



Chapter 5

Shillong: Betelnuts and bamboos

Lan Pohtam is the unlikely looking owner of 20 hectares of farmland in the Amlynpiang village, near the Bangladesh border. It's in the Wār Khasi hills of Meghalaya, overlooking Bangladesh, in the middle of dense moist deciduous forests, that he cultivates arecanut, oranges, bayleaf, broomstick bamboo, and other fruit. Wearing a vest that barely hangs together over shorts in the same state, the 55-year old farmer deftly assembles what I've traveled some 2,500 KM to see – the shyngiar.

Shyngiar is Khasi for their traditional drip irrigation system, fashioned from bamboo. It's an age old way to build a network of bamboo canals that ferry water from a hill stream to the roots of individual plants in a plantation. Bamboo grows abundantly in the Wār Khasi hills, as indeed in large parts of north-east India. It's used in everything – pickles, as a vegetable, for building houses, a weapon of war, and irrigation. The last is the most fascinating use of this extremely versatile grass.

Shyngiar is well-suited to the hills and their method of cultivating plantations. The Khasis, that are the dominant tribe in Meghalaya (the other two are the Jaintias and the Garos), follow the pattern of shifting cultivation. They clear a part of the forest of large trees and undergrowth and plant plantation crops. These yield for between five and 10 years after which they are left to die and the plantation shifts to the next plot. The land is hilly and even though they chop the large trees, there is a lot of forest still left behind. The streams to irrigate the plantations are usually a few kilometers away. They have to get water to their crops using bamboo channels because the land is hilly and rocky – digging canals is harder than making the Shyngiar.

Lan's patch earns him about Rs. 200,000 a year, plenty to get by for the entire year. It takes him about half an hour to set up a Shyngiar for demonstration, that irrigates two arecanut trees. But even that tiny sample – it covers an area of 10 square metres – is enough for me to appreciate the intricacy of the system that extends over 20,000 square metres, of undulating plantations and forests. It is so precise that water fed in at one end produces a steady trickle at the individual plant.

The raw material is completely free. Lan cuts bamboo growing in the forests of varying thickness and uses these to make the Shyngiar. It's like the human arm. The system has three or four stages, from the shoulder to the fingers. After cutting the bamboo, Lan uses a local axe called a dao to slice it in half to make a channel. Sometimes, he only cuts a slit in side of the bamboo without halving it. He uses another type of dao with a curved head to remove the internodes save the ones at the two ends of the bamboo. Lan makes a set of bamboo channels of different thickness with the internodes removed. Some have small slits on one side and the bamboo runs whole for a few centimeters before it is slit in half. Lan thus painstakingly fashions the raw material for his shyngiar.



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The thickest piece of bamboo is placed into the source of water, either a stream in the nearby hill or, as it the case now, the supply tank of the irrigation department. For Lan and a few other farmers, the irrigation department has laid pipes from the Amlynpiang stream over the hill to their farms. Lan does not have to labour to build a long bamboo channel to get water from that stream to his farm anymore, a distance of around a kilometre. He sources water from the irrigation department's tank next to his farm.

The bamboo used to make the main channel is as thick my arm at the shoulder and is stuck into one of the many holes on the side of the tank, held in place by a 'washer' of plastic bags. It is sliced open along the top, but not cut in half, to maximize the quantity of water it can carry. This runs for a few metres into the plantation from the irrigation tank and connects with other thick bamboos that form the main irrigation channel. The primary and other channels are supported by pieces of wood, to which they are tied with thin strips of bamboo.

Along the length of the primary channel, pieces of bamboo as thick my forearm, each cut at an internode, are placed on top at right angles and tied in place with bamboo strips. These are secondary channels and they have small rectangular slits in their sides where they cross the primary channel. One end is closed by an internode; the other is slit in half and the internodes removed. A narrower piece of bamboo, as thick as my wrist, sits in the primary channel and lifts the flowing water from it into the slit of the bamboos of the secondary channel. Some of the water flows into the secondary channel through this lift mechanism – the rest goes onto the next secondary channel. Water flows from the lower to the upper channel under its own momentum.

The secondary channel slopes steeply towards the plants. At intervals, tertiary channels tap water from them at right angles and irrigate individual trees in the plantation. Here again, the bamboo used to make the tertiary channels are tied above the secondary channels. They also have small slits on their side. Even thinner pieces of bamboo placed in the secondary channels lift water from these into the slits on the tertiary channel bamboo pieces. These are also cut in half and go from the secondary channel to the roots of the trees. The tertiary channel bamboos are about as thick as my thumb.

The bamboo pieces used to make all the channels are lashed together with extremely thin strips of bamboo. When these strips dry, they harden into place and make for a fairly permanent bond. The channels are supported by an equally intricate network of branches stuck in the ground.

When complete, the Shyngiar forms a tracery of bamboo across the plantations. They are so well constructed that very little water is wasted. The internodes at the ends of the bamboo pipes ensure that all the water is channeled to the plants rather than flowing out of the end of the pipe.

To begin irrigating one part of the plantation, Lan 'connects' the network to the mains by shifting the bamboo that taps the source to that network's source. The network is designed to irrigate two hectares at a time.

He says, "It takes a couple of hours to irrigate all the trees in a particular area. Then I shift the water to another part of the plantation by simply removing the little piece of bamboo that lifts



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water from the primary channel to the secondary channel. I usually irrigate the whole plantation in two days. In the dry season, I spend nights on the plantation.”

He sleeps on a low bamboo platform. Lucky for him there are not large predators around. His dao is a constant companion, stuck in the waist band of his shorts even when we are around. It's a menacing, two-foot long implement and in the right hands, can lop off a human head. Daos are multi-purpose – in the Kamakshi temple in Guwahati, priests use the same thing to slice off the heads of goats and buffaloes that are sacrificed to Kāli. Lan manages alone even though he has his family around to help. Khasis are matrilineal, and the women work at home while the men labour in fields or elsewhere.

June Lyngdoh, my guide on this outing, is from the Jowai irrigation department. She says, “It takes him about a month to build a system that will irrigate 10 hectares if he works alone. He hires people when its time to build the Shyngiar to speed up construction.”

“You mean he has to build it again and again?” I ask.

She puts the question to Lan, who says, “The system lasts only for a season. The bamboo rots in that time and has to be replaced. We replace the entire system rather than parts of it because it is easier.”

That is a lot of labour for a few months' irrigation. The upside is that the raw material is free and there are no running costs – fuel or power. The downside, in addition to the labour needed, is the need to cut bamboo. In this area alone, June says, there are 800 hectares of plantations. There is little agriculture save for plantations here – the locals buy all the food they need from Bangladesh that is a 20 KM away at the border town of Dawki.

This scale of plantation uses up a lot of bamboo just for irrigation every year. Last year's Shyngiar lies scattered all over Lan's plantation. He uses bits of old bamboo to support the new shyngiar but the rest just rots away. In the warmth and humidity, it quickly returns to the soil.

Lan has not been trained as an Shyngiar engineer – there is no such thing. All the plantation owners in the Wār hills of Meghalaya – Khasi, Jaintia and Garo – where bamboo irrigation systems exist, build the systems themselves or with the help of skilled local labour. Its construction is literally by rule of thumb. The ratio of the thickness of the primary channel to the tertiary one determines the quantity of water that will reach the trees. It's a fine balance that comes with years of watching and experience, something no degree can provide.

“How did you learn to make the Shyngiar?” I ask him, through June.

Lan grins, showing gumless teeth. They have long fallen to the incessant use of lime, betelnut and betel leaves. “I watched my father and uncles and learnt over many years. If you stay here long enough, you will also learn.”

The bamboo system is used after the monsoons, when the dry season begins. It is assembled in October and is in place by November. The plantation owners use it till April or May, or till the



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first showers start. Then they dismantle it because it rains here for a good five months. Excess water can kill off the plants more easily than under-watering can. For these five months, water gushes through bamboo channels from stream to the plantations in the Wār hills of Meghalaya.

June takes me across the road. "Let's see where the water comes from."

The forest across the road is very grim and foreboding. It was tropical rainforest a few years ago, with tall and dense growth. Most of the old growth trees have been cut and sold but the undergrowth is very dense. I see many of the trees coming back, but it will take a few decades of a total ban on logging to restore the forests to anything close to their former glory. The Khasis has bartered their future for a few bucks; rainfall has dropped and the climate has grown considerably warmer. Their system of shifting cultivation hasn't helped matters either. They admit to water shortages after clearing a patch of forest near the crown of a hill but continue to do it. There is a ban on logging following an order from the Supreme Court some years ago, but people cut trees on the sly.

The sun disappears – its evening – as soon as I step into the forest to see the headworks of the irrigation department. The dense forest closes around me as I desperately climb the slippery slope behind my guide. She is fleet footed; I have a twisted ankle. I cannot see the ground because it's hidden under shrubbery so have to assume that by following him, I am treading on solid ground; many times, I am wrong. Sweating, heaving, ducking, pulling and pushing myself along, I clamber up the slope. The path thankfully levels off around 50 M up and then climbs gradually into even denser forest. She's warned me of leeches but I am more worried about getting there and back.

We descend as steeply as we climbed – more treacherous because it's along the water course. The stones hidden in the undergrowth have slippery moss on them and I slip many times. I can hear the stream and smell the water but cannot see it even though my ears tell me it's a few feet ahead. Abruptly, I come upon it. The irrigation department's pipe runs along the stream like a python. This bit of 'civilisation' is out of place in the forest. The pipe ends in a small check dam, about 4 feet high, that ensures there is enough of a head of water to keep the pipe supplied.

I catch my breath balancing on rocks in the stream. They are red and peculiarly pockmarked, as if the earth caught small pox in some bygone era. The stream is quite dark and the forest is settling for the night. Birds call and beetles creak. The stream roars down the hill to join another river and flow into Bangladesh.

The forest abounds in an amazing variety of trees and plants. I seldom see two of the same species close together. I am no botanist but can tell the species apart from their leaves and bark. It's hard to compare this plethora of plant species with the red pine monoculture that Khasis practice in the higher slopes of the Khasi hills. But, they have extracted all the valuable timber from this forest, leaving behind saplings and secondary growth.

The National Highway 44 connects Shillong to Guwahati on one side and Silchar on the other. Jowai is about 50 KM Shillong on this tenuous artery. It's the main trucking route for coal mined in the Jaintia hills destined for Guwahati or Bangladesh. It's the only for people to get from one



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part of the state to the other. At night, returning to Shillong, it's totally blocked by truckers parked on both sides of the road. They have retired for the night to amuse themselves drinking and whoring. Late travelers have to contend with traffic jams that can last half the night.

The highway and many of the smaller roads that connect villages around Jowai are in fairly good shape – the state government ensures this. But the bridges are World War 2 vintage and in extremely poor shape. They are made of steel girders overlaid with thick planks of wood. Trucks weighing up to 30 tonnes carrying coal to Bangladesh use these and the bridges give up the ghost with regularity. I get stuck getting out of Jowai to see the Shyngiar in the Wār hills because a bridge at Myntdu has collapsed. This is also a national highway, leading to Dawki on the Bangladesh border. Even though June says it will be fixed in a few hours, it takes a few days to repair. The diversion takes us through pretty pine forests and rolling countryside, the sort you see in British postcards, tiny villages and farmland.

The idyll lasts till we regain the main road. At Amlarem, where the Wār Jaintia hills start on the route from Jowai to Dawki, we drive past an endless line of trucks – I count 332 – waiting with loads of coal to enter Bangladesh. They enter the border town of Dawki 100 at a time, cross and unload and return. The first part of the drive is through fairly steep mountains that descend to a plateau. The mountains have rudiments of forests left but the plateaus are completely bald. The hills from the plateaus to the Bangladesh border are called the Wār hills – Khasi, Jaintia or Gao, and have new growth and few stretches of forest.

At one point, I see a quarry sculpture. The land owner, digging for limestone, has left a portion of the hill standing, with a network of interconnected caverns that remind me of a cathedral. It stands on the junction of the two roads, a sentinel to the forests that cling on.

The shyngiar is caught up with the cultivation of arecanuts in Meghalaya. Arecanut plantations are the main source of livelihood here, says Biswarup Chowdhury, manager of the State Bank of India's branch at Pomshutia village in another part of the Wār Khasi hills. He is an old, plump balding man who has spent the better part of his life in areas as remote as this. We are about 60 KM south of Shillong on another route to Bangladesh, that also leads to Dawki. The road is good and traffic light and I cross maybe 20 vehicles, mostly taxis conveying Bangladeshi tourists to India. These are the legal visitors, not the hordes of illegal immigrants leaving their benighted country to work as labourers in India. There are very few trucks conveying low grade coal to Bangladesh from the East Khasi hills. Public transport comprises Maruti taxis, Tata Sumos, jeeps and the occasional mini-bus.

“About 40 percent of people here work in the arecanut industry,” Biswarup says. “Another 30 percent is involved in the coal industry. The other sources of employment are limestone mining and stone quarrying.”

I am sitting in Raja Khongshit's house in Pomshutia, a hill village of about 300 households. I cannot see most of the households because they are scattered up and down the hills, hidden in dense undergrowth and plantations. Raja is the local strongman – owner of the largest everything – house and plantation. He is building a petrol pump a kilometer uphill and plans to have a resort next door to it as well.



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“Here?” I ask. “Who will stop here?”

“The Bangladeshis will. There is no place to stop on this route between Dawki and Shillong,” says Raja. The petrol pump he is building sprawls over an acre of his land. The resort is up a small hill, above the pump. He stands sweating on his land, listening to the radio playing music from Bangladesh. The government of India has obviously not covered this part of the country, lacking a strategy to reach India's border areas. He is wearing a vest a couple of sizes too big and trousers. Raja is a man with a belly, and grimaces when he smiles. His eyes disappear into this face when he laughs, which is just once during our meeting. He is also suspicious of strangers.

“Who are you?” he asks. My driver Sharma who has brought me here, introduced us. But Raja does not buy the story and wants to see some evidence. I produce an old identity card from a newspaper I used to work in two decades ago. It satisfies him and he drops his dour demeanour and becomes almost amiable.

Raja owns 50 hectares of land but wants to earn more than plantations can provide. Therefore, he is diversifying, like any good businessman. Having the State Bank of India as a tenant helps to get loans.

Biswarup says, “The arecanut plantation industry has been recognized as a cottage industry. It is eligible for loans.”

Areca nuts are orange nuts, like small coconuts the size of a small chicken egg that grow on the betel palm. They are harvested by September or October and spend the next six months underwater, ‘being processed’. They are dunked in enormous bamboo baskets, about 20 feet tall and five across, that are stood in streams or tanks of water. Neither Raja nor Biswarup tells me what happens to the areca nuts during their submersion but I presume their alkaloids are drawn out. Areca nuts contain two alkaloids, arecaine and arecoline, that stimulate, intoxicate and suppress hunger in much the same way that nicotine does. Areca nut cultivation here is fast becoming uneconomical though. Market prices have halved while cultivations costs have gone up. A kāni of nuts (400 nuts) used to sell for Rs 300 in 2004; now its Rs 140. The larger measure is lynti, that is 16 kāni. The large bamboo baskets hold 20 lynti. The nuts come out smelling of smoked natural rubber. Women grade them by hand and then they are sent off to the nearest market.

The nut cultivators do not own the processing centres. They pay the processing centre Rs 1000 per season per basket for 20 lynti of nuts. Its cheaper than buying their own baskets, each of which costs Rs 500 and lasts just a couple of seasons. Even Raja does not have his own baskets – he used the processing centre outside Pomshutia.

“You cannot eat an arecanut straight off the tree. It makes your head spin,” says Sharma. “Submersion takes some of the sting out of the nut but in its processed form it is still very potent.”



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Raja only smiles his eye-hiding smile when I ask him if he has got a loan; that says it all. But his eyes don't smile – they regard from behind uplifted cheeks.

Paan is the traditional form of welcome in all households here. The Khasis eat pān that is a bit of betelnut along with betel leaf and a bit of lime. There are no other add-ons as elsewhere in the country. It is also something that poor people can afford to give visitors, in addition to water. Nearly all the betel nut and betel leaf grown in the Wār hills is consumed locally, even though both are of high quality and would probably command good prices in other markets.

A local legend has it that there were once two very close friends, one from a rich family and the other from a poor one. The poor family used to visit the rich one regularly and get the royal treatment. One day, the rich family's man and woman came to the poor household. The poor family had nothing to offer them. Ashamed, the man killed himself; his wife saw what he had done and followed him and finally, the daughter of the house joined them in the afterlife. The man was reincarnate as the betelnut, the wife as the leaf and the daughter as the lime. Therefore, paan is served to guests even by the poorest family. More likely, the poor eat it when they cannot afford food and the legend has been spun to give chewing paan respectability.

“Gastro-intestinal diseases including cancer are much more common here than elsewhere,” says Dr Edmund Khongthaw, the doctor in charge of the large primary health centre at Pongtung, a village about 10 KM from Pomshutia, between Shillong and Dawki. He loves the hills and asked to be posted back here, unusual for a doctor in India. He's been treating patients for years, and nobody takes his advice to cut out paan seriously. Its tradition, you see.

“There is no traffic between Jowai and Shillong. We will get home soon,” I tell Sharma, the taxi driver.

He doesn't reply. A little further, we hit the first of the trucks and are soon in the middle of a midnight jam. It takes four hours to clear.

I take a bus from Guwahati to Shillong. The person who arranged it, a constable with the Central Reserve Police Force, has chosen the lousiest, slowest bus that takes four hours to cover the 100 KM. The drive through the busy NH44 takes me through extremely dusty and polluted parts of Assam's state capital. Once out of this, it is a pretty sight even though the road is narrow. Bamboo is the construction material of choice here though the hills don't have much of it left. They don't have much of anything left, though they are greener in Assam than in Meghalaya.

The 100 KM drive from Guwahati to Shillong contrasts with what I see in the Khasi hills. The hills are mostly forested and there is an abundance of bamboo. There is so much bamboo that nearly all the buildings use bamboo screens for walls and bamboo thatch for roofs. They are strong screens and look like they could withstand a fair amount of battering. The houses have frames made of some hardwood into which these screens are fixed and roofs mounted. The structures are simple, yet elegant. Nearly all the houses are built on stilts – the smaller ones have wooden or bamboo stilts and the larger ones have concrete pillars.



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Most of the houses along this part of the highway are made of bamboo – bamboo walls, bamboo roof and they even have a bamboo floor. No, its not number 64. some are on foundations of stilts, others on packed earth. Bamboo pervades all aspects of life for the Assamese but the people in Meghalaya now regard it with disdain – its for poorer folk.

Nearer Shillong, the terrain is hillier and terraced farms more in evidence than in Assam. They are pretty, with vegetables growing on the terraces. Potatoes, cauliflowers, cabbages, tomatoes, peas, brinjal, ladyfinger, spinach and chillies – all are grown locally and promptly sent out of the state from these market gardens. The locals do not get to eat what they grow as they fetch a better price in the markets of Calcutta. They get their food from Assam. The potatoes are so good, and available for such a short season, that they command a high price outside. It makes economic sense to send the vegetables out. Potato fields have raised rectangular patches. In the valleys, narrow canals carry water from the nearest spring or tubewell to the fields. On the hillsides, fields are irrigated only by canal and very carefully, because some of them tend to be quite steep. But the agrarian dominance is misleading.

Most land in Meghalaya is privately owned by the resident tribes – a Khasi can own as much land he or his forefathers could grab – has resulted in a very peculiar situation. This has been interpreted as having the license to do what they want with it. Farming and pine plantations are just two of the activities that people do with their lands. Many have set up stone quarries, other mine coal or limestone from their land. The state government turns the other way and levies a nominal royalty on what they extract. Most of the income goes into pockets of the quarry owners and some to line government officials' pockets so they look the other way. Agriculture is not the main employer here – quarrying is. At Rs 100 for a six-hour working day, a local labourer does not have it too bad. Bangladeshis, though, get paid a fraction of this and make up the bulk of quarry and mine labour.

The other problem with the lack of accountability is that people have clear-felled the forests, that once were of a dense sub-tropical variety, and planted pine trees. Fast growing, they are more valued for fire wood and housebuilding than the indigenous species of oak and other trees. The Khasis love pine – they are the dominant tree species in these parts.

This is more in evidence as I near Shillong. To my horror, native moist deciduous forests give way to pine, and quarries. It's a different image of the north-east from what I have read in books. The undulating hills are largely bare save for patches of these plantations. Quarries cut an unsightly white swathe in the remaining greenery. It's a steep climb into Shillong and things improve somewhat once on the outskirts of town. Large parts of the town are under the army cantonment, that retains some magnificent old trees, mostly pine unfortunately, but also oak and other native species. The pine grows fast and is used for construction now that all the old hardwood trees have been logged.

My hotel, the Tripura Palace, is part of the palace of the Tripura maharaja. He lives in the front part of the sprawling complex on a hill, surrounded by a beautiful garden and some 25 dogs. The hotel is to the rear of his highness's residence in what was the guesthouse. It's got few rooms but all are very well appointed. Next door is the Birla residence, also swathed in foliage and mist.



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His highness is extremely fond of black – all his cars are black and have black-tinted glasses. At night, the house is dark save for a light in a couple of windows.

The taxi from the bus stand to the hotel takes me up a steep drive and pulls into the hotel's small parking lot. My room is on the lower level but nice and large. It's wood-paneled and has a tiled floor, that must be cold in winters. It's pleasant enough in summer though I need a heater when it threatens to rain, as it does on two days.

You can walk through Shillong in about 45 minutes, though parts are not pedestrian-friendly at all. It's got all the problems of India's hill stations – over crowding, narrow streets and traffic that is in a hurry to get somewhere. If you are planning to spend an evening out, forget it because the town hasn't grown out of the years of anti-tribal violence and everything shuts down by 8 PM.

It's a two-hour comfortable ride to Sohra, or Cherra, from Shillong along steep hills. The 56 kilometres that separates the two places is pretty badly denuded. My driver on this route, Suren Chamling, from Darjeeling, tells me that there were forests in these parts once. He has been a cabbie here for 15 years. He blames it on the land owners, who are free to do what they want with their land. For most of the journey, the hills are bare, covered with little but a thin layer of coarse grass. They have lost their ability to attract rain and store water. It's a matter of a few years before they lose their ability to sustain life. The land owners have preferred to make a quick buck by selling timber or firewood. There are a few trees left in scattered clumps on the hillside. Even bamboo, which once covered large parts of these slopes, is conspicuous by its absence. Their crowns are bare but most valleys still retain some foliage. Bare-headed hills have heart-attacks and kill not themselves but the people who live on and around them.

A little before Cherrapunji, on a plateau between the highlands the Wār hills, I chance upon a fishing tank, again privately owned. It's rectangular, the side facing uphill open to let water in, lined with stone blocks and concrete. The perennial springs ensure that it never runs dry even in the short summer that bridges winter and the monsoons. It's not very big, with the longer side around 15 M long and the other one, around 10 M. At the deeper side, a cut in the wall whose height can be regulated lets water overflow into the fields below. These structures are local fisheries and while the water may also be used for irrigation, human consumption is ruled out. Fish is an important part of local diet and these tanks are their main source where there are no rivers. I see itinerant anglers with thin bamboo fishing rods waiting patiently at these tanks for the fish to bite. The tanks exist in either isolation, or in cascades where the water that overflows from one fills the next and so on.

“These tanks are one of the newer modes of sport fishing. Several people have made small ponds, between 1000 and 2000 square yards in spread and 7-8 feet deep, lined with stones and usually with a board or slab of rock sticking out over the water, where people can fish for a fee. They stock these with fingerlings from the nearest government hatchery. Once these fingerlings grow, the pond owners charge Rs. 100 for a rod to let people fish. They make much more this way than catching and selling the fish on the market. It's an idea that is catching on really fast – water is abundant and if you have the land, why not turn it into a productive asset. A fish pond owner can



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made Rs. 50,000 in a season, and its tax-free agricultural income. He needs no permission or license,” says Edmund.

Water isn't in short supply in the region. Even in Cherrapunji, that supposedly has a drought every summer before the deluge, there is enough water from streams flowing down from the hills above, to keep the town supplied. It's hard water, as is to be expected if the liquid has been stored and released in an area rich in limestone – but sweet. Washing and bathing are tough as soap forms a persistent slime that is hard to wash off. Limestone also purifies the water so whatever falls from the heavens gets cleansed, stored and released over a long period. Even in the height of summer, the streams do not run dry. Yet.

I am surprised there is enough water, given the ecological degradation that has taken place here. Virtually all private lands have been stripped of their trees. Forests existed here till a few decades ago but now, bald hills greet me. Cherrapunji lives on its reputation as the wettest place on earth, but that sobriquet has moved on. Rainfall has decreased, say locals. The few tourists who do visit to get a glimpse of the waterfalls around seldom stay the night. Perhaps that is why residents do not face a water shortage. The town begins and ends before I realize it. One road leads to the bazaar, a misnomer for a small collection of shops that sells clothes, vegetables and trinkets. The only place to eat is an unnamed restaurant that Suren knows, but I would miss as being another house.

The view from Cherrapunji towards Bangladesh is marred by a cement factory. Cherra Cements Limited is a government entity that feeds off the locally-available coal and limestone to manufacture cement for local use. It's so remote that transporting cement anywhere would be unprofitable, but then, the government has its own strange logic for siting industries. This one is clearly there for political reasons to employ Khasi youth. Its twin chimneys spout bilious clouds of white smoke that drift west over the Noh Kalikai falls.

The government has made an eco-park in Mawsmat Nongthymmai that purports to show how water is harvested, forests regrown and waterfalls generated. It sprawls over about 10 acres of land a little outside Cherrapunji, overlooking the Bangladesh plains. The overall effect is exactly the opposite. A couple of streams flow into the eco-park; one is collected in a water trough from where it goes into making a water fall. The streams cascade into the forests that run from here to the border. However, the toilets for the eco-park empty into this trough; somebody with a lot of sense designed the park.

The Mawsmat cave, a few kilometres back towards Shillong on the highway, is awesome. It's 150 M of stalagmites and stalactites, formed through millennia of hard water dripping from the ceiling. In most places, the stalagmites and stalactites yellow and deeply furrowed. At one point, they form a small arch, that looks like the head and trunk of an elephant. The cave narrows to a small passage at one point, and reaching it, I wonder if it makes sense to go on when the entry is so tantalizingly close. I walk through an amazingly richly decorated passage. The passage opens into a marvelous cavern, a veritable cathedral of stalactites. There are a few stalagmites also, but they are restricted to the sides of the cavern. The cavern is lit by halogen lamps that cast harsh shadows on these marvels of natural sculpture, while not giving enough light to take pictures.



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Just inside the entrance to the right is a recess in the wall with what looks like a very black (what else) shivling. It's dark and wet, appropriately, and wholly unapproachable. The floor is full of large limestone rock, pitted from centuries of water dripping from the ceiling. In some places, the water has formed stalagmites while in others, its made craters in the rock. The cave's ceiling drips water right through making it an incredibly cold and damp place. I pick my way over the slippery floor, balancing carefully on outcroppings to get from one cavern to the next. The stone on the floor has been polished and rounded by water flowing over millions of years. It looks soft and fluffy, what with the craters that dot it, till I put my foot on it – then its hard rock. In between, there are many places where I have to go down all fours to get through. Getting up, I am careful not to bump into any sharp rock projections – the last thing I need in there is a bleeding head. When it rains, the caverns fill with water and become impassable. It takes a few hours for the water to drain away after that.

The absence of natural light makes it difficult to make out colours and the artificial lighting does not help matters. Yellows appear grey, whites appear yellow. And everything is gloomy in the light. Without the light, the caves would be closed to all but the most intrepid caver; ordinary people can walk and crawl through thanks to the lighting. I just wish somebody had used their creativity in lighting.

At the far end, cold, wet and muddy, I emerge into the welcome sunlight in the middle of – nowhere. There is no path, only forest. Then I hear the generator and walk to Wār ds its sound. The forest is dense, probably as it has always existed. It's also the reason there is a continuous drip of water inside the cavern.

The Siemlah sacred grove stands outside the eco-park. It covers 40 hectares and is an amazing collection of biodiversity, fenced and protected by the locals. Sacred groves have been protected by the local community for generations and represent the best collection of local biodiversity. They are a microcosm of the forests that existed once upon a time in the region. Sacred groves are the last repository of the rich biodiversity that once covered most of this place. They are important watersheds, places of religious importance and a source of medicinal plants and herbs. Local healers would be at a loss if sacred groves were to totally disappear.

I step into the sacred grove leaving my taxi driver staring behind me. If a spirit were to nab me, nobody on earth would be the wiser – my money is in the car, unknown to the driver. Almost immediately as I step inside the grove, an eerie feeling of being watched comes over me. The trees are tall and leafy, cutting out most of the sunlight on the ground. Rocks blackened by aeons of water flowing over them peep through the tree trunks and in places, resemble the faces of spirits that are supposed to live there.

“Don't be silly,” I tell myself. “There is no restriction on entering a sacred grove, just on taking stuff out it. The spirits wont mind an itinerant visitor wandering about.”

Its still and humid in the grove – the feeling of being watched follows me as I walk up the small hill and climb down the other side. There is a wealth of biodiversity here; these were the moist deciduous forests of the north-east before they were cleared for agriculture, plantations and



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mining. They remind me of similar vegetation on the other side of the country, in Goa. I breathe easy only when I emerge from the grove into the sunshine.

Cherrapunji was the wettest place on earth, testified the British over a century ago. A board still attests to this fact. Standing on a bluff next to the Noh Kalikai falls, with the plains of Bangladesh in the background, it proudly proclaims that I am at the wettest place on earth. A few feet beyond the board, a pipe runs down to a dilapidated hut – the few drops of water coming out of the pipe are gathered in an aluminum pan. Presently, these stop and the water stands in the pan, against the stark, barren plateau. There isn't a tree on the plateau.

The wettest place.

A woman sits in the hut with piles of firewood next to her, entertaining her grand-daughter. She calls to her like a goatherd calls goats – aa, aa. She's as oblivious to Cherrapunji's claim to fame as its fall from the pedestal.

Behind her hut is the source of the firewood – forests in the 500 foot-deep valley of the Noh Kalikai falls. A small stream runs down to Bangladesh from the falls. The falls themselves are breathtaking, plunging in a thin stream some 300 feet. It's not the rainy season yet so there isn't much water but even then, it makes for a spectacular cascade. A small green pool at the foot of the falls lies placidly in the sun, gathering the water and letting it flow onto the ocean through the next country. The river reaches the falls through a forested valley that stretches a few kilometers upstream. It is one of the few forested areas left in this part of Meghalaya. On the other side of the plateau, another few streams cascade down their valleys.

People grow vegetables – potatoes, cabbages, tomatoes, lettuce, spinach, gourds, chillies – and rice, a thick red variety of rice. There is some crop all the year round and the place is very affluent. I see no huts, only houses made of stone blocks and wood. People here have stopped using bamboo for construction. Bamboo is a poor man's building material, and these guys aren't poor by any stretch of imagination.

The Khasis channel water flowing from the upper reaches of the valley down one side of a field. Feeder channels running across the valley take this water to all parts of the field. The vegetable or paddy patches are built in terraces from the highest point that flat land is available right down to the road or the rocky bottom of the valley. Whatever water is left in the stream emerges at this point to scurry across the rocks and disappear into the foliage in the valley.

Farming is just one of the things this rich land yields.

“Meghalaya is the richest state in the northeast,” says Suren. “It has minerals like iron ore, limestone, coal and extremely fertile soil.”

The hills are pockmarked with limestone, rock and coal quarries of varying sizes. Both are still on a comparatively small scale in most places though some 20 kilometers from Shillong, I see that an entire mountainside has fallen to the quarrier's picks. No dynamiting here, because the quarries are right next to the highway. Instead, labourers drive iron rods into rock and pry large



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blocks loose. These are hammered into smaller bits and carted off in tractors or trucks. There are many stone crushers on this small stretch of 20 kilometers, doing brisk business enveloped in fine, deadly dust. The workers have no protective gear. They produce gravel that can be coarse, or as fine as sand.

“They take the material to the towns. The crushers produce gravel that is very good for building. The slightly brown gravel is Rs. 2000 for a jeepload. The white gravel is costlier, about Rs. 3500 for a jeepload. A truckload of rocks is about Rs. 15,000 to 20,000 and coal can be as much as Rs. 50,000 for a 30 tonne load,” says Suren, a treasure trove of facts on quarrying in the Shillong area.

Quarrying yields better returns in a shorter time than agriculture. A person with some 30 hectares would make Rs 250,000 or so in a year from agriculture. If he digs it up to sell rock, he can make that amount in a few months if business is good. The argument locals give is that they need the material to build their houses. That's clearly not the case – the quantum of quarrying is way above what the thin population of the region could use. The stone is sold in nearby towns and the limestone to local cement factories. The coal is used locally. The Khasis use rock and wood to build their houses. I see little bamboo, so presumably this plant has fallen on hard days here. There is little use for it either.

The quarries stand in stark contrast with the surrounding greenery. There have been a few showers and early growth shrubs have turned the hills green, where they have been allowed to grow. The quarries are a glaring white against this, and the green of the vegetable farms. In most places, I see the entire gamut of economic activity – quarrying in the hills, vegetable farming in the flatlands and fishing in small tanks that dot the flatlands.

Many hills and valleys have the entire gamut of economic activity in rural Meghalaya. The same hillside will have a quarry higher up and vegetable patches in the lower reaches. A muddy stream provides water for the vegetables. Clumps of pine and a few other trees make up the rest of the scenery. The non-quarried parts of the hillside are clothed in coarse grass.

Water to drink comes out of community taps, set up by the water department. These are supplied from a concrete tank common to the entire village. A spring, that could be a few KM away, is the ultimate source, from where a 3 or 4 inch thick pipe conveys water to the tank. This pipe is embedded in the headworks – a fancy name for a small check dam about 4 feet high that stops the flow of water and gives a small head of water to keep the pipe filled. Then, inch thick pipes take the water to different taps in the village. Water supply is regulated because often, a single stream provides for many villages. The Khasis bathe and wash clothes in any of the hundreds of perennial streams in the hills.

However, not all water is safe to drink and there is a high incidence of gastro-intestinal infections – diarrhoea, cholera, dysentery – among the people. That's because they don't boil the water before drinking, even though they collect the water in aluminum vessels from the community tap. The assumption is that if it's out of a tap, it must be clean. The truth is that the water supply department does not treat the water in any way before supplying it to the public. The costs of this



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are debatable but minimal training on hygiene is not. The people should be told to boil water before drinking.

Once the sun is up, I see women and children washing and bathing with abandon in the streams, oblivious to the vehicles passing by full of interested onlookers. Of course, the women bathe with clothes on so I am denied any free sights. It's a great place for paedophiles, though, with plenty of bare baby bottoms on display. The men finish their baths earlier and get to work. In this matrilineal society, the men get to do all the work that women traditionally do – chopping wood, cleaning, tending animals, farming. Women restrict themselves to cooking, fetching drinking water and commerce.

In places, forest fires have wiped acres of forest clean. These brown swathes contrast with the surrounding greenery. En route Cherrapunji, there are many such swathes and they usually are surrounded by forests; it's the common argument trotted out by the forest department that locals start the fire to get fuelwood. There could be some substance in the charge as most forests are privately owned; these forests have very few trees left. Most of the surviving trees are on government-owned lands and one of the ways to get at them is to start a fire that kills them off.

The villages are small and scattered with maybe a few dozen households arranged in an untidy jumble, but land holdings are large. There are terraced fields in the valleys in which run streams. In spite of deforestation, streams continue to flow through summer. The land around them is extremely fertile and terracing helps reduce soil erosion and water runoff. The terraces reach down to the stream in giant steps from the upper reaches of valleys. Above them, in some places, villagers have retained some tree cover.

Khasis traditionally used bamboo and wood for their houses. A traditional Khasi house is made of straw – straw walls and roof – on a wooden frame. They make a hut-shaped frame of wood, put in the frame for the roof and then tie the straw thatching to the frame. It's all locally available material, cheap and quick to assemble. An improvement on this is a house with a wooden frame and steel sheets as covering, instead of straw thatch. The steel lasts longer and is more water-proof. Further upscale, the foundation and walls are made of stone blocks and the rest of the house, from the windows up, is wooden; a frame to which wooden planks is nailed, with a roof of corrugated iron. Even better, the entire house is made of stone blocks and the roof of reinforced concrete cement. The construction reflects the wealth of the owners.

Regardless of what they are made of, all houses have a small verandah or covered sit out. The straw ones have a tiny place, big enough for one person to squat in. The size increases with the economic status of the owner. The larger houses have an open window behind which the women sit and stare at the world going by. All Khasi women above 40 seem to chew paan – their toothless mouths appear as red gashes in their otherwise fair, if weather-beaten, faces. They have amazingly pink cheeks and if not paan stained, their lips are defined by bright red lipstick. On the higher slopes, the villages cling to the hillsides. Most people in these villages make a living quarrying and selling timber – small bundles of firewood are the evidence. Farming isn't possible, the houses are smaller and the people are poorer.



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In the valleys, houses are larger. Farming is the economic mainstay. Quarrying and selling timber are incidental sources of income. In some places, I see piles of coal by the roadside. This is mined locally and sold mostly for domestic use as it's of low quality.

The Khasis carry their belongings and babies in conical bamboo baskets, suspended on their backs with a cord that goes around their foreheads. They plod forward, hands folded in front. The traditional Khasi dress for women comprises of a maxi-like dress called dhara with a toga cloth called jainshien wrapped over it, toga-style. Women also wear shawls called tamoh. The men wear pants and shirts or straight pyjamas and a short kurta and a variant of the Gandhi-cap. Everybody carries an umbrella – the weather is as unpredictable as the people.

Mornings are for field work, washing clothes and bathing as well as that bane of Indian womanhood – collecting water – where piped water isn't available. Outside large villages, there is no piped water and women have to trek to the nearest stream. The men mostly work the fields or graze livestock – cows, few goats and pigs. The women wash clothes and cook; a very traditional division of labour. In the villages I actually saw men working in contrast to other parts of India where the women do all the work and the men play cards. By the afternoon, the scene of action shifts to the quarries as nearly everybody here seems to own land that has been stripped of trees and now is good for digging. Both men and women dot the fields. The women are colorful, in their traditional red shawls, and stand out in the green of the fields. The men are dowdily dressed and were they to stand still, I would mistake them for rocks in the field.

Meghalaya is a Christian-dominated state and nearly all villages have a church of some sort, situated on a hillock. They are nearly identical – a small spire, hall large enough for the small parish, a little verandah outside the main entrance and a couple of steps up from the surrounding ground. The church bell isn't in the steeple but suspended from a concrete structure just inside the church compound. I don't see any house that could belong to the priest so presume that the priest stays in the village and not around the church.

Khasis do no work at all on Sundays. The fields are empty, the quarries silent and the traffic thin. We pass a dozen vehicles on the drive to Mawsyngram that was 56 KM. In contrast, the churches are packed with people in their Sunday best. The women are painted to their gills and well turned out; the men look better than their usual sloppy workaday clothes. It's easy to make out Christian burial sites on the bald hills – the top of a hill will have graves marked with crosses. These are in open spaces, away from any settlement. A lonely cement path leads to the fields of crosses.

The no-work attitude is so bad that the boys at a restaurant near a hot spring called Lowblie at the Jakrem village, about 64 KM from Shillong refuse to give us lunch even when offered Rs. 50 over the regular price.

To get to the springs I pay a fee of Rs. 10 and walk down a cemented pathway 250 M long, that goes through a small forest. The springs are at the bottom of a hill with an interesting combination of large black rocks and pine forests. They ooze out from under some rocks and are immediately gathered in a small pool. From the pool, pipes lead the water to the bathing area. The local hill council, the administrative body of the Khasis, has made separate bathing areas for men and women and piped the water to these 'bathrooms'. The men have separate cubicles, the



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women a communal area. The water is fairly warm, hot enough to bathe in without needing dilution even in the height of summer. It's rich in sulphur and supposedly has medicinal properties. It tastes sweet and is faintly perfumed. The water flows into a stream a few below through channels that have a coating of a hard green substance, presumably caused by the minerals in the water – it looks like the sulphate of some metal. The rocky bed of the stream has deep pools and the water is clean.

J Nongseij, the Khasi man who maintains the sulphur spring complex, says, “The ideal thing to do is to have a hot water bath and then dip yourself in the cool stream water.”

I take a rain cheque. But one of his tribesmen does precisely that after a vigorous bath in the hot water. Three naked Khasi children play in the spring water and disappear into the stream shortly thereafter.

The Khasi Hindus follow largely tribal burial customs. These are the ‘original’ Khasis, called Shen Khasis. Their distinguishing mark is a black chicken painted on a red flag. The Khasis traditional erect a menhir, or monolith in memory, of their dead, accompanied by a special prayer. It is said should the prayer go awry, the stone will fall and crush the erector; therefore, it is extremely important that the priest does a good job of the prayer to please the spirits and ensure his benefactor's longevity. These menhirs are long and flat granite stones, up to 20 feet long and rounded at the top, which are sunk into the ground. They stand any old how – vertically or tilted at a crazy angle. One, in Cherrapunji town, has a fluted round stone atop it. Most menhirs are old, but the custom persists. Sometimes, they erect a set of monoliths – four upright and one horizontal – like the fingers of my hand with the thumb folded in front, or just three or four vertical stones. It all depends on the occasion.

From Mawphlang to Jakrem, I see more smaller villages with houses of straw or wood covered with steel sheets. These belong to much poorer people and they are generally dingy. There are fewer houses made of stone, perhaps one of two in an entire village comprised of houses made of cheaper material. Even here, I see no use of bamboo in house construction nor any clumps of the plant. In some places, a species of bamboo is used to fence plots. The wood for house-building is usually pine or other fast-growing variety.

I see myriad small streams oozing out of rock, collecting and getting bigger. Even though the hills are denuded, they still retain enough water to feed these streams. These streams are the substance of life here. Three-inch thick pipes run down hillsides, presumably tapping streams at source for villages and towns. These pipes empty into concrete tanks from where smaller pipes supply community taps. I see no pipes going into houses so the concept of individual piped water supply hasn't yet percolated here. Most taps provide water at a fairly good pressure in the mornings and evening; despite this, they have the inevitable line of pots stretching away from them. A few women tend to the line to make sure nobody jumps the queue; the rest show up when they estimate that their turn for filling has come. The chowkidari rotates, with a different person guarding the pot line every day.

Perhaps the most famous of the sacred groves in this part of Meghalaya is at Mawphlang, 25 KM from Shillong on a good but narrow road. Its centuries old and covers several hundred acres of



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rolling hills. There are no pine trees, these being a British introduction, but an amazing range of indigenous plants. These include aroids, ferns, pipers and orchids, all native to Meghalaya. Sadly, the grove contrasts with the balding hills and underlines in bold the degradation of the hills.

Mawphlang is also the place where a dam, built in the early 1990s, supplies water to Shillong. I do not have permission to see the dam; permission is needed in case I decide to just walk up to the dam and toss in poison to kill every person in town. But from behind the inspection bungalow, I get a bird's eye view of the river as it flows into the dam.

There are different types of protected forests here, preserved for different reasons. Edmund describes them. "The one at Pontung is on land owned by individuals. This type is called a Law Kyntang. People needing wood or land can be allotted resources from here. Sacred forests where locals believe a demi-god lives are called Law lyngdoh. Some are under the care of the village headman, called law adong; these don't have any religious significance."

I drive atop the Khasi hills plateau. At Siatbakon village, where the Wār Khasi Hills begin, I see women sitting next to piles of stone and coal, waiting for customers, outside each rock quarry. Women squat next to piles of small rocks, breaking them into smaller pieces with hammers. A day's labour produces a 20 KG pile of rock that fetches around Rs. 50. Stone crushers produce smaller pieces and gravel and are usually operated during the day when there is electricity. These are made on order and shipped to the consignee immediately after the rock is crushed. The quarrying industry supports nearly 40 per cent of the population in these parts of the Khasi hills – quarry workers, crusher operators, labourers, truck drivers and loaders. Some of the quarries have been around for years and the denuded mountains, some of which have nearly disappeared under the crowbars of the quarry workers, bear testimony to this.

Elsewhere, it is king coal. Individuals dig black gold out of their patches and sell the stuff to Bangladesh. It is of inferior quality and not suitable for anything other than domestic use. The locals contemptuously say this coal is only good for Bangladesh, not for Guwahati.

A little further, there is abundant horticulture. In the valleys and even on hillsides, people grow a variety of vegetables. The countryside is picture-pretty. Rolling hills stretch into the distance, valleys tumble down to my feet with green potato plants or other vegetables sprouting. Clumps of bamboo or stands of pine dot the fields. Streams and brooks gurgle their way down the rocky hills and into the fields below. The population here is small and villages are correspondingly far apart and tiny, usually between 20 and 40 dwellings. The dwellings sprout any old how and are extremely varied. The rich have concrete and stone houses. The middling rich have stone and wood houses. The not so rich have thatch and wood houses. And the poor have houses made of thatch or bamboo. Most dwellings are far apart in the smaller villages, and clustered together in the larger ones.

Mawsyngram is a village 1000 M above sea level near the Bangladesh border. It's a 25 KM drive from Weiloi, a crossroads where one road goes to the hot springs at Jakrem and the other to Mawphlang. The narrow road that passes through spectacular mountains. Mawsyngram has a



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spectacular limestone cave with one large and several smaller shivlings – stalagmites formed by millions of years of water dripping from the roof.

The cave is actually a massive overhang of rock that covers maybe 2000 square yards of a rock filled cavern. A long crack in the ceiling has let water drip over the aeons and this mineral-rich water has built up the shivling. The stalactite atop the shivling is nearly as long, but thinner. The tips of both are painted red. Behind the larger one are a series of smaller stalagmites, with corresponding stalactites; all the tips are red. Even here, far from maddening crowds of tourists, water and religion are mysterious and inextricably interlinked. The roof on the sides and back of the cavern have collapsed some time in the past. From the back of the cavern comes the sound of rushing water. The man at the ticket counter – it's a two rupee ticket – says nobody has found the source of the sound. It must be an underground river. Did water, then, create god?

Mawsyngram is a small village of around 130 houses, dominated by two huge churches. Its unusual for such a small place to have such large churches. But it's the only village after Weilo with a sizeable population; it's the local parish. From the village, I can see the plains of Bangladesh as it is at the end of the Khasi hills.

Nearby, a stream flowing down the hillside is channeled onto the road via a bamboo rod that has been sliced in half and the internodes removed. It flows in a steady stream of sweet water, tempting in the hot afternoon sun. Here, the locals have not yet rendered the hillsides bare so they are beautiful shades of green. However, I do not see any tree that would be over 15 years old; the larger ones are cut for furniture. Piles of firewood at every turn stacked neatly between vertical bamboo stakes tell me where the other species of wood have gone. The Khasis are burning both ends of their natural resources candle. Still, there are forests in this part.

The traditional system of channeling water from streams on the heights to fields in the valleys using a system of bamboos is slowly giving way to another one. The new order comprises the thick plastic pipes used to channel optic fibre or power cables. These are tougher than regular plastic pipes and flexible enough to run over rocky terrain from the source of the spring to the fields, supported over ditches with bamboo sticks. Once laid, they can last many years before they need replacement. They are easier to put in place – just unroll the pipes. Bamboo systems on the other hand have to be painstakingly constructed.

However, the plastic pipes do not achieve what the bamboo systems do – progressively reducing the quantum of water reaching the plant to a level where each plant gets just what it needs. These systems reduce waste and maximize the use of available water. Plastic pipe systems do not. It's a single pipe, ranging from one inch to three inches in diameter, that brings water from the source to the user. These modern replacements are beginning to snake up and down hills.

People like Lan aren't familiar with the plastic pipes. They are hard to cut and are seldom straight. They are heavier and tougher to work with than bamboo. They last longer but fashioning a shyngiar is out of the question. Plastic pipes will remain a means to transport water from the streams to the shyngiar, but the shyngiar will live on.



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Meghalaya's immense water resources have to be nursed. Its natural resources need to be conserved. Locals have perfected the art of using what they have, with the shyngiar and terraced farming. They have a long, long way to go in learning how to conserve what they have. Trading the future for a richer tomorrow wont work, even though it may let the Khasis, Jaintias and Garos buy that fancy car or colour TV. Once gone, tropical rainforests never return and eventually, their streams will dry up. When that happens, an entire way of life will flow into the sea.