Agriculture and ‘Improvement’ in Early Colonial India: A Pre-History of Development

DAVID ARNOLD

The doctrine of ‘improvement’ has often been identified with the introduction – and presumed failure – of the Permanent Settlement in Bengal in 1793. Although recognized as central to British agrarian policies in India, its wider impact and significance have been insufficiently explored. Aesthetic taste, moral judgement and botanical enthusiasm combined with more strictly economic criteria to give an authority to the idea of improvement that endured into the middle decades of the nineteenth century. Concern for improvement also reflected dissatisfaction with India’s apparent poverty and deficient material environment; it helped stimulate data-collection and ambitious schemes of agrarian transformation. A precursor of later concepts of development, not least in its negative presumptions about India and the search for external agencies of change, improvement yet shows many of the false starts and intrinsic limitations early attempts to transform rural India entailed. This article reassesses the significance of improvement in the first half of the nineteenth century in India, especially as illustrated through contemporary travel literature and through the aims and activities of the Agricultural and Horticultural Society of India.

Keywords: India, colonialism, agriculture, improvement, tropics, development

INTRODUCING ‘IMPROVEMENT’

Forty years ago, in a pioneering essay on the political economy of early colonial India, Ranajit Guha examined the intellectual exchanges that resulted in the creation of the Permanent Settlement in Bengal in 1793 under the administration of Lord Cornwallis. This established on Indian soil a Whiggish attachment to private property and founded a ‘rule of property’ that endured in the province until the end of the colonial era (Guha 1963). Central to the debates Guha examined was
the conviction that landed property was the true source of ‘prosperity, happiness and wealth’, its value enhanced by the activities of ‘improving’ landholders and their tenants. The ideals of progressive capitalism as expressed through agrarian improvement (transcending the more narrowly mercantile outlook of the East India Company before its recent acquisition of eastern India) were repeatedly invoked in Cornwallis’s policy documents of 1789–90 and identified as the means both of ensuring the well-being of Britain’s Indian subjects and of securing the permanence of British rule (1963, 18, 172). Guha saw this doctrine as having its roots in French Physiocratic thought and, more immediately, in the enclosures, agricultural innovations and technological changes effected in eighteenth-century Britain and associated with such iconic figures as ‘Turnip’ Townshend and Jethro Tull. Indeed, by emphasizing improvement’s agrarian lineage, Guha helped make the agricultural, rather than the industrial, revolution appear the centrepiece of early colonial economic theory and practice in India.

As applied to Bengal through the Permanent Settlement, improvement took the form of an attempt to create an Indian landlord class (the zamindars), conceived ‘after the contemporary English model’ (1963, 171). The tax burden of the zamindars was fixed in perpetuity; they were bound by ties of loyalty and material self-interest to the British, and committed to promoting the agrarian transformation needed to augment rural productivity, generate increased revenue from the land and supply the agricultural products required for British commerce and manufacturing. The deliberations culminating in the Permanent Settlement conceptualized India as a vast ‘estate’ – ‘the greatest, the most improvable, and the most secure, that ever belonged to any state’, as Philip Francis described it in 1776 (1963, 17). However, the zamindari system soon attracted strong criticism, either because the newly created landlords proved a parasitic class, living off the fruits of their tenants’ labour without generating any serious attempt at improvement in return for their rents and privileges, or because, as happened extensively in the fifteen years after 1793, they were unable to manage their estates profitably, became bankrupt and had to sell their land on to others even less inclined to invest in agrarian improvement. Although the zamindars remained, British revenue policy turned instead to other schemes, notably the ryotwari system, by which a periodically revised settlement was made with peasant proprietors, who, it was believed, would have greater incentive to improve their holdings. Guha, like several authors before him (e.g. Dutt 1940, 209–12), concluded that Bengal’s zamindars completely failed to fulfil the expectations thrust upon them: ‘far from imitating the model landlords of Arthur Young’, the zamindars ‘were happy to be living off the fat of the land, but comfortably away from it. It was the France of the ancien régime and not the England of Townshend and Tull that . . . remained a more authentic parallel for Bengal’ (Guha 1963, 182). In later work, Guha frequently returned to the importance of improvement, arguing, in partial revision of his earlier essay, that the doctrine lived on (as through the improving ambitions of Lord Bentinck, the reformist Governor-General of India, 1828–35), and that while the Permanent Settlement was unsuccessful in economic terms, it none the less secured for the British the long-term collaboration of India’s landed classes,
Agriculture and ‘Improvement’ in Early Colonial India

one of the principal props of colonial rule (Guha 1989, 240–4; for an alternative view of the Permanent Settlement and its legacies, see Marshall 1987).

Four decades ago, when Guha wrote his account, the history of science and environment barely impinged upon the understanding of agrarian change and the political economy of colonial India. In retrospect, it is remarkable that Guha, in exploring the ideological antecedents of the Permanent Settlement, stuck so closely to the idea, ascribed to Philip Francis and others, that zamindars constituted the only practicable agency of agricultural improvement and that, in treating the failure of improvement as almost a foregone conclusion, he ignored the many critiques of Indian agrarian practice and repeated calls for reform written in the forty or so years after 1793 by European administrators, missionaries and naturalists. The scholarship of South Asia has, however, changed immensely since the 1960s: science has come to be recognized as one of the principal ideological expressions and material agencies of Britain’s engagement with India and in many post-Marxian analyses an environmental critique of colonial rule and its consequences has become as influential as interpretations grounded in political economy formerly were. It is in this scientific and environmental context that the theory and practice of improvement have been most commonly revisited in recent years, notably in the work of Richard Grove (1995) and Richard Drayton (2000).

Adopting a long-term perspective on improvement and empire, Drayton has argued for the critical importance of improving ideas and practices in the making of the British Empire from the seventeenth century onwards (2000, 59). This incipient ‘ideology of development’, as he pointedly describes it, evolved in close and mutually constructive association with the natural sciences, especially botany, and moved outwards from its metropolitan base to Britain’s colonial territories overseas. The ‘imperialism of improvement’ held out the promise that ‘people and things might be administered, in the cosmopolitan interest, by those who understood nature’s laws. European power, joined to the scientific mastery of nature, would necessarily confer the greatest good on the greatest number’ (2000, xv). In Britain improvement was initially identified with the management of private estates, but by the late eighteenth century, not least in Britain’s colonies, it had become entwined with state policy as well. It found particular expression in the transfer of ‘useful’ plants, a movement facilitated and coordinated by botanic gardens across the burgeoning empire. This quest to command and control plant resources was heightened by the escalating demands of British trade and industry and by Anglo-French rivalry. Like a number of other recent authors (Gascoigne 1994; Grove 1995), Drayton sees the naturalist Joseph Banks as a pivotal figure in this expanding network of plant exchanges and botanic gardens. Combining scientific expertise with royal patronage, and as an adviser to the East India Company, Banks encouraged the empire-wide introduction and exchange of plants (especially via Kew Gardens). He also helped nurture and disseminate the idea of improvement overseas in support of British commerce and manufacturing.

The establishment of a botanic garden at Calcutta in 1786 is now seen as an innovative move that served both imperial and improving agendas. Drayton identifies British botanists rather than Indian landlords as the principal agents of
improvement in India, and, rather than wilting away under zamindari neglect, he sees improvement as gaining momentum as the nineteenth century progressed. As the economic importance of the West Indies dwindled, that of India increased, especially as a source of tropical produce. After Banks' death in 1820, other metropolitan botanists assumed responsibility for the promotion of economic botany in the service of empire, notably William Hooker and his son Joseph, who, as successive directors, ran Kew Gardens from the early 1840s to the mid-1870s (Drayton 2000; Brockway 1979).

While Drayton is right to draw attention to the strategic role of Kew and its directors, by placing Kew at the centre of plant introductions and exchanges he overlooks the extent to which improvement – in India at least – might acquire its own local impetus, characteristics and constraints. Just as Guha looks to the zamindars as the agents primed as improvers in Bengal, so, from his very different perspective, Drayton turns to imperial botanists and to the introduction of plants (like cinchona) that attracted state support or served an imperial function in commerce or medicine. There is little sense in the work of either author of how far peasant agriculture might have been affected by improvement, or even whether any sustained effort was made to do so.

These forays, forty years apart, by Guha and Drayton, point to the continuing relevance of improvement to discussion of agrarian change in colonial India, but they leave many issues unresolved. Did improvement fail to progress much beyond the Permanent Settlement of 1793, or did it acquire a significant local momentum? How far was its destiny tied to Bengali zamindars or, conversely, to European botanists, or did it find other agencies? Did improvement impact on agrarian change in India and contribute to the long-term emergence of what Ludden (1992) has called India's 'development regime'? To what extent was it confined to a specifically economic agenda, or did it inform other aspects of the colonial project of knowing, ruling and profiting from India? This essay seeks to re-examine the significance, context and impact of improvement in early colonial India and to offer some preliminary answers.

THE DISCOURSE OF DEFICIENCY

Although poverty had long been seen by Europeans – for instance, the seventeenth-century French traveller François Bernier – as one of the characteristics of India, it was countered by displays of courtly opulence, by the extraordinary natural abundance associated with regions like Bengal, and by the handsome profits to be made from the trade in spices, textiles and other luxury goods (Bernier 1891, 200–38, 437–46; Landes 1998, 154–8). However, the British takeover of Bengal following the battle of Plassey in 1757, and the wholesale plundering of eastern India that followed in its wake, began to create a different, more disturbing, impression. The famine of 1770, in which up to a third of the population of Bengal may have perished (Arnold 1999; Datta 2000), greatly added to the idea of India's poverty, though the reasons for this remained subject to widely differing interpretations.
As Guha presents it (1963, 16), many of the theorists at the time were inclined to see the famine as ‘the most conclusive evidence of the worthlessness of the existing economic policies’ followed by the Company and hence the best possible reason for ‘seeking an alternative in terms of a more stable and comprehensive land settlement’ – ultimately the Permanent Settlement of 1793. However, more recent discussion (Grove 1995, 332–6) has shown how the famine of 1770 and those that followed soon after encouraged the belief that it was not so much the policies of the Company that were at fault as the deficiencies of nature itself or the failure of India’s agricultural classes to capitalize on the resources available to them, whether from their own ignorance and inertia or the effects of the warfare and pillaging that preceded the establishment of British rule. As early as the 1780s, improvement (through state encouragement to agriculture and trade) was being urged as the necessary response to the recent famine, as in the Jungle Mahals of southwest Bengal (Browne 1788).

The increased facility of European travel in the Indian interior, as Company rule expanded, made such critical observations more frequent and informed by direct observation. Thus William Tennant, a Calcutta chaplain who travelled extensively in northern India in the 1790s and wrote at length on its ‘domestic and rural economy’, regarded ‘universal poverty and nakedness’ as the characteristic condition of those Indians as yet untouched by the benefits of British rule and still suffering from the ‘cruel spoilations’ of ‘Asiatic’ despots (Tennant 1804, 1, dedication, 85). Benjamin Heyne, a surgeon-naturalist whose south Indian journeys in the 1800s included areas still, or until recently, under Muslim rule, similarly remarked on the desolation of the countryside, the poverty of agriculture and the prevalence of dry, stony ‘jungles’ (Heyne 1814, 288–326). Recounting the impoverished state of the Indian countryside and the ‘squalid wretchedness and extreme poverty’ of its inhabitants (Dr Tytler in Agricultural and Horticultural Society of India (AHSI) Transactions, 1, 1829, 29) was a significant step towards asserting the moral superiority of the British, their self-determined obligation to improve India, and hence their entitlement to rule over it.

It was in this spirit of apparent poverty and destitution, as much as in the hope of favouring British commerce, that in 1786 Lt-Col. Kyd proposed to the Government of Bengal the establishment of a botanic garden at Calcutta. It was not, he insisted, to be a place for collecting rare and curious plants ‘but for establishing a stock for the dissemination of such articles as may prove beneficial to the inhabitants, as well as the natives of Great Britain and ultimately may tend to the extension of the national commerce and riches’. He had in mind the sago palm and cassava, plants which he thought would, if successfully introduced, protect India against recurrent famine, as well as crops like indigo, cotton, coffee, clove and nutmeg that would benefit both Indian agriculture and British trade (Biswas 1950, 8). The governor-general, Cornwallis, and the Court of Directors in London supported this proposal, while Banks welcomed the garden as serving the valuable purpose of intra-tropical plant exchanges. It was, as he put it, well suited ‘for the purpose of conferring on the inhabitants of that circle of the globe who enjoy a climate similar to the climate of Calcutta, what I conceive to be the
greatest of all earthly benefits, an increase of their resources of food, in raw material and in luxury by receiving from the West such useful plants as the East did not then possess and by sending to the West such as hitherto exclusively belonged to the East...’ (Biswas 1950, 12; cf. Mackay 1985, 174–7).

The reference here and elsewhere in Banks’ correspondence to India’s ‘tropical’ location is more significant than historians have generally realized, for the late eighteenth century marked the period in which Europeans began to identify India with the tropical world. Hitherto, it had been customary to see India as an easterly extension of ‘the Orient’, as part of the trading world of ‘the Indies’, or as ‘Hindustan’, a region with distinctive physical and cultural characteristics of its own. Beginning in the 1780s and 90s, India’s appropriation to the tropics rapidly gathered pace in the colonial literature of the subcontinent during the early nineteenth century, especially in its medical and naturalist discourses, so that by the 1840s and 50s it was customary to speak of India as having a ‘tropical’ climate, vegetation or diseases and ultimately as belonging to the domain of ‘tropical agriculture’ (for the elaboration of this argument, see Arnold 1998, 2005). This ‘tropicalization’ of India had many consequences. One was that it ran counter to the appreciative Orientalist scholarship of William Jones and others, for it suggested that, despite the achievements of its early civilization, India, unlike Europe, still lay under the thrall of an unmastered nature. Another consequence was that the comparison of India with other ‘tropical’ territories – the West Indies, Brazil and the South Pacific – created in the minds of European travellers and commentators expectations of natural abundance that India was seldom capable of realizing.

Of course, not all tropical territories were assumed to be identical: India might lack the slavery that many travellers saw as blighting colonial societies in the Americas, though some saw caste and religion as having almost as baleful an effect. But, in the minds of Banks and many others, just as it shared the climate and diseases of a large part of the tropics, so was India destined to produce those commercial crops, such as sugar, cotton and tobacco, that typified the tropics and thereby supplement the trade and complement the produce of the northern temperate zone. In an age of Romanticism, the tropics became aesthetically, as well as commercially and scientifically, associated with an extraordinary fecundity of nature, with luxuriant vegetation and dazzling sunlight, brightly coloured birds and insects, a wealth of exotic fruit and flowers. The South American travels of the German naturalist Alexander von Humboldt (1799–1804) helped propagate this alluring view of the tropics, just as writings in a similarly exuberant Romantic and scientific vein about Mauritius, Ceylon and Southeast Asia brought such exalted expectations to India’s doorstep. Travelling naturalists, like the Frenchman Victor Jacquemont, who visited India in the late 1820s and early 30s, but who had previously revelled, with almost ecstatic delight, in the tropical sights of Haiti and Brazil, or who, like the German physician W. Hoffmeister and the British botanist Joseph Hooker in the 1840s, toured the seemingly ‘barren’ interior of Bengal and north India after experiencing the vibrant splendour of Ceylon were bitterly disappointed by what they saw and reflected ruefully on
Agriculture and ‘Improvement’ in Early Colonial India

India’s deficiencies (Jacquemont 1841; Hoffmeister 1848; Hooker 1854). Along with the comparison afforded by the agricultural revolution in Britain, these tropical expectations profoundly influenced attitudes to India in the early nineteenth century. Through their disappointment, they helped create the discourse of the ‘poor tropics’ that informed subsequent thinking about improvement and development in South Asia (perhaps the ultimate apotheosis of this negative representation of the tropics, and of India’s place within it, is Gourou 1961). Further, in a more recent scholarly context, since the idea of ‘the tropics’ encompassed both the wild and the cultivated, investigating this peculiar mode of understanding India offers a way of transcending the artificial dichotomy between its agrarian and environmental history (Agrawal and Sivaramakrishnan 2000, 3–10).

RUINED INDIA

In India, as in Britain and France, much of the literature on improvement took the form of commentaries by travellers, whether acting in an official capacity or as independent observers. One of the most celebrated naturalist travellers was the Bengal-based surgeon Francis Buchanan, who in 1800 was commissioned by the governor-general, Lord Wellesley, to report on territories recently seized from Tipu Sultan, the defeated ruler of Mysore (Buchanan 1807; Vicziany 1986). As Buchanan departed from Madras and headed inland, he found abundant evidence not only of the destruction caused by recent warfare and depredations, but also of what he regarded as the ruined or defective state of south Indian agriculture. Despite the fact that he was travelling in the dry season of the year, when much of the vegetation was dormant and agriculture at a virtual standstill, Buchanan repeatedly described the territory he traversed as being devoid of ‘verdure’ and having a ‘desert appearance’. Like many European travellers of the period, Buchanan found India’s dry-season landscape hard to fathom: it was ‘sterile’ and ‘bare’. Relieved by only occasional patches of cultivation, the landscape of the Carnatic reminded Buchanan unfavourably of the Scottish moors, except that it was ‘still more barren’ (Buchanan 1807, I, 6). Apart from the unimproved wastes of own country, Buchanan had in mind two very different models of landscape and agriculture against which to compare south India. One was the luxuriant natural vegetation of eastern Bengal and Chittagong, where he had botanized in 1796–8. While finding little about the dense, exotic vegetation of this region, with its palms, bamboos and creepers, to remind the traveller of his ‘native’ scenery, Buchanan still found it ‘highly pleasing’, both from its novelty and from its ‘beauty and grandeur’ (Buchanan 1826, 173–7). He similarly found the cultivated areas of eastern Bengal ‘one continuous field yielding the richest crops, free from all the stiffness of regular fences, and only interrupted by the natives’ cottages concealed in groves of fruit trees, that are variegated with all the irregularity of luxuriant nature’ (quoted in Marshall 1987, 21–2).

But the second, in many ways dominant, image in Buchanan’s mind was that of rural Britain, transformed by the agricultural revolution, with its enclosed
fields, stone walls and hedges, with fattened livestock grazing on improved pastures or sheltering in barns. Indeed, little more than a decade after the introduction of the Permanent Settlement in Bengal, Buchanan’s instructions specifically enjoined him to report on the state of south Indian agriculture and its prospects for ‘improvement’ (Buchanan 1807, I, vii–ix). Seen in this light, south Indian cultivators appeared to him ‘indolent’ and ‘slovenly’. Though the land itself seemed far from being naturally deficient, and was ‘perfectly fitted for the English manner of cultivation’, it needed to be ‘enclosed . . . and planted with hedge-rows’ (I, 30). To him, as to many contemporaries, the absence of enclosed fields reinforced the impression of ‘nakedness’ and compared unfavourably with England and ‘with all that is rural and secure in its crowded and neatly dressed inclosures’ (Sherer 1826, 158). Such was the backwardness of Indian agriculture and husbandry in Buchanan’s eyes that a ‘meliorating succession of crops’ was ‘utterly unknown’, and ‘scarcely any attention’ was paid to ‘the improvement of the breed of labouring cattle, and still less providing them with sufficient nourishment’ (Buchanan 1807, I, 126).

Not all of Buchanan’s narrative was informed by so dismal a view of landscape and agriculture. He was one of the first European travellers in India to write in a Romantic vein, though in the south his Romantic inclinations were often most evident from his constant disappointment at the ‘barrenness’ and lack of beauty in the arid and desolate landscape. Romanticism is sometimes understood as an escape into wild nature and away from an increasingly mechanized and over-regulated society. But, as Peter Womack has argued for the Scottish Highlands in the period following the suppression of the Jacobite rebellion in 1746 – an example the many Scots in the Company’s service knew well – ideas of capitalist improvement were far from incompatible with Romanticism. At one level, Romanticism and improvement might appear to represent contrasting views of the landscape and nature but ‘in reality they were twins’, not least in their mutual engagement with capitalist needs and middle-class tastes (Womack 1989, 3). The process of reconciling Romanticism and improvement was effected in many different ways, but it is striking how often in India the two coexisted and favoured an improved landscape (one, furthermore, that was nostalgically redolent of ‘home’) over the wild ‘desolation’ many travellers observed about them. This reconciliation was sometimes achieved, as in Buchanan, by juxtaposing the few Romantic spots (a dramatic waterfall, a leafy grove, a well-wooded district) with the generality of south India’s parched and barren landscapes (Buchanan 1807, II, 167, 390). But it was frequently done by presuming that India, now ruined and impoverished, would again become pleasing and prosperous under the benign, improving influence of British rule.

One recurrent element in the travel narratives and topographical descriptions of the period was the identification of India as a land of ruins. As in Europe, derelict forts, palaces and tombs might, at one level, be deemed ‘picturesque’ objects, worthy of Romantic contemplation. They might even occasion sober reflection on the vanished power and former glory of the Mughals, whom the British had displaced. But in the main they reflected far more negatively on
Agriculture and ‘Improvement’ in Early Colonial India

a prevailing sense of ruination. Bishop Heber’s description of Delhi in the mid-1820s – ‘a very aweful scene of desolation, ruins after ruins, tombs after tombs . . .’ – can be taken as representative of dozens of dismal descriptions of urban decay (Heber 1828, II, 290), while in the countryside the repeated emphasis upon the encroachment of unproductive scrub on what had once been cultivated fields and thriving villages depicted a similar state of rural degeneration. Jungles might appear ‘picturesque’ to some Europeans, but to most they (and the tigers, bears and other beasts that inhabited them) were the arch-enemies of improvement. Repeatedly in the accounts of British travellers and administrators the ‘desolate’ state of the country they had acquired from the Marathas and other Indian rulers cried out for improvement (Malcolm 1824, II, 232–6). The want of capital investment, the deficiencies of Indian livestock, the crudeness of Indian agricultural implements, the want of manuring, of hedges and enclosures – all these formed part of the litany of complaints directed against Indian agriculture (Tennant 1804; Heyne 1814; Heber 1828). Given the elision common at the time between ‘culture’ and ‘cultivation’, it is not hard to see how a land seeming so poorly cultivated was deemed similarly wanting in civilization.

Elements of both retrospective and prospective Romanticism surface in the writing of another early colonial author, James Tod, British political agent for Rajasthan in the years following the final defeat of the Marathas. Tod’s Annals and Antiquities of Rajasthan, first published in 1829, has often been seen as a classic piece of Orientalist scholarship, but it might equally be understood as an essay in high Romanticism, combining history, folklore and legend, replete with dramatic tales from the lives of Rajput princes and princesses, and set against the striking desert and mountain scenery of the region. In the course of his journeys through Rajasthan, Tod rhapsodized over the landscape and its historic and mythic associations, though, like Buchanan in south India, much of his narrative also reflects on the depredations caused by the Marathas and freebooting Pindaris before the British had established the ‘blessings of peace’, and redressed the imbalance between the evident capabilities of the fertile soil and the many fields that still lay abandoned and untilled (Tod 1873, I, 564–8; II, 544, 572).

Tod might be a Romantic in his affection for the ‘feudal’ Rajputs and the wild and rugged landscape they inhabited, but this did not prevent him, in another (improving) aspect of his Romanticism, from anticipating a more secure and prosperous world. One illustration of this occurs in a passage from his second journey through Rajasthan. In February 1820 he looked down from a commanding escarpment onto the plains of Mewar below. This ridge disclosed ‘one of the most diversified scenes, whether in a moral, political, or picturesque point of view’, Tod had yet beheld. His mind embraced all the ‘grand theatres of the history of Mewar’ – from Chittoor, ‘the palladium of Hinduism’, through the mountainous Aravalli, ‘the shelter of her heroes’, to lands seized by the ‘barbarian Toork’ (the Muslims) and the Marathas. ‘What associations, what aspirations’, Tod exulted, ‘does this scene conjure up for one who feels as a Rajpoot for this fair land’. The rich, flat plain through which he had just travelled appeared
as a deep basin, fertilized by numerous streams, fed by huge reservoirs in
the mountains, and studded with towns which once were populous, but
are for the most part now in ruins, though the germ of incipient prosperity
is just appearing. From this height I condensed all my speculative ideas on
a very favourite subject – the formation of a canal to unite the ancient and
modern capitals of Mewar, by which her soil might be made to return a
tenfold harvest, and famine be shut out for ever from her gates. My eye
embraced the whole line of the Bairis, from its outlet at the Oodosagar, to
its passage within a mile of Cheetore, and the benefit likely to accrue from
such a work appeared incalculable. What new ideas would be opened to the
Rajpoot, on seeing the trains of oxen, which now creep slowly along with
merchandize for the capital, exchanged for boats gliding along the canal;
and his fields, for miles on each side, irrigated by bilateral cuts, instead of
the creaking Egyptian wheel. (II, 575–6)

Before railways transformed the landscape and the agrarian economy of India, it
was commonly canals (more often for irrigation than, as in Britain, for transpor-
tation) that were envisaged as the principal means of effecting change. Two
decades before Tod, James Mackintosh of the Bombay High Court, in visiting the
Buddhist monuments of Aurangabad, remarked on their ‘massy and monstrous’
forms, designed, he believed, more to ‘overwhelm the mind, rather than delight
it’, and to ‘excite wonder, not admiration’. He contrasted ‘all the boasted works
of Asia’, from the Pyramids to the Great Wall of China, with the ‘docks, canals,
and other useful works’ the British had constructed in recent years. ‘To pierce a
country in all directions with canals’, he concluded, was ‘a greater work than any
of them’ (Mackintosh 1836, II, 77–8).

In India, as in Europe, Romanticism assumed many forms. The glorification
of wild nature was certainly among these, as was a wistful delight in historic
ruins, but commonly in India Romantic appreciation of nature or the relics of the
past was coupled with a desire to improve India, both in the capitalistic sense of
generating greater resources and profit from the land and in terms of the aesthetics
of a landscape that seemed ‘naked’ and ‘bare’, overgrown with jungle or lying in ruins.
The cultural preference for a humanized landscape over a wild and unkempt one
was widely shared. Reporting on Dehra Dun in the western Himalayas in 1827,
F. J. Shore wrote lyrically of the valley, extolling the beauty of its scenery. His
eye descended from the ‘grand and sublime’ mountains in the distance to the chan-
ging colours of the sal and sisoo forests in the foreground. But what appeared at
first to be unstinting praise for the glories of unmediated nature concluded abruptly
with the observation: ‘Were there but cultivation and the habitations of man on
the level between the river and hills, the scenery would be perfect’ (Shore 1836, 18).

THE AGRICULTURAL AND HORTICULTURAL SOCIETY

Enthusiasm for improvement was not confined to colonial state servants like
Buchanan, Tod and Shore. It was taken up with particular vigour by Christian
clergy and missionaries, men like William Tennant and Reginald Heber, through
whose writings the doctrine of improvement took on a strong moral tone (Tennant 1804; Heber 1828). Especially revealing of the evangelizing attitudes and agenda of improvement was the formation of the Agricultural and Horticultural Society of India (AHSI), set up in Calcutta in 1820 through the efforts of the Baptist missionary William Carey. Apart from being one of the first British missionaries to work in India, Carey was a keen and accomplished botanist. That the initiative for the AHSI came from a missionary like Carey underscored the reluctance of the Government of India and the Court of Directors to act directly in the cause of improvement, preferring to leave it to individual enterprise; but it also showed how an improving agenda might also be an implicitly Christian one, replacing ‘heathen’ jungles and ‘slovenly’ agriculture with tidy homesteads, neatly tilled fields and industrious peasants.

In his manifesto, Carey declared that the formation of such an organization would ‘tend to enlarge the ideas of the peasantry, to dissipate their prejudices, to call forth their latent energies, to encourage their industry, and promote their respectability and usefulness in society’ (AHSI Transactions, 1, 1829, iii). He continued:

The draining of marshes, the cultivation of large tracts of country now not only useless, but the resort of savage beasts and the source of severe diseases – the improvement of stock – the creation of a larger quantity of the necessaries and conveniences of life, and of raw materials for manufactures – the gradual conquest of the indolence which in Asiatics is almost become a second nature, – and the interdiction of habits of cleanliness, and a neat arrangement of domestic conveniences, in the place of squalid wretchedness, neglect and confusion; in a word, of industry and virtue in the room of idleness and vice, might all, by an association of this nature in time become obviously important even to the natives themselves. (1829, iv)

Carey’s ‘mission’ (as subsequent writers aptly termed it) was also an anglicizing one, since the terms in which he instinctively thought of improvement owed almost everything to British, rather than Indian, experience. This was most evident in the twenty-point questionnaire sent out in 1820–1 to correspondents across India. The ‘queries’, too long to quote in full, began with requests for information about the current state of the climate, soil, agriculture, animal husbandry, stock improvement and markets, then enquired more specifically about what attempts had been made to improve ‘wastes’ and pastures, to drain, manure and enclose land, to establish orchards and timber plantations. Question 15 was particularly expressive of this extra-Indian orientation, asking

... in the manner they are improved in Europe? (AHSI Transactions, 1, 1829, xvi–xix)
If this last sentence hinted at a mounting exasperation, question 18 was still more direct, demanding ‘What do you think are the obstacles to agricultural improvement? And what do you suggest as the most appropriate remedies to them?’ (xviii).

Initially the Agricultural and Horticultural Society attracted relatively wide support. Barely mentioned by modern writers, it was favourably compared by contemporaries with the Asiatic Society of Bengal (founded in 1784), and, with some 600 subscribers in the 1840s, had, for a while, a larger membership. F. J. Mouat declared in 1848 that the AHSI was ‘the most flourishing and successful association in India’, and the ‘one which had most earnestly and honestly fulfilled its mission’ (AHSI Minutes, 13 January 1848). Other enthusiastic supporters, employing a similarly quasi-religious vocabulary, declared that the AHSI had been ‘a real blessing to the country’ (Wallich 1853, 137). In its first forty years it attracted the support of several governors-general as patrons. One, William Bentinck, identified himself particularly closely with the AHSI’s evangelizing aims when he told the society in 1835 that it was ‘impossible not to deplore the same defective state in the agricultural as in every other science in this country. Look where you will . . . and you will find the same results – poverty, inferiority, degradation, in every shape. For all these evils, knowledge, knowledge, knowledge, is the universal cure’ (quoted in Temple 1854, 357). The society’s headquarters in Calcutta and its branches elsewhere (including Bombay, established in 1830, and Madras in 1836) received small grants from the state to maintain its activities or for specific improving purposes, such as conducting cotton trials, and its office-holders engaged in correspondence with the Court of Directors over the introduction of new plant species or duties that discriminated against Indian cotton and wheat in Britain.

But more substantial state sponsorship eluded the society, seldom extending beyond ‘cordial co-operation’ (Temple 1854, 342). Improvement and imperialism did not operate, as Drayton’s argument might lead us to suppose, entirely in tandem. Indeed, there were signs, even by the late 1830s, that the government was disappointed at how few practical results followed from the society’s ambitious schemes and benevolent intentions, while society members, for their part, felt that the AHSI could not realistically undertake tasks that more properly belonged to the state and to capital (H. H. Spry in AHSI Proceedings, June 1839, 52). In consequence, the AHSI’s activities were often confined to the collection of agrarian data and in becoming a ‘depository of practical information’ (Temple 1854, 354). It has become fashionable in the context of colonial India to equate knowledge with power, but, without a radical overhaul of agrarian society, this store of agrarian knowledge was hard to convert into the power of empirical use.

One of Carey’s ambitions in setting up the AHSI had been to attract Indian membership. In part this reflected his own proselytizing engagement with Indian society (he was a pioneer of Bengali translation and vernacular education), but it was also pragmatic recognition of the commanding position entrusted to the zamindars by the Permanent Settlement and hence the primary route by which the mass of the peasantry might most effectively be reached. As Carey put it in 1820,
it was important to involve ‘native gentlemen’ in the society, as ‘one of its chief objects will be the improvement of their estates, and of the peasantry who reside thereon’. In this, he believed, lay the ‘future welfare of India’ (AHSI Transactions, 1, 1829, xii). Clearly, hopes of using the landlord class as the vehicle for improvement had not died in the 1790s or even disappeared several decades thereafter.

To a limited degree, Carey’s ambitions were realized. Unlike the Asiatic Society, the AHSI drew from the outset on Indian participation: one of its earliest members was Radha Kanta Deb, in the 1840s its vice-presidents included Dwarkanath Tagore and Ram Kumal Sen, and its meetings attracted other prominent members of the Calcutta-based bhadrakok of landlords, entrepreneurs and intellectuals. Upcountry, Indian zamindars and government servants attended branch meetings (notably at Bhagalpur in Bihar) and helped judge fruit and vegetable shows. The society’s Hugli district branch was revived in 1844 with the specific hope of attracting more zamindari involvement (AHSI Journal, 5, 1846, 83–4, 180–2). In 1846, at a time when 36 of the 606 members were ‘Asiatics’, the society translated two volumes of its Transactions into Bengali, and a year later published a vernacular handbook on agriculture. The society might thus be seen as a significant site of collaboration between European and Indian elites in the early nineteenth century, though (to judge by Radha Kanta Deb’s reply to Carey’s questionnaire) Indian members were more inclined than Europeans to blame inclement seasons for the deficiencies of Indian agriculture and to portray their own landlord class as caring paternalists concerned with the ‘comforts and happiness of the peasantry’ (AHSI Transactions, 1, 1829, 56).

To some extent, too, the appeal of improvement extended beyond landlords to the ranks of the subalterns: up to 200 malis (gardeners) attended the society’s exhibitions in Calcutta in the 1840s and were recipients of its fruit, vegetable and flower prizes. In its heyday the Society attracted a very varied membership including European civil servants, army officers, clergymen and their wives, indigo planters, and Bengali zamindars. However, by the mid-1840s ‘native’ membership of the society was shrinking and amounted to barely 5 per cent of the total. ‘It was scarcely to be expected’, the President reported in 1846, ‘when the Society was first established, that this class of the community would join it readily; it was proper that the European portion should lead the way, and it did so. But it was hoped that, as education advanced among them, they would begin to perceive how much their interests could be promoted by the agency of this Society, and that its objects would meet at their hands a cordial support’ (AHSI Journal, 5, 1846, lxix). Since that had not happened, Indian ‘apathy’ was increasingly blamed for the failure to garner support and generate more substantive change in the Indian countryside.

A formal commitment to improvement outlasted Carey’s death in 1834. Officially the society remained dedicated to rescuing Indian agriculture from a state ‘more rude . . . than that of England two centuries ago’ (AHSI Transactions, 1, 1829, 6). But such lofty ambitions were difficult to maintain in practice. For instance, although animal husbandry and the improvement of Indian livestock had been one of the AHSI’s original concerns, it rapidly proved impracticable.
Responding to Carey’s questionnaire, Dr Tytler in Allahabad explained that in that district ‘Stock, in the English farming sense of the term, seems unknown . . . There seems to be no establishments of the particular kind which in England are known by the name of dairies’ (AHSI Transactions, 1, 1829, 22). In 1839 the AHSI instituted a prize for cattle and sheep, only to abandon it four years later. On average only twelve cattle a year had been exhibited, and the tropics were deemed an environment ill-suited to the improvement of sheep (AHSI Minutes, 8 March 1843).

For many of its members the society had a more modest role than Carey had envisaged. Along with the Calcutta botanic garden, it served as a vehicle for the introduction and dissemination of exotic plants, especially the distribution of European fruit trees and flower and vegetable seeds to Indians and expatriates. In 1840 J. F. Royle noted the dramatic progress of this more decorative version of improvement in and around Calcutta. ‘Country seats have risen in all directions, gardens have been attached to the houses in town, in the suburbs, and on the banks of the river [Hugli], both among natives and Europeans, all replete with the choicest fruits and flowers. Similar improvements’, he added, ‘have taken place in many parts of the interior of the country’ (1840, 197). Having adopted floriculture as one of its main undertakings in 1844, the AHSI held well-attended flower and vegetable shows in Calcutta and in upcountry stations like Lucknow and Bhagalpur, and prizes were awarded for the best flower displays or for the finest celery, peas and asparagus (AHSI Journal, 5, 1846, 41–2, 181). It was, of course, possible to claim that floriculture and horticulture were in their way as important as agriculture and improved husbandry. In 1836 Nathaniel Wallich, superintendent of the Calcutta botanic garden and a leading figure in the AHSI for many years, sought to convince his superiors that ‘No enlightened government, lest of all the British in this country, can fail appreciating the beneficial influence which must result to the governed from imparting to them a taste for agriculture and gardening – of all human occupations the most pure, useful and civilized’ (Wallich to Government of Bengal, 1 October 1836, Board’s Collections F/4/1761: 72126). But it was increasingly obvious that, for most of its members, the AHSI was of more value for purposes of recreation and display than for agrarian transformation.

THE PROGRESS OF IMPROVEMENT

It would, however, be a mistake to write off the Agricultural and Horticultural Society as entirely ineffectual. Both through its own efforts and the broad penumbra of its members’ and supporters’ activities, the society helped to promote the ethos of improvement and to foster some real, if (in a wider view) modest, changes in crop production. The scale and significance of these agricultural innovations call for more detailed investigation, but they merit brief mention here.

By the 1840s the AHSI had eleven standing committees concerned with the different areas of its activity. These included committees for sugar, cotton, silk,
Agriculture and ‘Improvement’ in Early Colonial India

hemp and flax, coffee and tobacco, oil-seeds and grain. Sugar cultivation was one of the areas where the society and its members were most active and influential, partly because this seemed to fit the ‘tropical’ identification of India and partly because the crop was already widely grown (but in varieties that yielded little juice) and so ripe for improvement. There was much interest in the so-called ‘Otaheite’ type, which came to India not from Tahiti but from Mauritius. This was first imported in 1829 on behalf of Captain W. H. Sleeman in Central India who, when not tracking down the Thugs for whose suppression he became famous, encouraged and cajoled the peasants of the Narmada valley to take up the new variety. Given its greatly superior properties and the higher prices it could command in the marketplace, Otaheite cane spread rapidly across northern India and the Deccan (Sleeman to AHSI, 9 May 1836, Board’s Collections F/4/1768: 72586; Temple 1854, 342). The AHSI assisted this process by growing and distributing canes to its members: in 1839 alone it distributed 42,000 canes (AHSI Proceedings, June 1839, 7).

Sugar was in keeping with the ‘tropical’ expectations of Indian agriculture, but many of the plants, both decorative and useful, favoured by the AHSI reflected a contrasting ambition to anglicize Indian agriculture, horticulture and floriculture. As much effort went into trying to establish apple, pear and peach trees as into disseminating improved varieties of mangoes or tropical fruit-trees from Southeast Asia and Tahiti. One temperate vegetable that did establish itself, even before the founding of the AHSI, was the potato – one of the few cases in which a food crop was successfully acquired from Britain. Although some potatoes may have been grown earlier, they only became a significant crop at the very end of the eighteenth century. The main reason was the growth of the British military presence in India – the Company and British Army regiments stationed in India contained large numbers of spud-hungry Irish and Scottish soldiers and the profitable market for potatoes in the cantonments encouraged peasants (and even prisoners in jail gardens) to take up the crop. The AHSI did not initiate this development but, like the government, it welcomed and encouraged further cultivation of ‘this salutary and useful root’ (Bentinck’s minute, 12 November 1803, Board’s Collections F/4/179: 3224), especially in the western Deccan and in hill areas like Tripura in the northeast. Powerless though the AHSI and its allies were to effect a radical transformation of agrarian India, these more modest aspects of agricultural change should not be overlooked, if only for what they indicate of peasant responsiveness to new crop varieties and changing market opportunities. India may not have succumbed to the improving spirit of the iconic turnip and mangel-wurzel, though the AHSI certainly did its utmost to honour even them – as at Bhagalpur in 1846 where a prize was awarded for a basket of mangel-wurzels, said to be ‘as fine perhaps as was ever produced in England’ (AHSI Journal, 5, 1846, 83). But the potato, like the cauliflower and pea, did find a valued place in Indian market-gardening and expanding culinary taste.

Another area where the AHSI was extensively involved was cotton cultivation. In addition to trials in the 1830s at its experimental farm near Calcutta, it organized, with government assistance, the recruitment of ten planters from the
American South in 1839–40 to help advise on the cultivation of foreign varieties and on their ginning and marketing. The scheme ran into a number of difficulties – not least from the planters’ ignorance of Indian conditions – and the AHSI was forced to recognize from experience that Bengal was not an ideal location for cotton trials (AHSI Proceedings, June 1839, 33–59; Board’s Collections F/4/1949: 84747). This was an instance where state initiative ultimately proved more effective. The task of experimentation with foreign varieties of cotton was taken up by the Madras botanist Robert Wight, whose government farm near Coimbatore in the 1840s demonstrated the possibility of naturalizing imported strains, including the prized New Orleans cotton, and encouraged their adoption by peasant cultivators across south India (Royle 1851, 472–521).

Despite the modest financial and technical resources at their disposal, men like Wight and Royle (who in the 1820s and 30s had been superintendent of the Company’s botanic garden at Saharanpur, the north Indian ‘temperate’ counterpart to ‘tropical’ Calcutta, before retiring to London where he became an adviser on economic botany to the Court of Directors) might legitimately be seen as the development experts of their day. They combined a practical local knowledge of plant science with an appreciation of the wider imperatives of imperial economics, seeking to establish an agenda for agricultural change that would, in their eyes, benefit Britain and India alike. Royle was one of several surgeon-botanists who straddled the divide between increasingly professionalized science, erratic state patronage and the amateur ranks of improvers. For him, like many earlier proponents of change, the principal task of improvement was to overcome the ‘unaccountable discrepancy’ between the natural riches of India’s soil and the poverty of its current produce (Royle 1840, iii–iv).

There were two further and somewhat contradictory aspects of the pre-Mutiny drive for improvement. The first concerns white colonization and settlement. Guha reminds us that many of the theorists of the late eighteenth century were convinced of the ‘inadvisability of colonization’ (1963, 18), believing that the Company could not deprive Indians of their established right to the soil: at most, Europeans might be allowed to cultivate untenanted wastes. Excluding white farmers made reliance upon improving zamindars all the greater (1963, 105, 156). It is certainly the case that the East India Company was, and remained, opposed to the idea of white settlers in India, not just from respect for land rights but also from fear of the fierce opposition alienation would provoke, from conviction that Europeans could not compete with Indians as cultivators, artisans or labourers, and from concern that an influx of low-class whites would bring the ruling race into contempt and exacerbate racial conflict (Arnold 1983).

There was, none the less, despite this official prohibition, an enduring belief that only Europeans, with their superior energy, expertise and capital, were capable of generating the necessary impetus for agrarian change. According to Dr Tytler at Allahabad in 1820, India had great need of ‘European exertion’, which alone could speedily bring about the ‘amelioration of the present distressing state of things’ (AHSI Transactions, 1, 1829, 29). Several of the schemes favoured by the AHSI seemed to have been designed with prospective European farmers and
entrepreneurs in mind. The arguments for white settlers, especially for planters who would show Indians the road to improvement (Colebrooke and Lambert 1795, 99), were primarily couched in economic terms, but a moral, military, scenic or sentimental case was also often made. Writing in 1821, but recalling the time he had spent in Bengal and its eastern borderlands at the end of the previous century, Robert Lindsay argued that European colonists could do much to ‘improve’ the country. He remarked of Sylhet in particular that ‘If Europeans were allowed to colonise, the high ground of this and the adjoining provinces would soon become the most beautiful country in the world, from their industry and the fertility of the soil’ (Lindsay 1849, III, 222).

While Bengal came increasingly to be seen as an unhealthy province, the opening up of India’s Himalayan frontier following the Anglo-Gurkha war of 1814–16, and the rich potential its foothills and valleys seemed to afford for English-style orchards, farms and homesteads, fuelled speculation that there might one day be substantial numbers of white settlers living and labouring in the hills. In 1821 Captain J. D. Herbert remarked that the indigenous population of Kumaon, despite occupying fertile soil, was unlikely ‘speedily to improve’ the country without ‘the support of European capital and the example of European enterprise’. If the experiment of European colonization were ever to be tried in India, he believed, ‘we cannot select a better spot than these mountains, whether we consider the favourable nature of the climate, the great room for European improvements, the quantity of available land, or lastly, the nursery which such a colony might form of a hardy and warlike race to which we might in the hour of need owe the safety of the empire’. He admitted, however, that such an idea was no more than ‘visionary’, and that improvements were more likely to be made elsewhere and by other means than white settlers (Herbert 1842, viii).

The apparent success of white colonization in Australia seemed to increase rather than diminish interest in equivalent schemes for upland India and to suggest a way in which India might not only be improved but, as a colony hitherto without colonists, become less of an imperial anomaly. Brian Hodgson, former British Resident in Nepal, was among those who took up the argument for white colonists in Darjeeling, Kashmir and the Kathmandu valley in the 1850s, seeing this both as a bulwark of British rule and a refuge for the displaced poor of Ireland and Scotland (Hodgson 1874). By the 1860s and 70s, however, despite the demise of the Company and its replacement by Crown rule, the idea of white settlers in the Himalayan foothills appeared increasingly implausible, though a few enthusiasts clung to it even then (Newall 1882). In the main, improvement had moved on from white settlement.

There was a second noteworthy shift. While the growth of laissez-faire ideology in India in the early nineteenth century made state intervention in support of improvement less likely, the persistence of famine (notably in south and central India in 1833 and in the north in 1837–8) served to demonstrate the continuing vulnerability of Indian agriculture, the very limited impact the improving schemes of botanists like Wight or organizations like the AHSI were having on rural subsistence, and the urgent need (if only to protect government revenue) for
David Arnold

Some form of official response to rural destitution. These famine episodes further directed attention away from Bengal to other (non-zamindari) areas of India where different kinds of opportunities presented themselves, particularly through the state-aided construction of major irrigation works – the canals of which Mackintosh and Tod had dreamed a decade or two earlier. Through the construction of canals (their banks lined with thousands of shade-, firewood- and timber-yielding trees from the botanic garden at Saharanpur), the north Indian countryside was seen by the 1850s to be exhibiting clear and visible signs of improvement. The transformation appeared most marked in the recently annexed Punjab, where desert, ‘bushy jungle’ and ‘pastoral waste’ had hitherto prevailed (Jameson 1853). Here, as late as 1851, the governor-general, Lord Dalhousie, was so shocked to find plains largely devoid of trees that he called for extensive afforestation to counter this ‘grievous . . . deficiency’. He also sanctioned a grant to aid the establishment of a provincial branch of the AHSI (Lee-Warner 1904, I, 363; Board’s Collections F/4/2429: 132616).

The opening of the Ganges Canal, completed during Dalhousie’s term of office, was hailed as a beneficent check to the kind of famine that had devastated northern India in 1837–8. It was also taken to symbolize a new age of improvement in which British engineering exceeded the achievements of the Mughals and visibly imprinted itself on the Indian landscape. The canal was, in the words of one army chaplain, a work which ‘in grandeur of design and wisdom of purpose, throws into the shade all, even the greatest, works of the Mahomedan emperors’. It was, too, in his estimation an achievement that ‘rendered impossible the recurrence of such a famine’ as that of the 1830s (Browne 1857, 77). Through their impact on the landscape and rural economy, the canals, and after them the railways, transformed the Indian countryside in a way the efforts of the AHSI could never do.

CONCLUSION

Although there was no clear consensus among British commentators as to the cause of its deficiencies, the identification of the Indian countryside and agriculture with poverty in the late eighteenth and early nineteenth centuries gave authority to a widely deployed strategy of improvement, one that ranged far beyond the institution of the Permanent Settlement in 1793 or the activities of a select group of botanists beholden to Kew. India was seen to be ripe for improvement – whether for an anglicization of its agriculture after the British model or for its tropicalization on the lines of the West Indies and Brazil. While the late nineteenth-century debates about India’s poverty concentrated upon economic arguments, these earlier debates presented a wider environmental and moral critique of India and proposed a correspondingly wide variety of solutions, including a greater role for European settlement and enterprise. By the late 1840s many of these improving ambitions and experimental schemes had already failed, whether from want of state support (in an age of growing laissez-faire) or from their innate impracticality and ignorance of Indian conditions.
Agriculture and ‘Improvement’ in Early Colonial India

The drive for improvement did not entirely die out, but by mid-century the Agricultural and Horticultural Society of India, one of its principal champions, had lost much of its improving zeal in favour of a more decorative and recreational role. The perceived need for improvement in Indian agriculture remained: indeed, it was enhanced by the massive famines of the late nineteenth century and the rise of a more technically advanced agricultural science (Voelcker 1893). But, despite the widely perceived failure of the zamindari system, the practical implementation of improvement was left either to once-despised Indian initiative or the reluctant intervention of the colonial state. Moreover, the quest for improvement remained largely as it had begun, a European movement, and failed to generate among Indians the necessary enthusiasm and resources for substantial agrarian change. Despite its continuing evocation into the 1840s and 50s, the British model of improving landlords and tenants had all but failed on Indian soil. In that sense at least Guha was surely right.

REFERENCES


Agricultural and Horticultural Society of India (AHSI). Journal. Published 1841 f.

Agricultural and Horticultural Society of India (AHSI). Minutes, held in manuscript at the Agri-Horticultural Society, Kolkata, 1843–8.

Agricultural and Horticultural Society of India (AHSI). Proceedings. Published 1839 f.

Agricultural and Horticultural Society of India (AHSI). Transactions. Published 1829 f.


Board [of Control]’s Collections. India Office Records, British Library, London.


Buchanan, Francis (as Francis Hamilton), 1826. ‘Some Notices Concerning the Various Plants of India’. Transactions of the Royal Society of Edinburgh, 10: 171–86.
524 David Arnold


Agriculture and ‘Improvement’ in Early Colonial India
