseng for the foreign market spread south to Byrd's part of the world, and what was left of the Appalachian forests. During the depression of 1857–8, when many small farmers went bankrupt, it became an invaluable wild cash crop. Whole communities turned to hunting the herb, a custom that came to be called 'sanging'. The town of Ginseng, in La Rue County, Kentucky, is named for the herb, which was sold at market in nearby Elizabethtown, though there's not much evidence of 'home use' by the picking communities: this was a commodity for export. But though it helped tide the local economy over, in many places ginseng was overpicked. The decline was accelerated by the increasing destruction of the Appalachian forests for coal and mineral mining, and some first attempts were made at cultivation techniques which had been introduced in Korea with the Asian species.

They weren't too successful to begin with. American ginseng is a sensitive, old forest species, shade loving and fussy about soil type. It didn't take well to being grown in fields and backyards. More recently forest-farming techniques have been introduced, with chosen strains being planted out – and minimally tended – in the forest itself, which produces higher yields but makes the crop vulnerable to thieves. The spur for the revival of ginseng's fortunes was its sudden rise to fame as a herbal stimulant in the countercultural mood of the late 1960s. Body builders, sexual adventurers, the perennially fatigued and anyone in search of a novel high began to take it. And, as with historical panaceas (and modern 'super nutrients'), its aura of potency began to spread beyond its original focus of action. Soon ginseng was being added to shampoos, skin creams, soft drinks and vitamin supplements. All these products are available over the counter, and the new demand (though

## THE CABARET OF PLANTS

it has declined now) revitalised the ginseng trade. The vast majority of the world's ginseng still finds its way to China, where it is used almost universally as a tonic, and where a perfectly man-shaped root can still fetch up to \$10,000. Ginseng picked in America is still sent to the Far East for wholesale trading, before finding its way to a Chinese banker's bedroom or back to a US drugstore.

In 2000, 300 tonnes of American ginseng was exported to Hong Kong, and 'sanging' remains an important part of local Appalachian economies. At the point of highest demand in the mid 1990s almost 100,000 pounds were gathered annually in the states of Kentucky, West Virginia and Tennessee alone. Collectors receive an average of \$500 a pound – which makes ginseng the most valuable plant crop in the United States.



Whether the panacea works is questionable, at least by Western medical criteria. Accounts of its use and effectiveness appear to vary according to the culture in which it's being tested, suggesting that social values and expectations are powerful psychological boosters. In the USSR, Chinese ginseng (or more probably the unrelated Siberian 'ginseng' *Eleutherococcus senticosus*) was given to cosmonauts to increase their stamina, and to factory workers to increase their contribution to the Soviet GNP. During the Vietnam War the Viet Cong used ginseng to treat gunshot wounds. Orthodox Western medicine has tested ginseng and found it has few measurable effects beyond an occasional rise in blood pressure and marginal increase in stamina. In London, nurses on night shift reported feeling more alert on duty when dosed with ginseng, and in a more stringent but typically unpleasant laboratory test, rats given the herb took longer to drown when forced to swim in an escape-proof tank. In the USA in the 1960s, the godfather of modern foraging, Euell Gibbons, issued a laconic verdict on the herb's effects. He brewed up some tea from roots he'd gathered in a Pennsylvania wood, and sipped it as pensively as William Byrd. He detected no physical effects whatsoever, but confessed that 'the feeling of luxurious self-indulgence that

## THE PANACEA

came from drinking a beverage that would have cost a Chinese a king's ransom was terrific'. Rational hedonist to his marrow, he thought a tincture might make a novel cocktail bitter.

Practitioners of complementary medicine have invented the term 'adaptogen' to describe ginseng's elusive effects on human physiology. They argue that it helps the body adapt to stress of all kinds, normalising energy levels, immune responses, appetite and mood – which is why its effects are so hard to quantify. It sounds like an easy way of avoiding the discipline of serious testing, but it might be true. Such chemicals are well known in the plant world. One is salicylic acid – the precursor of aspirin. It was discovered in willow, but is widespread in plants. It acts botanically as a hormone, promoting growth, reducing the effects of stress and, in the event of damage occurring to one part of a plant, carrying messages to boost resistance in other parts. Its action on humans isn't identical. We use its synthetic derivative aspirin (named incidentally after another botanical source of salicylic acid, *Spiraea* (now *Filipendula*) *ulmaria*, meadowsweet) most often for pain, which isn't experienced consciously by plants, though damage causes electrical storms in their tissues. What is intriguing are the new revelations about aspirin's effect on the human immune system and its slowing of the growth of many human cancers, which echo its action inside plants, and remind us that our evolutionary roots lie in common primeval cells. Because of this shared ancestry there is always a chance of finding vegetal compounds which will be therapeutic in humans; we are simply dipping into the common legacy of biological self-medication. Antibiotics, for example, have been derived from the chemicals plants use to ward off fungal and bacterial infections. Astringents such as tannins, which shrink tissue and help heal wounds in humans, fulfil a similar function in plants, as well as warding off predatory insects.

But we're not plants. Our bodies have physiologies which are unique to our species, and to the animal world. Many compounds which are beneficial to plants can be toxic in our systems. So can those which are probably waste products, or a kind of incidental chemical ornamentation – for example atropine, from deadly nightshade, which in small quantities is used to dilate the pupil in eye examinations, but is lethal in

## THE CABARET OF PLANTS

high concentrations. The belief that 'out there, is a cure for everything' is yet another offshoot of the persistent human conviction that we are the focal point of all biological activity. Plants evolved their remarkable chemicals for their own purposes, something demonstrated by the precision of a 'magic bullet' chemical in the lima bean. If the bean is attacked by spider mites it gives off a volatile pheromone which attracts another species of predatory mite which feeds on the original attacker. But not any random predator: the bean analyses the spider mites' saliva and releases a volatile chemical which 'calls' only the predator species that feeds on that particular mite. It's conceivable that, by pure coincidence, this pheromone might activate human immune system cells thus fulfilling the teachings of sympathetic magic and analogy. But it is vanishingly unlikely in reality. Panaceas for all our human ills will not automatically be waiting in plants' unexplored depths.