

Contents

<i>Preface</i>	viii
1 Introduction	1
Agricultural Energetics	3
The 'Entropy Law' and the Economic Process	7
Social-Darwinism and Ecology	10
Ecological and Pecuniary Economics	13
'Social Engineering' and the 'History of the Future'	15
2 'Modern' Agriculture: A Source of Energy?	20
Introduction	20
Ethanol from Sugar Cane	21
The Energy Cost of Modernizing Chinese Agriculture	27
The Energy Balances of Spanish Agriculture (1950s–1970s)	33
Boussingault, Liebig, Guano and Agrárian Chemistry	37
3 The History of Agricultural Energetics: Podolinsky	45
Introduction	45
One of the <i>Narodniki</i>	53
4 Eduard Sacher's Formulation of Podolinsky's Principle	64
5 Rudolf Clausius: 'On the Energy Stocks in Nature'	73
Introduction	73
The Electrical Revolution	75
The Club of Ideologists	77
The Kaiser's Birthday	82
The Coal Question	84
6 Patrick Geddes' Critique of Economics	89
Introduction	89
Ruskin and Geddes	91
An Ecological Critique of Industrial Urbanization	96

7	The Carrying Capacity of the Earth, according to Pfaundler	99
	Introduction	99
	The Energy Cost of Horizontal Transport	102
	The Availability of Energy and the Energy Requirements of Humankind	105
	Limits to the Growth of Food Production	109
	A Simple Account of the Second Law of Thermodynamics	112
8	Henry Adams' 'Law of Acceleration' in the Use of Energy	117
	Introduction	117
	Life Against Entropy	121
	Bernard Brunhes	124
9	Soddy's Critique of the Theory of Economic Growth	127
	Introduction	127
	What do 'Capital' and 'Investment' Mean?	129
	The Vital and the Laboral Uses of Energy	135
	National Income Accounting	137
	The First Illusions and Doubts about Nuclear Energy	140
	Technocracy, Inc.	144
10	Lancelot Hogben v. Hayek	149
11	Methodological Individualism and Inter-generational Allocation	156
	Introduction	156
	Jevons	160
	L. C. Gray, John Ise and American Conservationism	163
	Hotelling's Rule	164
	Neo-corporatist and Neo-liberal Macro-economics	171
	Externalities	179
	Conclusions	181
12	Max Weber's Chrematistic Critique of Wilhelm Ostwald	183
13	Ecological Utopianism: Popper-Lynkeus and Ballod-Atlanticus	193
	Popper-Lynkeus	193
	Ballod-Atlanticus	199
14	The History of the Future	206
	Unified Science and Universal History	206
	Neurath's <i>Naturalrechnung</i>	212

Contents

vii

Marxism and Ecology	218
Bogdanov and Bukharin	225
Ecological Anthropology	228
15 Political Epilogue	232
Introduction	232
Ecological Neo-narodism and Sustainable Development	234
The Social Base of Ecologism: Examples from the Andes	242
<i>Bibliography</i>	248
<i>Index</i>	274

Contents

vii

Marxism and Ecology	218
Bogdanov and Bukharin	225
Ecological Anthropology	228
15 Political Epilogue	232
Introduction	232
Ecological Neo-narodism and Sustainable Development	234
The Social Base of Ecologism: Examples from the Andes	242
<i>Bibliography</i>	248
<i>Index</i>	274