

**Peter Lund Simmonds and the Political Ecology of ‘Waste Utilisation’ in
Victorian Britain**

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Introduction

Waste is one of the most important categories of capitalist modernity.¹ Indeed, it could be argued that ‘waste’, in its manifold forms, has been *the* characteristic concern of that modernity, which has derived its legitimacy from its claim to increase social productivity. The application of technology is central to this claim. New technologies transform human relations with ‘nature’, and this process has commonly been accompanied by the ideological claim that those new relations with nature were legitimate precisely because they eliminated ‘waste’. From the enclosure of ‘waste lands’ to the recycling of domestic refuse, waste has provided a vital foundation to claims of technological progress. Waste has thus become a legitimating precondition of capitalist modernization. However, waste’s ideological character, and its role in enabling capitalism to legitimate the application of new technologies to the transformation of nature, has been somewhat neglected by historians.² Historians of technology, for example, have tended to treat waste narrowly as a material ‘end-of-pipe’ problem which created a crisis in urban environments that drove a variety of technological fixes.³ This has, of course, frequently been the case, but in this article I wish to direct attention away from the materiality of waste as pollution, and to focus

¹ For some of the most recent theoretical and historical work on waste see, T. Cooper, ‘Modernity and the Politics of Waste in Britain’, in S. Soerlin and P. Warde, *Nature’s End: History and the Environment* (Basingstoke 2009), S. Gee, *Making Waste: Leftover and the Eighteenth-Century Imagination* (Princeton, 2010); J. Scanlan, *On Garbage* (2005)

² On the concept of the ‘production of nature’ see N. Smith, *Uneven Development: Nature, Capital and the production of Space* (Oxford, 1990), pp. 368-401.

³ J. Tarr, *The Search for the Ultimate Sink: Urban Pollution in Historical Perspective* (1996); M.V. Melosi, *Garbage in the Cities: Refuse Reform and the Environment* (2004 edn); *The Sanitary City: Environmental Services in Urban America from Colonial Times to the Present* (2008); S. Strasser’s *Waste and Want: A Social History of Trash* (1999), C.A. Zimring, *Cash for your Trash* (2005).

instead on the ideological functions of ‘waste’ in legitimating the technological transformation of existing ecologies into sources of capitalist profit.

To some extent, the ideological significance of waste has already been indicated in Michael Adas’s *Machines as the Measure of Men*. Adas identifies the tendency during the nineteenth century to represent the failure of non-European peoples to fully utilise their ‘natural resources’ as a legitimisation of the European model of modernization. For writers like Benjamin Kidd the control of nature was identified with the appropriation, through the application of technology, of ‘natural potential’ that was otherwise going to waste.⁴ Waste was therefore a important element in an enlightenment discourse which sought to redefine particular existing social-ecologies as ‘natural resources’ ripe for exploitation.⁵ This representation of particular social-ecologies as waste was not necessarily a straightforward affair. As David Gilmartin has observed significant tensions existed between the aims of those who sought to displace existing social-ecologies with an improved rational agriculture and the revenue maximising aims of colonial administrators, who were often much more conservative in their practices.⁶ But the idea of waste was nonetheless a significant part of the ideological armoury of imperial science, and served to legitimate transformative technologies and practices. This article aims to develop these insights further by investigating the meaning and deployment of the Victorian concepts of waste and waste utilisation by the prolific, yet neglected, writer, editor and journalist, Peter Lund Simmonds. Through a close reading of Simmonds’s journalistic output I

⁴ M. Adas, *Machines as the Measure of Men: Science, Technology and Ideologies of Western Dominance* (1989), pp. 218-9.

⁵ C. Merchant, *The Death of Nature: Women, Ecology and the Scientific Revolution* (New York, 1990); *Ecological Revolutions* (University of North Carolina Press, 1989)

⁶ D. Gilmartin, ‘Water and Waste: Nature, Productivity and Colonialism in the Indus Basin’, *Economic and Political Weekly*, 38, 48 (2003), pp. 5057-65

shall attempt to demonstrate how the concepts of waste and waste utilisation functioned to produce and legitimate the capitalistic transformation of ‘nature’ through the application of technology. I shall also examine the contradictions evident in the idea of waste, and what they can tell us about the limits placed upon the emergence of such phenomena as ‘conservation’.

The argument develops in five sections, each of which seeks to demonstrate a different aspect of the deployment of ‘waste’ or ‘waste utilisation’. The first section introduces Simmonds’s body of work and critically analyses his understanding of the meanings of waste. This section is particularly concerned with the degree to which Simmonds and his contemporaries saw nature itself as ‘waste’, opening up the prospect of the infinite incorporation and transformation of the globe’s ecology for productive ends through the medium of technological innovation. The second section investigates the economic context in which Simmonds was writing, and particularly the relationship between his support for colonial improvement and the priorities of liberal political economy. This is further developed by the third section which looks at the relationship between Empire and the political ecology of waste. The context for Simmonds’s promethean optimism surrounding waste utilisation is studied in the fourth section, which argues that providentialist ideas were critical in grounding Simmonds’s belief in an unlimited capacity to incorporate a waste nature into the cycles of capitalist production. The final section examines Simmonds’s apparently contradictory position on the concrete ecological consequences of the application of ‘waste utilisation’ and suggests that the idea of waste was, perhaps surprisingly, rather antithetical to the development of conservationism.

Simmonds and Waste Utilisation

Peter Lund Simmonds (1814-1897) was born in Denmark and adopted at an early age into a British naval family.⁷ He began his working-life in the merchant marine at the age of twelve before becoming a bookkeeper in Jamaica at the beginning of the 1830s. It was probably this experience to which he alluded when he later claimed to have had experience as a 'practical planter'.⁸ Experience of colonial agriculture and commercial life is apparent throughout Simmonds's later work as editor of a number of journals and as a prolific author on commercial and technological subjects. After his return to England in 1834, Simmonds began what became a fifty year career as author, journalist, editor and proprietor, with *The Garland, or Chichester, West Sussex and East Hampshire Repository* (1836).⁹ This was followed by a series of periodicals as various phases of his career, the most important of which for our purposes were *Simmonds' Colonial Magazine* and *The Technologist*. Simmonds oeuvre as a writer was broad, including popular works on arctic exploration to tropical agriculture, food adulteration and the cultivation of hops, although this far from exhausts his output.¹⁰ Despite this industriousness, however, Simmonds's did not profit significantly from his publishing career and he died in relatively impoverished circumstances in 1897.

⁷ For details of Simmonds's biography see D. Greysmith, 'Simmonds, Peter Lund (1814–1897)', *Oxford Dictionary of National Biography* [<http://www.oxforddnb.com/view/article/41011>, accessed 2 February 2010].

⁸ P.L. Simmonds, *Commercial Products of the Vegetable Kingdom* (London, 1854), pp. 1-2.

⁹ For a full account of Simmonds' publishing career and its significance see D. Greysmith, 'The Empire as Infinite Resource: The Work of P.L. Simmonds (1814-1897)', *Journal of Newspaper and Periodical History*, 6, 1 (1990), pp. 3-15.

¹⁰ P.L. Simmonds, *The Arctic Regions: A Narrative of British enterprise to discover the North-west Passage* (London, 1857); *Tropical Agriculture: A Treatise on the Culture, Preparation, Commerce and Consumption of the Principle Products of the Vegetable Kingdom* (London, 1877); *Coffee and Chicory: Their Culture, Chemical Composition, Preparation for Market and Consumption, With Simple tests for Adulteration* (London, 1864); *Hops: Their Cultivation, Commerce and Uses in Various Countries* (London, 1877). This list in no way exhausts Simmonds diverse output, but it does reflect his basic concern with the valorisation of nature's products.

Simmonds's publishing efforts were unified by an enduring commitment to the principles of colonial improvement, and it is in this context that his writings dealing with 'waste', 'waste products' and 'waste utilisation' need to be understood. As Greysmith has argued, Simmonds was not one of the great public figures of his day, nor was he a leading scientist or engineer, but the range of his work (27 books in total) and the multiple editions that some of his volumes went through would suggest that there was a significant readership for the kind of material he was publishing.¹¹ Simmonds' work as editor and proprietor of a number of periodicals places him amongst those entrepreneurial figures that Brock has suggested were so important in generalising and popularising scientific culture.¹² Simmonds's subsequent obscurity should not therefore deflect from the opportunity his work offers to address the structure and functioning of 'waste utilisation' as ideology. Indeed, it is Simmonds very role as an everyday cultural labourer that makes him interesting. Simmonds work on waste utilisation demonstrates the nature of ideological assumptions that were so deeply held that they were ordinary and even commonplace in their own time.

In 1844 Simmonds began a new journal called *Simmonds's Colonial Magazine and Foreign Miscellany* which he edited until 1848/9. The *Magazine* began publication in the midst of the great expansion of the Victorian periodical press, a phenomenon which it has been demonstrated drew heavily on narratives of scientific discovery and progress.¹³ The *Magazine* ran for five years under Simmonds's editorship, a success considering short life-span of most new publications at the time, and it endured after his editorship came to an end. Simmonds intended to his journal provide a voice for

¹¹ Greysmith, 'Empire as Infinite Resource', p. 3.

¹² W.H. Brock, *British Periodicals and Culture: 1820-1850*, *Victorian Periodicals Review*, 21, 2 (1988), pp. 47-55.

¹³ G. Cantor, G. Dawson, G. Gooday, R. Noakes, S. Shuttleworth and J.R. Topham, *Science in the Nineteenth-century Periodical* (Cambridge, 2004).

‘the advancement of [the colonists’] civil, political and religious interests’.¹⁴

Contributions therefore argued for better colonial government, colonization, and the ‘improvement’ and exploitation of the natural resources of the empire. The *Magazine* published articles from authors both at home and overseas, and correspondence in the periodical suggests a global audience spread across the British Empire. Simmonds boasted that it had ‘perseveringly sought for authentic information from every quarter of the globe, and opened up new channels of correspondence with talented men in the Colonies which will be lasting and valuable’.¹⁵ Simmonds obviously sustained a large colonial correspondence on which his own contributions to the *Magazine* drew extensively.¹⁶ This correspondence was vital to the claim that the *Magazine* represented the authentic experience and needs of colonists to its audience, an authenticity which was intended to encourage colonisation and political support from the metropole for colonists’ efforts abroad. It also provided a source of ‘practical knowledge’ about the discovery of new plants and animals and their potential utility in the development of colonial agriculture and industry. This mixture of colonization, scientific discovery, practical technological innovation and the commodification of external nature would later be synthesized in Simmonds’s own published work on waste and waste utilisation.¹⁷

Simmonds started the *Colonial Magazine* in the midst of the hungry forties. Both he and his contributors represented colonization, and the efficient exploitation of imperial natural resources that it was supposed to bring in its wake, as the solution to the Social Question at home. Mixing a combination of wages-fund theory with

¹⁴ P.L. Simmonds, ‘Preface’, *Simmonds Colonial Magazine and Foreign Miscellany*, 2 (1844)

¹⁵ *Colonial Magazine*, 3 (1844), ‘preface’

¹⁶ P.L. Simmonds, *The Commercial Letter Writer* (1866)

¹⁷ On the concepts of commodification and external nature see N. Castree, ‘Commodifying what Nature’, *Progress in Human Geography*, 27, 3 (2003), pp. 273-297.

providentialist arguments for emigration and colonial improvement, contributors asserted that the development of colonial resources was the only solution to industrial poverty and a means of undermining political radicalism. The idea of nature as waste was crucial to these arguments, presenting as it did an image of an untamed wilderness, an external nature, awaiting the attentions of the civilizing process. As one contributor, P. Vibent, argued:

To whatever quarter of the habitable globe we direct our attention, save Europe, we find millions of acres of fertile land, over which the British Flag proudly waves, awaiting the industry of the husbandman. Will any man be bold enough to assert that these fair portions of the earth have been created by an all-wise and munificent Providence for no other purpose than to be the haunts of wild beasts?¹⁸

Contributors to the *Magazine* claimed that, through emigration, the Empire's various ecologies, and particularly its tropical areas, could provide an infinitely expansive resource base for British industrial capital. C.T. Campbell expressed the view succinctly in an essay entitled 'Suggestions for Promoting Emigration to the British Colonies' that:

Britain's greatest resources lie in her colonies: by means of them her commerce is susceptible of considerable increase, her population of permanent relief; by enlarging them and adding to their population, she multiplies resources which keep multiplying in themselves; by directing enterprise and capital to them, by fostering and supporting them, she might be wholly independent of foreigners and foreign supplies.¹⁹

This autarchic moral economy presented the 'underutilised' natural wealth of the colonies as a solution to the industrial and social problems of British capitalism. This

¹⁸ P. Vibent, 'A few hints on foreign and home colonization', *Simmonds Colonial Magazine*, 5 (1845), p. 55.

¹⁹ C.T. Campbell, 'Suggestions for Promoting Emigration to the British Colonies', *Simmonds Colonial Magazine*, 7 (1846), p. 130.

was the context in which Simmonds would eventually elaborate an understanding of colonial natures as wastes awaiting reclamation.

Simmonds sold the *Colonial Magazine* in 1848/9 (which continued to publish as the *Colonial Magazine and East India Review*).²⁰ In 1849 it appears that he was also declared bankrupt.²¹ After the Great Exhibition, however, Simmonds's extensive knowledge of raw materials found new employment when he was appointed curator of the display of trade products at South Kensington. At this point he appears to have begun to develop more explicitly his ideas about waste. During the 1850s, Simmonds presented a series of papers at the Society of Arts dealing explicitly with the theme of waste products and undeveloped substances.²² These would eventually provide the basis for the publication of what he termed without irony a popular volume, *Waste Products and Undeveloped Substances: Hints for Enterprise in Neglected Fields* (1862). The first edition of *Waste Products* (a further heavily rewritten edition was published in 1873) was Simmonds's most sustained engagement with the idea of waste and the techniques of 'waste utilization'. Interestingly, and as the title suggested, 'waste' for Simmonds incorporated far more than just garbage. In over four-hundred pages of text, the first volume of *Waste Products*, perhaps surprisingly, only infrequently referred to the problems of industrial waste and pollution, and many of the references to industrial recycling were more rhetorical than practical.²³

Simmonds was not particularly worried about waste as pollution, indeed, he embraced

²⁰ Greysmith, *Empire as Infinite Resource*, p. 7.

²¹ *Manchester Guardian*, 31 January 1849, 8.

²² 'On Some Undeveloped and Unappreciated Articles of Raw Produce from Different Parts of the World', JSA vol 2 No 106 (1854), p. 33-42; 'A Few Remarks on the Economic Uses of Algae', JSA, 5 (1856), pp. 362-365; 'On the Utilization of Waste Substances', JSA, 7, 325, (1859), pp. 175-184

²³ P.L. Simmonds, *Waste Products and Undeveloped Substances: Or Hints for Enterprise in Neglected Fields* (1863); D. Woodward, "'Swords into ploughshares': recycling in pre-industrial England", *Economic History Review*, 38 (1985), 175-91. Simmonds argued, for instance, that 'in every manufacturing process there is more or less waste of the raw material, which it is the province of others following after the manufacturer to collect and utilize', Simmonds, *Waste Products*, 2.

the idea that Victorian economic development remained inevitably accompanied by waste: ‘The improvements in the arts and sciences, which are daily taking place, the new manufactures which arise, the increase of population, the extension of colonisation, the greater demands made upon manufactures, *and the continual waste occurring*, are creating urgent wants for new materials of commerce’.²⁴ Rather, Simmonds saw ‘waste’, and particularly waste nature, as an opportunity for the application of technological innovations that would bring both waste matter and waste space within the confines of industrial production. The encyclopaedic character of *Waste Products* with its lists of entries on different natural resources available for exploitation, along with the technologies that might incorporate them into production, suggested economic opportunity rather than environmental degradation was uppermost in Simmonds’s understanding of waste.

The publication of *Waste Products* occurred alongside Simmonds return to the field of periodicals publication. In 1861 he began the *Technologist: a Monthly Record of Science Applied to Art and Manufacture*, which he continued to publish down to 1866. Like the *Colonial Magazine*, the *Technologist* exhibited Simmonds’s commitment to colonial development, but with a more explicit focus on the provision of scientific information and the application of technology to the development of natural resources. Contributions provided either botanical information or insights on new industrial processes to capture natural wealth. Articles in the *Technologist* also rarely covered the problem of industrial by-products, concentrating instead on the ways in which natural products could be transformed into raw materials and put to industrial uses. Again the focus of contributors’ concerns was the commodification of

²⁴ Simmonds, *Waste Products*, 1962 edn. [my italics]

nature not the remediation of pollution. In a typical article on ‘The Supply of Resin’, for example, Simmonds listed known sites of resin supply, the implication being that far from a scarcity, there was a natural oversupply of resin. One of Simmonds correspondents, the British consul in Greece, wrote:

At present but a very imperfect idea can be formed of the quantity of resin that might be obtained in this country, as, in the absence of profitable demand, this valuable article is but little sought after; but it may be fairly presumed that considerable supplies of it are left to waste in the pine forests which abound in most of the mountain districts of Epirus.²⁵

Valorising nature’s natural surplus through the application of new techniques was the heart of this conception of waste utilisation.

Simmonds’s, and his contributors’, understanding of waste was partly a typical product of the enlightenment employment of waste as a way of rendering operative the concepts of progress and improvement.²⁶ Mediaeval uses of the term had already named certain spaces and ecologies as ‘waste’, such as devastated or marginal lands that owed reduced feudal dues or taxes.²⁷ But the meaning of waste was inflected with an increasingly temporal dimension in the early modern period, which imagined a teleological move away from waste towards the condition of improvement. Post-enlightenment renderings of waste therefore constituted ‘waste’ as neglected utility.

²⁵ P.L. Simmonds, ‘The Sources of Resin’, *The Technologist*, VI (1866), 114.

²⁶ J. Scanlan, *On Garbage* (2004); W.A. Cohen and R. Johnson, *Filth: Dirt, Disgust and Modern Life* (2005); G. Hawkins, *The Ethics of Waste: How We Relate to Rubbish* (2006); J.F.M. Clark, ‘The Incineration of Refuse is Beautiful: Torquay and the Introduction of Municipal Refuse Destructors’, *Urban History*, 34, 2 (2007), 254-277; T. Cooper (2007), ‘Challenging the ‘Refuse Revolution’: War, Waste and the Rediscovery of Recycling, 1900-50’, *Historical Research*, 81, 214 (2008), 710-721; M. Riley, ‘From Salvage to Recycling – New Agendas or Same Old Rubbish?’ *Area*, 40, 1 (2008), 1-11; J. Scanlan, ‘In Deadly Time; The Lasting On of Waste in Mayhew’s London’, *Time & Society*, 16 (2007), 189-206; P. Brantlinger and R. Higgins, ‘Waste and Value: Thorsten Veblen and H.G. Wells’, *Criticism*, 48, 4 (2006), 453.

²⁷ E. Amt, ‘The Meaning of Waste in Early Pipe Rolls of Henry II’, *Economic History Review*, 44, 2 (1991), 240-8.

This remaking of waste established what J. Scanlan has argued was a ‘moral economy of waste’ complete with its own totalizing assumptions about what constituted ‘best use’.²⁸ The modern idea of waste thus always contains within it a fantasy of reclamation. As W.A. Cohen argues: ‘when polluting or filthy objects are thought of as trash, waste, junk or refuse, they become conceivably productive, the discarded resources in which riches may lie, and therefore fecund and fertile in their potential’.²⁹ Simmonds’s own interest in ‘waste utilisation’ was founded on just such a moral economy of waste. In emphasizing the universal recuperation of natural wealth, however, it raised questions about the nature of the natural order. Why was it possible to assume that technology could be infinitely applied to the incorporation of nature into industrial civilisation? At the heart of Simmonds’s conceptions of waste utilisation there lay a particular ‘political ecology’, a normative understanding of how nature functioned and the forms of social, political and economic organisation it made possible.

Free Trade and Wasted Nature

Simmonds’s political ecology of waste must be understood in the context of mid-Victorian economic controversy. The politics of free-trade and of global economic competition, was of longstanding importance to Simmonds’s conceptualisation of the globe as a waste space awaiting restitution. For Simmonds, and his fellow contributors, the effect of free trade on colonial development was a key issue activating concerns with ‘wasted’ nature. From Simmonds’s perspective free trade was a potential threat to the development of colonial natural wealth. As Simmonds wrote in 1854.

²⁸ Scanlan, *On Garbage*, 22.

²⁹ Cohen, ‘Locating Filth’, x.

In consequence of the recent liberal policy of Great Britain, the competition of foreign countries, the want of cheap and abundant labour, and other causes, those chief staples Sugar and Coffee, which for a series of years formed the principle and most exclusive articles of production in our colonies, and which had met with a ready and remunerative sale in the British markets, have either fallen off to an alarming extent, or become so reduced in price as scarcely to repay the cost of cultivation.³⁰

It was therefore necessary, Simmonds concluded, to ‘direct attention to... those indigenous or exotic products of the soil in tropical regions’, which had previously been ‘neglected’ and could be adapted to new uses complementing the old staples of colonial agricultural production.³¹ The *Colonial Magazine* encouraged colonial planters to seek to compete with their European counterparts not in existing organic products but in new and as yet undeveloped materials.

This concern to garner the relative advantage of being the first to find a use for waste natural products is well-illustrated by Simmonds’s discussion of the subject of resource substitution, and his engagement with the search for a substitute for rags in paper making. The 1850s and 1860s, was a period of scarcity in the supply of the rags that were used in traditional paper-making techniques. Demand for paper was growing rapidly and European powers were seeking to protect their domestic paper industries through export duties on rags. Pressure from British paper-manufacturers encouraged the House of Commons to appoint a select committee to investigate the possible re-introduction of import duties on rags in 1861.³² Although the report concluded that a return to import duties would be retrograde, there remained significant industrial pressure for protection. The rag shortage visibly raised some of

³⁰ P.L. Simmonds, *Commercial Products of the Vegetable Kingdom* (1854), p. 1.

³¹ *Ibid.*, p. 2.

³² 1861 (467) *Select Committee to inquire into Duties or Prohibitions in Foreign Countries on Export of Rags used in Manufacture of Paper in United Kingdom*, iii-v

the sectoral contradictions of free-trade policy, and a reconciliation was through the development of new paper-making techniques.³³ In the case of the paper manufacture, Simmonds argued that British paper production could survive free trade if cheap substitutes for rags were freely available elsewhere. Fortunately, nature pointed the way to the hidden uses of previously waste plants as a substitute for rags. As Simmonds gleefully reported in the *Technologist*, through the various efforts of entrepreneurs to develop substitutes for rags. ‘It has been proved’:

[T]hat paper can be made of almost anything,... There are thousands of fibrous materials in the world of nature that the art of man can macerate into pulp, and shape into paper. The very wasps with their weak mandibles construct their paper nests as a lesson for him; while ocean and river, by their action on vegetable substances, show him the adaptability of certain plants to felt and cohere into paper material’.³⁴

Implicit in this argument was the notion that as soon as the economic limits of one natural resource were reached nature would provide instances of how another, previously waste, material might provide a substitute. This process, it seemed, was almost pre-ordained to be the case. There were no natural limits in nature then, at least as far as the technological appropriation of raw materials was concerned.

By emphasizing the needs of British industry under free-trade for ever cheaper sources of raw materials, and the capacities of technology to integrate new species, landscapes and ecologies within the industrial metabolism, Simmonds produced ‘waste’ as an object that progressive science and industry should necessarily seek to eliminate. ‘Waste’ was, in effect, any part of natural productivity not already incorporated into industrial processes:

³³ S. Strasser, *Waste and Want*, 90-93; ‘Paper and Rags’, *The Leeds Mercury*, 31 March 1860, 4d, ‘Substitute for rags in making paper’, *Lloyds Weekly London Newspaper*, 25 February 1866, 7b.

³⁴ P.L. Simmonds, ‘Wood Pulp for Paper’, *The Technologist*, 6 (1866), p. 116-132.

It is evident that, when considered from the point of view of industrial science, the phrase, “utilization of waste”, may be fairly applied not only to the unused residual products of manufactures but to the boundless undeveloped wealth of nature...Nature produces abundantly and spontaneously in many countries, vegetable substances (such, for instance, as the esparto grass), which were allowed to lay waste. Important industrial uses have been found for many of them, and fortunes realized by numbers who have turned their attention towards rendering them articles of commerce.³⁵

Technological innovation promised to re-incorporate and reorder the wasteful over-productiveness of the natural world, by instead producing abundantly for human civilization. The reviewer for the *Popular Science Review*'s picked up on this universalised representation of a wasted nature:

[*Waste Products* is a] book aptly described by the author as affording “hints for enterprise in neglected fields,” – hints which do not refer so particularly to waste materials, but serve specially as directions by which to guide the student into new fields of enquiry as regards the utilitarian applications of natural productions generally. It would be difficult to define what is ‘waste’ in the present day, so admirably and completely are the many substances, formerly neglected and thrown away, now utilized and converted into new and valuable products.³⁶

Understood, however, as an attempt to transcend an *unnatural* scarcity of raw materials imposed by the consequences of free trade, Simmonds's work on the utilisation of waste products offers an apparent contradiction. Endless technological innovation offered the prospect of the full incorporation of nature into industrial production, and yet simultaneously suggests the unlimited expansion of the field of exploitable nature *as waste*. This apparent contradiction will be explored further below.

³⁵ Simmonds, ‘Utilisation of Waste’, 97.

³⁶ *Popular Science Review*, 2, 6 (1862), 254.

Empire and the Political Ecology of Waste

G.M. Medland once observed that, in the colonies European settlers ‘finding waste, produced worth’.³⁷ It was unacceptable to leave colonial possession in their ‘natural’ states when they could so readily provide substitutes for raw material imports from competitor powers. As C.T. Campbell observed in the *Colonial Magazine*, advantage should be taken of the, ‘resources which belong to us almost exclusively – they must no longer be left to lie unused, or partially and inefficiently drawn out.’³⁸ Observing the neglected abundance of the colonial fisheries, Simmonds commented that: ‘When Nature’s all-bountiful hand is spread on every side to enrich us, it is something more than supineness – it is moral delinquency – in ourselves if we neglect her favours’.³⁹ Simmonds’s understanding of waste was bound up with a political ecology of imperialism. There was a relationship between colonisation and the need to find substitute raw materials from the waste matter provided by nature. Simmonds’s concern throughout *Waste Products*, and the various editions of the *Colonial Magazine* and the *Technologist*, was with a global colonial project to reclaim this ‘waste’ nature. The encyclopaedic excursus of *Waste Products* into the range of colonial natural products, made their waste apparent to the desires of the imperial gaze. The ability to envisage the productions of nature as waste and to magnify their possible uses incited Simmonds’s readers to apply European technology and capital to the further commodification of the external nature represented by colonial ecologies.⁴⁰ The exploitation of nature’s wastes was further legitimated by the threat to British

³⁷ G.M. Medland, *Great Barrier Calls* (1969), 119, quoted in A. Green and K. Troup (eds), *The Houses of History: A Critical Reader in Twentieth-century History and Theory* (1999), 278.

³⁸ C.T. Campbell, ‘National Emigration’ *Simmonds Colonial Magazine*, 10 (1847), pp. 75-6.

³⁹ P.L. Simmonds, ‘On the extent and value of our colonial fisheries’, *Simmonds’s Colonial Magazine*, 9 (1846). P. 104.

⁴⁰ ‘[A]lmost bewildering in its vastness’, as a reviewer of the second edition of *Waste Products* commented, *Nature*, 9 (1873), 101

trade posed by the ambitions of foreign powers, a position that gained credence in the immediate context of the Crimean conflict. Simmonds noted in *Waste Products* that it should be remembered ‘how suddenly we were drawn into hostilities with a powerful country, with which we had long maintained peaceful relations, and from where we had derived valuable supplies of timber, tallow, hides, fibres, and other products of commerce’.⁴¹ The fear of great power conflict reinforced the view of colonisation that the colonial improvers employed in responding to free-trade. The colonies were an infinitely adaptable, and providentially provided, resource base that would enable Britain to endure an international conflict and any interruption of raw material supplies.⁴² India, of course, played a particularly important role in these visions of imperial resource substitution, providing jute to replace Russian hemp, and teak in place of dwindling British timber supplies.⁴³

The desire to transform the wasted nature of empire was also apparent closer to home. The Victorian obsession with the reclamation of the Irish peat bogs, for instance, was a subject that also attracted Simmonds’s attention. The economic possibilities presumed to be latent in Irish peat were a common fantasy among English and Anglo-Irish improvers, although the economic viability of converting peat to use as fuel was doubtful.⁴⁴ Again the notion of colonial resource substitution was present in these debates. In 1851, the editor of the *Belfast News-Letter* expressed his hope that ‘in these latter days of inquiry and enterprise – of invention and development’ peat, if

⁴¹ Simmonds, *Waste Products*, 1862 edn., 3.

⁴² Simmonds, ‘Undeveloped Articles of Raw Produce’, 34.

⁴³ Simmonds, *Science and Commerce*, 253.

⁴⁴ *The Times*, 9 October 1872, 6e; and also the reply in *The Freeman’s Journal*, 10 October 1872, 7a.

treated and used as a coal substitute, could make the bogs ‘a more precious mine than the Pacific “placers”’.⁴⁵

And if the recently almost profitless bog-stuff of Ireland – an eye sore to her natural beauty, and a reproach to her industrial enterprise – can, by a simple, cheap, and efficacious process, be converted into fuel of a finer kind than English coal for all economic and manufacturing purposes, who will venture to say that Ireland does not in it possess the materials of future prosperity and power?⁴⁶

Simmonds observed that ‘Ireland possesses in its peat a great source of wealth and profitable employment... With this immense magazine of wealth at command, it is not too much to assume the peat tracts may become to Ireland what the coal mines are to England, or steam power to the English, Scotch and Welch manufacturers, sources of industry, wealth and public enterprise’.⁴⁷ Furthermore, it was hoped that the reclamation and transformation of the Irish bogs would not only provide a political ecology that would stabilise the United Kingdom, but would also provide a valuable contribution to the public health by eliminating a source of disease.⁴⁸ From the colonial improver’s perspective, then, imperial spaces were exploitable ‘wastes’ whose ecologies required subordination to the rationalising, value extracting techniques of the metropolis.⁴⁹

The utilisation of nature’s wastes was seen as identical with the progress of civilisation. When Felix Wakefield attacked the formation of native reservations in

⁴⁵ Editorial, *The Belfast News-Letter*, 29 September 1851.

⁴⁶ Editorial, *The Belfast News-Letter*, 29 September 1851.

⁴⁷ Simmonds, *Waste Products*, 1862 edn., 271.

⁴⁸ Simmonds, *Waste Products*, 1862 edn., 277.

⁴⁹ Richard Drayton has charted the emergence of economic botany and the establishment of an imperial network of botanical gardens centred on Kew during the nineteenth century as a response to the imperialist expectation that the transformation of the ecology of empire would contribute to economic and political integration. R. Drayton, *Nature’s Government: Science, Imperial Britain, and the Improvement of the World* (2000).

New Zealand, he did so because he believed they caused ‘every natural element of prosperity’ to be ‘kept down and stifled by nothing but an immense reserve of its waste lands’.⁵⁰ The discovery of new techniques that changed unutilised nature into natural resource, was a sign of what marked out ‘civilized states’ from the ‘barbarous nations’.⁵¹ Simmonds argued that it was the discovery of uses for previously ‘waste’ organic products like palm oil that had caused the ‘petty monarchs’ of Africa to abandon slavery: ‘the Zulu and Kaffir tribes, instead of waging exterminating wars with each other, are settling down more readily into the peaceful pursuits of stock-breeding and cultivating the soil’.⁵² The cycles of nature, after all, did not permit for waste. The ‘poverty’ of indigenous peoples was only an unnatural consequence of their own lack of civilisation: ‘nothing is lost in nature’, the ‘uncultivated mind’ may cast aside as unprofitable the residue of his consumption, where the ‘advanced intelligence’ would seek to find new uses for any raw product.⁵³ ‘The savage having sucked the milk from the cocoanut, had not the idea of making the fibrous material into a textile fabric; and the man who first turned rags into writing paper must have been a great improvement on the aboriginal ape, which some would wish us to believe was his immediate progenitor’.⁵⁴

The idea of expanding global commerce was central to Simmonds’s political ecology of waste. The transformation of imperial ecologies from a state of waste, and the subordination of wilderness to technological control, was accompanied by the belief that commerce naturally eliminated wasted nature. Despite a certain scepticism

⁵⁰ F. Wakefield, *Colonial Surveying with a View to the Disposal of Waste Land* (1849), 10.

⁵¹ L. Playfair, ‘The Chemical Principles Involved in the Manufactures of the Exhibition’, in Society of Arts Manufactures and Commerce, *Lectures on the Results of the Great Exhibition* (1852), 119.

⁵² P.L. Simmonds, ‘Some Undeveloped and Unappreciated Articles of Raw Produce from Different Parts of the World’ *Journal of the Society of Arts*, 1 December 1854, 33.

⁵³ P.L. Simmonds, *Waste Products* 1873 edn., p. 10

⁵⁴ P.L. Simmonds, *Waste products* 1873 edn., p. 10

toward the effects of free-trade on colonial producers, Simmonds welcomed the opening up of Japan and China, along with the colonisation of the rest of the globe, for ensuring that the globe was being ‘ransacked by commerce’.⁵⁵ Open markets were critical to realizing the wealth of nature. One consequence of this, however, was the need to continually transform newly commodified ecologies in order to serve changing market conditions and respond to competition. Indeed, Simmonds expressed approval of the means by which commodity trades shifted centres of resource production across the globe in search of the lowest production costs.⁵⁶ Efficient use of cattle products was ensured, he argued, ‘not by the local demand for butchers’ meat, but by the price which can be obtained for the various constituents of the carcass in the market of the world’.⁵⁷ Hence, the global ecological transition that Simmonds envisaged would occur to colonial natures through waste utilisation would be unstable and unending. The global market would determine how new technologies should be applied to the reconstitution of the globe’s ecology, subject to change at a short notice. Constant substitution and the dynamic transformation of local ecologies would be necessary for survival in a global market.

The Chemico-Theology of Waste Utilisation

Science and technology played a critical role in the formation of Simmonds’s ideas about waste and its utilisation. That chemistry was of particular importance is evident in Simmonds’s volume the *Dictionary of Trade Products, Commercial, Manufacturing and Technical Terms* (1858), dedicated to the President of the

⁵⁵ Simmonds, ‘Undeveloped Articles of Raw Produce’, 33.

⁵⁶ Simmonds, *Waste Products*, 1962 edn., 4-5.

⁵⁷ Simmonds, *Science and Commerce*, 50. Mike Davis has illustrated the ways in which the logic of imperial ecological transformation was driven by an ideological fixation on free-trade and entire continents were subjected to the ‘rationalising’ influence of commodity markets, often at the murderous expense of subject colonies. See M. Davis, *Late-Victorian Holocausts: El Niño Famines and the Making of the Third World* (2002 edn.), 280-310.

Chemical Society, and former student of Liebig, Lyon Playfair.⁵⁸ As T. Levere has argued, the Victorian chemists' capacity to transmute the valueless into the valuable 'furnished an arena in which the chemist with his tactile imagination could grapple intimately with Nature's products and educts and even attempt to replicate her creative processes'.⁵⁹ Faith in the transformational capacities of chemical knowledge underpinned the almost millenarian hopes placed upon sewage recycling in the period.⁶⁰ As E. Måråld has demonstrated, the idea of nutrient recycling had its origins in chemistry, botany and agricultural science, in which disciplines the doctrine of the 'economy of nature' maintained that there was a natural equilibrium of matter circulating throughout the cosmos.⁶¹ Although this might suggest that civilisation had upset the natural balance of chemical cycles, it also implied that human intervention could rectify imbalances and sustain new forms of social production by inserting new transformations into the cycles of matter.

The prestige of chemistry and the 'economy of nature' model which underpinned it, was crucial to the thought of those who believed that an over-productive waste nature could be captured and incorporated within the industrial metabolism. Waste utilisation and chemical processes and discoveries were therefore closely connected in Simmonds's writings. It was he claimed 'that mighty converter, chemistry' that would

⁵⁸ P.L. Simmonds, *Dictionary of Trade Products, Commercial, Manufacturing and Technical Terms* (1858). Playfair returned the compliment by contributing an essay on 'The Utilization of Waste' to the *Technologist*. See L. Playfair, 'The Utilisation of Waste', *The Technologist* (1863), 403-12.

⁵⁹ T.H. Levere, 'The Rich Economy of Nature: Chemistry in the Nineteenth century', in U.C. Knoepfelmacher and G.B. Tennyson, *Nature and the Victorian Imagination* (1978), 189.

⁶⁰ N. Goddard, "'A Mine of Wealth'? The Victorians and the Agricultural Value of Sewage', *Journal of Historical Geography*, 22 (1996), 274-90; J. Sheail, 'Town Wastes, Agricultural Sustainability and Victorian Sewage', *Urban History*, 23 (1996), 189-210. C. Hamlin, 'Providence and Putrefaction: Victorian Sanitarians and the Natural Theology of Health and Disease', *Victorian Studies*, 28, 3 (1985), 381-411.

⁶¹ E. Måråld, 'Everything Circulates: Agricultural Chemistry and Recycling theories in The Second Half of the Nineteenth Century', *Environment and History* 8 (2002), 65-84, 68-69.

‘yield substances of use and profit’ from useless material.⁶² In *Waste Products*, Simmonds quoted Liebig’s own words that ‘Modern chemistry has taught us how out of the most vile and apparently worthless rubbish, the most useful and frequently the most beautiful things may be elaborated’.⁶³ In a rare allusion to the environmental consequences of development, Simmonds even observed that ‘Science has taught us how to transmute the waste and refuse materials – elements of pollution – into sources of economy and wealth’, although he notably failed to develop this idea.⁶⁴ As William Proctor asserted in the *Technologist*: ‘It would be an extremely difficult matter to over-estimate the value of chemistry to the various arts and manufactures, neither can the important benefits which it has conferred on society be ranked too highly...none [of these benefits] are more interesting than the utilization of waste products’.⁶⁵ Chemistry was important to Simmonds’s conception of waste because its representation of matter as cycling through various forms enabled the imagination of the almost limitless transformation of matter. Chemical transformation thus naturalised the attempt to technologically dominate nature on a global scale. As Simmonds observed, ‘When we perceive in nature how nothing is wasted but that every substance is reconverted and again made to do duty in a changed and beautiful form, we have at least an example to stimulate us in economically applying the waste materials we make, or that lie around us in abundance, ready to be utilized’.⁶⁶

Hamlin and Mårald have both demonstrated that there were strong natural-theological tendencies within mid-Victorian chemistry. These suggested that human scientific endeavour was providentially intended to reveal more and more how natural

⁶² Simmonds, ‘Utilization of Waste’, 112.

⁶³ Simmonds, *Waste Products*, 8.

⁶⁴ Simmonds, ‘Utilization of Waste’, 113.

⁶⁵ W. Proctor ‘Our Coal Tar Dyes’, *The Technologist* 2 (1862), 427.

⁶⁶ Simmonds, *Waste Products*, 1862 edn., 1-2.

processes could be manipulated and extended by humankind.⁶⁷ But, as Hamlin shows, this view of the cosmos also challenged evangelical political economy, which had sought to demonstrate that private property and free markets were necessary and moral means of distributing what were finite resources.⁶⁸ We have already seen the contradiction between scarcity and excess at play in Simmonds's own conception of waste. Hamlin has argued that the idea of decay enabled the reconciliation of such contradictions, and the maintenance of those Malthusian assumptions which underpinned the wages-fund theory alongside belief in a beneficently productive nature. Nature may produce abundantly, but her productions would only survive for a brief period before being reabsorbed into the cycles of production. Destruction, decay and putrefaction demonstrated 'that the laws of Nature were indeed consistent with the goals of Victorian civilization'.⁶⁹ Putrefaction enabled Simmonds to represent humanity as the means of reconciling a wastefully over-productive nature with the existence of a purposive creator. Humanity's purpose was to utilise nature's excesses for civilization before they rotted. Simmonds explained this in his *Science and Commerce* (1872): 'It has been well remarked that it is from a careful observation of the vegetable growth and decay that man has been enabled to take advantage of many of the beautiful vegetable products that lie scattered about in luxuriant profusion...'⁷⁰ There was no waste in nature, in the sense that anything ever escaped the cycles of production and destruction. The purpose of science and technology was to uncover the many hidden capabilities of natural products: 'In the economy of Providence every fragment of creation seems to unfold, as man progresses in the arts of life,

⁶⁷ W. Coleman, 'Providence, Capitalism, and Environmental Degradation: English Apologetics in an Era of Economic Revolution', *Journal of the History of Ideas*, 37, 1 (1976), 40.

⁶⁸ B. Hilton. *The Age of Atonement* (Oxford, 2001 edn.), 73-114.

⁶⁹ Hamlin, 'Providence and Putrefaction', 390-391.

⁷⁰ P.L. Simmonds, *Science and Commerce: their influence on our manufacture* (1872), p. 581.

unbounded capabilities of adaptation to every want'.⁷¹ In some sense then it was these capabilities which were actually being wasted by a nature left to her own devices, human interventions, particularly with the aid of chemistry, would make such latent uses apparent and enable them to be appropriated into ever-expanding productive processes.

Natural-theology also supported the belief that natural resources were more or less inexhaustible, ensuring that there would ever remain boundless possibilities for technological development. For advocates of colonization a cornucopian nature pushed the idea of limits to growth firmly out of the picture. 'Let us here no more of Malthusian doctrines' wrote Vibent in the *Colonial Magazine* 'absurd propositions contrary not only to the laws of nature, but those of God'.⁷² Simmonds took up this cornucopianism, 'So bountiful, however, is nature', he opined, 'that the need has but to be made known, and diligent investigation and inquiry set on foot, and the demand will soon be satisfied', it was evident that 'Nature has provided ample resources for the necessities of the human race; to develop these resources is the province of man'.⁷³ To minds such as J. Addington Symonds, it was clear that the creator had even ensured that the products of nature's previous wasteful excess had been stored up through history in order to achieve certain providential purposes.⁷⁴ Simmonds

⁷¹ P.L. Simmonds, *Commercial Products of the Vegetable Kingdom* (1854), p. 5.

⁷² P. Vibent, 'A Few Hints on Foreign and Home Colonization', *Simmonds Colonial Magazine*, vol 5 (1845), p. 58.

⁷³ Simmonds, *Waste Products*, 1862 edn., 2, 276.

⁷⁴ J. Addington Symonds, *Waste: A Lecture, Delivered to the Bristol Institute for the Advancement of Science, Literature and the Arts* (1863), 3. Symonds argued that even the creation of coal indicated the beneficence of waste: 'These spoils of ancient forests were transported to lakes and estuaries, and there buried, or, should we rather say, stored up in subterranean treasure houses for the future use of man, and then by a series of volcanic revolutions lifted up to within his reach. It was not for nothing that the grand and stately forests of palms were sepulchred in the depths of the Earth. But for all that enormous destruction, where would have been the blazing hearths of England – where these wonderful changes, social and national, that are involved in the mechanical applications of steam?'. See Symonds, *Waste*, 37.

believed that the coprolite deposits of Cambridgeshire had been purposefully laid down as a part of a divine plan.⁷⁵ ‘It is supposed’, he wrote, ‘that part of the south-east Suffolk was once a large area or estuary of the sea, wherein dwelt the monsters of the deep, and that their organic remains have been laid up by some great convulsion of nature, probably at the time of the Deluge’.⁷⁶ For Simmonds, therefore, ‘waste utilisation’ coincided with a cosmology in which waste was providentially ordained, and the tendency towards excess, disorder, and wilderness in the cosmos provided a rationale for purposive human intervention in the natural world.⁷⁷

Waste Utilisation and the Limits of Conservation

In the final part of this article I wish to make some observations on what Simmonds’s ideas about waste and waste utilisation imply about Victorian attitudes towards nature, the environment and resource depletion. Following a post-colonial paradigm, R. Grove has argued that ideas of conservation and environmentalism did not originate from nineteenth-century American transcendentalism (or British Malthusianism), but in the ecological experiences that accompanied European colonial exploration. In particular the interactions of European scientific knowledge and ‘rational’ forestry with indigenous ecological knowledges.⁷⁸ Grove traces a genealogy of ‘conservationism’ from early modern experiences of rapid ecological

⁷⁵ R. Grove, ‘Coprolite Mining in Cambridgeshire’, *Agricultural History Review*, 24 (1976), 36-43.

⁷⁶ Simmonds, *Waste Products*, 1862 edn., 330.

⁷⁷ As Symonds put it: ‘Lord of Nature and the finite beings, subjugating the qualities of matter and the forces of matter to his will and purpose; creating nothing, but taking command of the powers of nature and compelling them to work under new combinations, so as to supply his wants, and augment his pleasures, and gratify his pride; and dealing with form and colour and sound, so that things in the outward world shall be copies of the ideas of his mind, and present to other men, and for ages on ages, the same thoughts and feelings which he was first to conceive’. Symonds, *Waste*, 33.

⁷⁸ R. Grove, *Green Imperialism: Colonial Expansion, Tropical Island Edens and the Origins of Environmentalism* (Cambridge, 1995); See also, J. MacKenzie, *The Empire of Nature: Hunting, Conservation and British Imperialism* (Manchester, 1988); W. Beinart and L. Hughes, *Environment and Empire* (Oxford, 2007); S.P. Hays, *Conservation and the Gospel of Efficiency: The Progressive Conservation Movement 1890-1920* (Harvard, 1959); J. Winter, *Secure from Rash Assault* (California, 1999).

degradation on small oceanic islands, through romantic and physiocratic understandings of environmental change, to the eventual emergence of a 'social forestry' in the forest conservancy system in colonial India. This account of the origins of environmentalism has been criticised by a number of historians. David Arnold, for example, in his account of Nathaniel Wallich's botanical enterprises, challenges Grove's notion of a 'social forestry', arguing that Wallich remained 'part of the imperial concern with exploiting India's material 'riches'' and the implementation of 'improvement' ideology rather than any kind of nascent environmental ethic.⁷⁹ Richard Drayton has similarly argued that 'We must...call into question Grove's opposition of the histories of exploitation and conservation. Conservation, while apparently contradicting the ethic of exploitation, was premised on the same paternalist ideology of command'.⁸⁰ From these accounts it would appear that conservation was simply another side to the imperial exploitation and transformation of nature. Here I wish to suggest that Simmonds own work on waste utilisation suggests the continuing hegemony of ideas of exploitation over ideas of 'conservation'.

Simmonds, and the colonial improvers who wrote for his periodicals, were ultimately cornucopians: 'It has been well observed' he stated 'that the bounty of nature is inexhaustible.'⁸¹ There is no evidence that his own imperial experiences encouraged the development of any kind of conservation ethic outside of an occasional commitment to the rational management of colonial forest resources. Indeed an inexhaustible nature that was always available for exploitation and transformation was

⁷⁹ D. Arnold, 'Plant Capitalism and Company Science: The India Career of Nathaniel Wallich', *Modern Asian Studies*, 42, 5 (2008), pp. 899-928.

⁸⁰ Drayton, *Nature's Government*, p. 234

⁸¹ Simmonds, 'Undeveloped Articles of Raw Produce', 33.

a prerequisite to Simmonds analysis of waste: ‘Nature beyond doubt’ he wrote ‘has many wonders yet in her storehouses, awaiting the discoveries of man, and fitted for the rapid advancement of civilisation and common comforts’.⁸² The seas and oceans were a particular subject of Simmonds’s construction of an inexhaustible nature. The abundance of the ‘rich finny harvest of the colonies’ was the subject of several treatments by Simmonds, the neglect of whose ‘inexhaustible resources’ was to be deprecated when they might be made ‘subservient sources of wealth, commerce, and successful enterprise to our hardly colonists’.⁸³

The ways in which a conception of a waste nature delimited Simmonds’s thought is apparent in that fact that he evidently saw no need during his writing career to respond to concerns about the ecological consequences of the transformations he advocated. There is a notable absence of concern with species depletions in Simmonds’s later work. The case of the North American bison, which Simmonds addressed in an essay of 1854, is especially instructive.⁸⁴ Although the bison came close to extinction in course of the nineteenth-century, and was significantly depleted in Simmonds’s own lifetime, the implications of this were ignored in Simmonds later treatments of waste products, such as his re-publication of the significantly rewritten version of *Waste Products* in 1873. In 1854, when he estimated the annual slaughter of bison in North America at 400,000, Simmonds was primarily concerned with the fact that only the bison’s robes had a commercial value, the flesh being as he put it ‘entirely wasted’.⁸⁵ While he expressed sympathy to laws designed to prevent the ‘wholesale slaughter of these noble animals’, Simmonds drew no larger implications

⁸² Simmonds, ‘Undeveloped Articles of Raw Produce’, 34.

⁸³ P.L. Simmonds, ‘On the extent and value of our colonial fisheries’, in Simmonds Colonial Magazine, vol 9, (1846), p. 104-105, 114

⁸⁴ Simmonds, ‘Undeveloped Articles of Raw Produce’, 41.

⁸⁵ Simmonds, ‘Undeveloped Articles of Raw Produce’, 34.

from this decline.⁸⁶ The decline of the bison certainly does not appear to have caused any revision in his basic outlook. Given his interest in animal introductions to unproductive landscapes, it is likely that Simmonds would have been sympathetic to later proposals to substitute the Kangaroo for the Bison on the North American plain as a source of ‘flesh, fur and footwear’.⁸⁷ A similar lack of interest in the consequences of extinction can be seen in the case the passenger pigeon. In the 1850s Simmonds cited the use of the pigeons’ young as a source of fat for the feeding of pigs as a prime example of the waste of nature being utilized for the good of civilization, and looked to the eventual possibility of shipping the pigeons ‘potted in their own fat, to supply us with cheap pigeon pies’.⁸⁸ In his later works all reference to the passenger pigeon disappears. There was no attempt to integrate the experience of catastrophic species decline with his representation of the globe and its natural products as waste. Only in the case of the esparto grass did Simmonds recognise that environmental degradation could be a consequence of the transformation of nature into raw material, but the blame for this was quickly shifted to ‘native’ improvidence. ‘It is greatly to be regretted’ he wrote in the 1873 edition of *Waste Products*, ‘that both in Algeria and Spain, instead of mowing the esparto at the proper season, the natives pluck it up at the roots and all in the most reckless manner; and they are thus destroying the grass by their method of gathering it’.⁸⁹ From this he drew the lesson that ‘The progress of civilization would almost appear to be the occasion of waste and destruction. For here is an instance of natural production being wantonly destroyed by man, in spite of his deriving a benefit from it’.⁹⁰ Yet again, however, he failed to significantly modify his position as a result. There is certainly nothing to suggest

⁸⁶ Simmonds, ‘Utilization of Waste’, 98.

⁸⁷ *Manchester Weekly Times*, Supplement, Friday 23 September 1892, 8

⁸⁸ Simmonds, ‘Undeveloped Articles of Raw Produce’, 42

⁸⁹ P.L. Simmonds, *Waste Products* 1873 edn., p. 277.

⁹⁰ P.L. Simmonds, *Waste Products* 1873 edn., p. 277.

Simmonds ever read Marsh's *Man and Nature* (1864), published two years after the first edition of *Waste Products*. Indeed, throughout his career the only area in which Simmonds recognised a need for conservation of natural resources was colonial forestry. Here the argument rested on geo-politics. The teak forests of India were simply too important to leave to the tender mercies of the market and the necessity for 'proper supervision' of the colonial forests was therefore accepted by Simmonds. Here were the imaginary limits of the colonial ecological revolution, the natural resources that maintained the empire had to be monopolised and sustained at all costs.⁹¹ Counter-posed with Simmonds's refusal to respond to ecological degradation in other cases, this insistence on the necessity of a conservationist colonial forestry is striking and suggestive of the limits of 'green imperialism'.

How can we account for Simmonds's lack of interest in cases of negative ecological impact of colonial development? Ultimately, perhaps, a providentialist view of nature as waste was reconcilable with the destruction of species and ecologies. Conscious of the role of human agency in the decline of the world's large animal populations, for example, J. A. Symonds observed in 1863 that 'In North America the animals are slowly decreasing, from the persevering efforts and the indiscriminate slaughter practised by hunters, and by the appropriation to the use of man of those forests which have once afforded them food and protection', but, he continued: 'we have seen enough to prove that such phenomena, anomalous as they at first sight appear, are too numerous to be regarded as exceptional'.⁹² 'Change' he noted 'is the soul of the world; all things are in flux, nothing is stationary, but in the thought of man'.⁹³ Death

⁹¹ P.L. Simmonds, 'Of the teak and other forest trees of Madras', *Simmonds's Colonial Magazine*, X (1847), p. 264.

⁹² Symonds, *Waste*, 12.

⁹³ Symonds, *Waste*, 29.

and extinction was a natural process for the re-absorption of matter. ‘Death begins life, as well as ends it,’ wrote a reviewer of *Waste Products* ‘and no agencies in nature are suffered to waste. The changes which organic life undergoes are but the links leading from one organism to another, and in this transmutation there is no waste, no loss, but perfect harmony of arrangement, by which the life ending in death becomes the death merging in new existence’.⁹⁴

Simmonds’s complacency towards extinction also reveals something of the ecological logic of Victorian evangelical political economy. As M. Norton Wise and C. Smith have demonstrated, from the 1830s liberal political economy increasingly saw social progress in terms of the ‘continuous development of the new productive forces’.⁹⁵ Malthusian, Ricardian, and later Millian, concerns with scarcity, the stationary state and the balance of productive forces were supplanted by ideas of disequilibrium and decay which, for men of science like William Whewell, and theologians like Thomas Chalmers, were crucial to demonstrating divine agency was being exercised over human affairs. As scientific interest in energy and entropy developed the failure ‘to turn available resources into saleable commodities’ became less significant than an inability to ‘restore the lost work’.⁹⁶ Once lost, labour could not be applied to the development of civilisation. One thing that could not be recycled was the expenditure of effort. Simmonds certainly shared this view in which the waste of socially productive labour time was crucial. He edited an edition of Ure’s *Philosophy of Manufactures* in 1861, which is suggestive of a concern with the efficiency of work done, and made this concern even more explicit in his own works. In *Science and*

⁹⁴ Popular Science Review, vol 2 no 6, p. 254.

⁹⁵ M. Norton Wise and C. Smith, ‘Work and Waste: Political Economy and Natural Philosophy in Nineteenth Century Britain, (II)’, *History of Science* 27, 4 (1989), 392.

⁹⁶ M. Norton Wise and C. Smith, ‘Work and Waste (II)’, 423.

Commerce, for example, he quoted Liebig on the responsibility to conserve work rather than matter.⁹⁷ ‘Utilization is the great law of nature’ Simmonds wrote in the 1873 edition of *Waste Products*, ‘[t]here must be no loss of anything once within his [civilised man’s] grasp. So much lost is so much power running to waste – it is the leak in the gas pipe, the hole in the water pipe’.⁹⁸ Better by far to use-up matter, than to waste labour.

Simmonds’s understanding of ‘Waste utilization’, therefore, must be read in the context of a concern to effect the greatest possible transformation of the world’s ecology into useful substances and articles of commerce for the minimum input of work. Simmonds constructed an inherently over-productive nature, against which human technical innovation and labour were the means of redeeming that excess. It was impossible to articulate a conservation ethic from within this kind of political ecology. When W.S. Jevons came to assess the impact of ‘peak coal’ production on Britain’s future prospects, and to conclude that no action beyond the redemption of the national debt would to be useful, it was to similar concerns that he appealed. The earth’s resources were a free gift ‘stored up’ for human use.⁹⁹ Conservation would be a repudiation of the duty to achieve the highest level of civilisation possible before an inevitable decline.

Conclusion

⁹⁷ ‘As Liebig well observes: - “Science teaches us the simplest means of obtaining the greatest effect with the smallest expenditure of power, and with given means to produce the maximum of force. The unprofitable exertion of power, the waste of force in agriculture, in other branches of industry, or in social economy is characteristic of the want of true civilization”.’ Quoted in P.L. Simmonds, *Science and Commerce*, 37.

⁹⁸ Simmonds, *Waste Products*, 1873 edn., 10.

⁹⁹ W.S. Jevons, *The Coal Question* (1866 edn.), 365.

Brantlinger and Richards have observed that ‘Capitalism, it seems is an economic system geared to the transformation of waste into ever-more waste; according to its spendthrift logic, instead of two separate islands, utopia and wasteland turn out to be the same place’.¹⁰⁰ Exactly this apparent contradiction may be seen in the writings of Peter Lund Simmonds, but if it is a contradiction then it was a necessary one. ‘Waste’ played a crucial ideological role in Victorian technological discourse, and was vital in legitimating the capture, transformation and integration of external nature into the cycles of capitalist production. This was the ideological objective of Simmonds’s significant labours in the 1850s and 1860s to promote ‘waste utilization’. Waste utilisation formed a necessary part of a political ecology that represented the globe as covered by a plenitudinous nature going to waste. This efflorescence legitimated a recycling operation in which technology and science became key means of exploring and appropriating the hidden potential of all natural produce. In Simmonds a providentialist conception of waste was a crucial part of the ‘alchemy of modernism’.¹⁰¹ However, his understanding of waste struggled to integrate the experience of apparent ecological degradation into its cosmology, a fact that may suggest a need to revisit Lynn White’s much criticized thesis that Christian theological views had a role to play in the making of western ecological ideas.¹⁰² Certainly, the example of Simmonds at least adds further credence to Harriet Ritvo’s recent contention that, whatever may have been the case elsewhere, conservation ideas remained weak in nineteenth-century Britain in the face of the hegemony of

¹⁰⁰ Brantlinger and Higgins, ‘Waste and Value’, 436.

¹⁰¹ M. Oelschlaeger, *The Idea of Wilderness* (New Haven, 1991), 68-96; J.B. Foster, ‘Marx’s Theory of Metabolic Rift: Classical Foundations for Environmental Sociology’, *American Journal of Sociology*, 105, 2. (1999), 366-405; J.W. Moore, ‘Environmental Crises and the Metabolic Rift in World-Historical Perspective’, *Organisation and Environment*, 13, 123 (2000), 123-57.

¹⁰² L.T. White Jr., ‘The Historical Roots of Our Ecologic Crisis’, *Science*, 155, 3767, (1967), 1203-7.

modernisation.¹⁰³ Simmonds's work is perhaps also indicative of the ways in which environmental historians can throw light upon not just the origins of key topics such as environmentalism and conservation, but upon ideological justifications of capitalism's production and reproduction of nature.

¹⁰³ H. Ritvo, 'Manchester v Thirlmere and the Construction of the Victorian Environment', *Victorian Studies*, 49, 3 (2007), 457-81.