

The Influence of Science on the Thought of

H.G. Wells

By

Roslynn D. Haynes, B.Sc. Hons. (Syd.) M.A. (Tas.)

Submitted in fulfilment of the  
requirements for the degree of  
Doctor of Philosophy.

University of Leicester

1973

UMI Number: U641665

All rights reserved

INFORMATION TO ALL USERS

The quality of this reproduction is dependent upon the quality of the copy submitted.

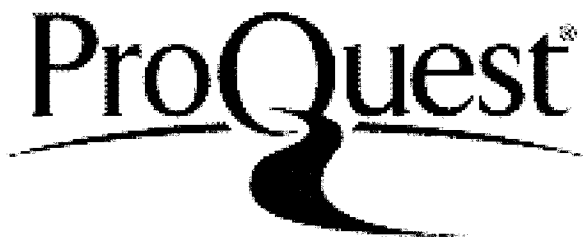
In the unlikely event that the author did not send a complete manuscript and there are missing pages, these will be noted. Also, if material had to be removed, a note will indicate the deletion.



UMI U641665

Published by ProQuest LLC 2015. Copyright in the Dissertation held by the Author.  
Microform Edition © ProQuest LLC.

All rights reserved. This work is protected against  
unauthorized copying under Title 17, United States Code.



ProQuest LLC  
789 East Eisenhower Parkway  
P.O. Box 1346  
Ann Arbor, MI 48106-1346

185660581

The Influence of Culture on the Thought of

W.C. Wells

For the M.A. Degree, Department of Philosophy, University of Toronto

Submitted in partial fulfillment of the

requirements for the M.A. degree

by



THESIS  
468421  
17 12 74

### Acknowledgements

My thanks are due to the Commonwealth Scholarship Commission for the award of a Scholarship for two years' research in Britain, during which time the material for this thesis was assembled and the first drafts written.

It is a very real pleasure to thank my supervisor, Dr. P.J. Keating, for his unfailing enthusiasm during the period of my reading for this thesis, and for his critical comments on the manuscript. I am deeply appreciative of his interest and stimulating discussion.

I wish also to record my gratitude to my husband and my parents for their cheerful encouragement and for invaluable assistance in checking the final copies.

My sincere thanks are also due to Miss Frances Parsons who read and commented on the manuscript and to Miss J.G. Mulhallen who typed this final version of the thesis.

This thesis contains no material which has been accepted for the award of any other degree or diploma in any other university, and to the best of my knowledge and belief contains no copy or paraphrase of material previously published or written by any other person, except when due reference is made in the text of the thesis.

This thesis is the result of work done mainly during the period of my registration for the degree of Doctor of Philosophy in the University of Leicester.

R. D. Haynes.

## Table of Contents

Preface	i
Introduction: Wells's Predecessors	1
<u>Section I. Wells's Scientific Background</u>	
Chapter 1. The Major Influences on Wells's Thought.	85
Chapter 2. Scientific Method and Wells's Thinking.	129
<u>Section II. The Rôle of Science in Society</u>	
Chapter 3. Science and Technology.	178
Chapter 4. Science and Government: the Wellsian Utopia.	202
Chapter 5. Waste and Disorder: Order and Uniformity.	258
Chapter 6. Free Will and Predestination: Freedom and Limitation.	286
Chapter 7. Science as Myth and Mysti- cism.	314
<u>Section III. The Influence of Science on Wells's Approach to Characterization</u>	
Chapter 8. Wells's Concept of the Individual.	349
Chapter 9. The Character of the Scientist.	426
<u>Section IV. The Influence of Wells's Scientific Training on his Techniques and his Concept of Art</u>	
Chapter 10. Techniques of Persuasion and Presentation.	460
Chapter 11. Art, Science and Structure: the Debate with Henry James	494
Conclusion	508
Bibliography	516

## Preface

Wells was one of the first professional writers of literature to have had a scientific training and the first for whom the rôle of science in society was a primary question. As such, his work forms a unique contribution to literature, not only in the way he approached the novel's traditional themes of personal relationships and the social order and in the view-point from which he assessed traditional values, but also in the scope of his interests and the issues which he judged appropriate for inclusion.

In 1912, Wells delivered what was in effect a manifesto of his intention to enlarge the scope of the novel, asserting the right of novelists to 'have all life within the scope of the novel'. Inevitably he did not succeed in including 'all life' within his compass; nevertheless the sheer volume of his output presents a formidable task for the critic since the breadth of his concern necessarily brought a wider range of material to his notice. I propose therefore in this thesis to concentrate specifically on Wells's attempts to incorporate science and the concerns of scientists into the fabric of literature, since even from this aspect alone his work has been of increasing importance in the developing understanding of the means whereby apparent fantasy becomes an integral part of the mainstream of literature.

It is the contention of this thesis that, contrary to the belief of many critics, Wells's thought was considerably influenced by his scientific training, and that those principles which form the basis of scientific method and experimental procedures informed his intellectual development in almost all the areas to which he turned his attention, imparting a strong unity to his work despite its apparent diversity of themes.

His characteristic habit of relating any newly acquired fact to the entire body of his previous thought makes it difficult to classify his work validly or even to determine with finality the boundaries between his fictional and non-fictional writing. It is possible of course to distinguish between the categories of scientific romance, novels of character-development and humour, and the more journalistic discussions of his later years, but the frankly propagandist intention of many of his novels has continued to irritate critics of the novel form, while at times his journalism soared through flights of allegory in an expression close to poetry and mysticism. Even the scientific romances are by no means homogeneous; they include tales of the future (disasters, alien invasions), utopias and prophecies, fantasies of the present (including evolutionary fantasies) and fantasies on themes from the new physics, and there is considerable overlap between these categories. Some of the more simple tales may be fitted adequately into a single class, but many have compound themes and contain elements from several genres. Thus 'The Time Machine' which begins as a fantasy based on the 'new physics' of a proposed fourth dimension, contains as essential ingredients a prophecy of the future and a description of an anti-utopia, with consequent sociological criticism of the present. Even the short story 'A Slip Under the Microscope' is considerably varied in content for it comprises a vivid evocation of science students at South Kensington and their laboratory milieu as well as a fragment of a Bildungsroman together with sociological comment both explicit and implied. The War of the Worlds and The First Men in the Moon combine elements of the scientific romance and the tale of the future with much

sociological discussion, while the novel When the Sleeper Wakes may be seen as either a tale of the future (whether as utopia or anti-utopia), or as satire on the present. It therefore seems more profitable to trace the development of several themes and intellectual convictions throughout the whole Wellsian opus rather than to consider individual works chronologically, always bearing in mind that the themes are themselves closely interwoven and still arouse considerable dispute as to their real significance.

Rarely, before Wells's time, had a consideration of science been deemed suitable material for fiction, and it will be seen that Wells was relatively little influenced by his predecessors in this field. Where he did adopt themes from earlier literature he almost invariably transcended his models in the depth, immediacy and imaginative variety of his treatment. Although the scientific romances have frequently been dismissed as sheer fantasy decked out in scientific language, I believe a detailed examination will show that they do in fact adhere closely to scientific principles; they demonstrate Wells's innate respect for the sanctity of facts as opposed to sheer fantasy, and the diligence with which he confined himself to the realm of the theoretically possible, however far he may have overstepped the probable. The very term 'scientific romance' apparently adopted from the series of short stories published by C.H. Hinton during the 1890's, and so frequently associated with Wells's work, is significant. 'Romance' implies that author and reader alike consider the events of the tale as non-factual, highly-coloured and, above all, remote from everyday life, perhaps even with overtones of actual distortion of the truth. Such

a term appears ill-matched with the epithet 'scientific', which carries all the contrary connotations of exactitude and the careful, unbiased observation of facts. Hinton's romances are far from scientific in this sense, being concerned with philosophical extrapolations from mathematical speculations; nor has Wells escaped criticism on a similar charge, as will be seen below. However, it is my contention that in Wells's case, unlike Hinton's, the compound term is highly meaningful, for it describes what Wells in fact did - namely assert the scientific validity of the imagination. When Wells in his romances induces a suspension of disbelief it is not chiefly in order to trick the reader into believing something which is false, but more usually to open his eyes to what is probable, perhaps even within his grasp, if only he can be brought to realise the possibilities.

When considering the question of Wells's ability to write about science it has been customary to discuss only the scientific romances, but I shall endeavour to show that while these earlier works embody some of Wells's best and most original writing, they by no means exhaust the measure of his scientific thought. His increasing preoccupation with sociological interests arose largely from his stress upon the relevance of scientific principles to the lives, and particularly to the thought of anyone attempting to participate fully in modern Western society. Although it must be remembered that Wells's contribution as a sociologist, both of his own time and, through the 'prophecies', of our contemporary scene, was considerable, it will not be possible within the limits of this thesis to consider all the diverse sociological aspects of his work, but only those emerging

as the result of scientific development. I propose therefore to trace through the scientific romances and the novels as well as through the more doctrinaire works of his Fabian and later years, five areas in which Wells endeavoured to work out for himself, and later to propagandise, the rôle of science in society. There will inevitably be some overlap between these areas both because his ideas about science were all closely related to evolutionary theory, and also because he progressively built up in his mind a synthetic view of an ideal society in which all aspects of social functioning were regarded as part of an organic and integrated approach to life as a whole.

The most obvious impact of science on society was through technology which was quickly seen to raise problems as well as benefits. Wells believed that these problems could be solved, but only through a clear-sighted appreciation of the intrinsic distinctions between science and technology, and an awareness of the necessity for intelligent control over the progress of technology. Such a programme, in turn, raised questions about the form of government most appropriate to cope with this comparatively new and specialised issue, and the theoretical ideals towards which it was desirable to channel the increasing power of technology. These considerations form the basis of Wells's ~~urban~~ <sup>utopian</sup> works, both fictional and non-fictional; hence any discussion of his scientific thought must include also some assessment of the sociological work - the social novels, and the several non-fictional treatises on plans for social reform.

It will be seen also that Wells's scientific training induced in him an habitually synthetic approach to experience,

in that he attempted to assimilate every new factor into the existing corpus of knowledge, to dwell upon its associations with existing theory and to eliminate as honestly as possible any conflict between different areas of experience. This demand for a unified, synthetic explanation of the multiplicity of phenomena, imparted to his work an extraordinary unity and a philosophical dimension rarely accorded to the themes he chose to consider; ultimately, in his work, each entity is seen, at least implicitly, in relation to the entire cosmos. This being the pattern of his own thought, Wells naturally stressed the importance of order and unity (as distinct from uniformity) in all the various aspects of life. Waste and disorder became increasingly abhorrent to him, whether in the details of everyday life, in lazy inaccurate thinking, or in the panorama of waste and disorganization which characterized the social sphere.

On the theoretical level, science, and particularly biological science in which he was most interested, raised for Wells the perennial problem of determinism and free will, a question, over which he toiled until he found a solution satisfying within his own particular terms of reference. Discussions of the problem appear explicitly in several of his works, both fictional and non-fictional, and are also implicit both in his approach to characterization and in his concept of the rôle of the individual in society.

Ironically, despite his stress on the power of the scientific method and its relevance to all areas of experience, Wells was also led, through his very preoccupation with science to embrace a quasi-mystical approach to life, to the universe, to Being. In this he was not unique, for a parallel development may be traced in the work of Samuel Butler and, more

recently, of Aldous Huxley, but it is of particular interest to note the way in which Wells attempted to demonstrate the compatibility of mysticism with experimental method and his efforts to trace a mythical dimension and significance in the basic principles of science.

It will also be shown that, besides this all-pervasive influence on his abstract thought, Wells's scientific training radically affected his approach to characterization, both in his general view of the individual and in his pre-occupation with the figure of the scientist - a character previously rare in literature and, with one outstanding exception, never before treated in depth. Certainly Wells was in most cases able to realize such a character for his readers as capably as he was able to present scientific principles for the intellectual consideration and entertainment of a reading-public which had had little if any background knowledge of science. His methods and techniques are therefore of particular interest in a generation which has tended to accept unquestioningly allegations of the immense difficulty, if not the impossibility, of adequate conversation between the 'two cultures'.

Lastly, it seems clear that Wells's style of writing, which was intimately associated with his approach to aesthetics and to Art in general, and which brought him into sharp conflict both with the literary giants of his own time and with form critics to the present day, was the direct, perhaps inevitable, result of his scientific training. Belief in an ultimate truth which may be discovered by diligent research and experimental pursuit, renders all lesser truths in science of transitory value. Any hypothesis may be overturned and disproved by a single contrary fact, and the history

of science is strewn with discredited theories and discarded hypotheses which pass unmourned by scientists. Every postulate therefore, has a tentative quality and certainty is, by definition, unachievable, for a theory may be disproved, but technically it can never be proved. It is almost certainly this transitoriness which underlies Wells's famous reply to Henry James's criticism of his style:

I am a journalist. I refuse to play the 'artist'. If sometimes I am an artist it is a freak of the gods. I am a journalist all the time and what I write goes now - and will presently die.<sup>1</sup>

This thesis attempts to examine what lasting contribution, if any, the scientific aspects of Wells's thought and writing may have made to literature, and thus to assess whether the value of his work is as transitory as he himself declared.

<sup>1</sup>Experiment in Autobiography, Chap. 8, v, p. 623

### Introduction: Wells's predecessors

In order to assess the importance and originality of Wells's contribution to literature it is necessary to consider first the work of those who preceded him in writing of science in a literary context. Recently, several authors have traced back the pedigree of science-fiction to the second-century writer, Lucian of Samostrata, apparently in order to increase the respectability of the genre by a claim to antiquity.<sup>1</sup> Thus it seems more useful here to avoid duplicating such chronological surveys and to trace instead the development in literature of four basic scientific themes which Wells himself was later to draw upon extensively while expanding them almost beyond recognition.

The first and most basic of these is, of course, science itself - the attitudes which writers held, consciously or unconsciously, towards its concepts, the technology with which they frequently confused it, and the symbols in which they expressed their opinions of its aims and theories. The second theme, arising from a social concern which seeks to integrate the understanding of science into the community, involves the development of a Utopian literature, including both utopias and anti-utopias. Integrally related to this is the motif of the journey whereby such utopias are to be reached - journeys either in space or in time. The fourth theme to be considered appears much later in literature: the treatment of the scientist as

<sup>1</sup> e.g. K. Amis, New Maps of Hell (London 1961);  
J.O. Bailey, Pilgrims Through Space and Time (New York, 1947);  
R.L. Green, Into Other Worlds (London, 1957).

a fictional character, is comparatively rare before the time of Wells and thus there are few examples to be considered.

Clearly an exhaustive treatment is impossible within the scope of this introduction, but I hope to indicate the trends and standard of presentation of these themes sufficiently for some reasonable assessment of Wells's originality to be made.

#### A. The Concepts of Science

##### a) The Universe

The concept of science as we know it is a relatively recent one in the history of Western thought. It was not until the sixteenth century that modern science may be said to have arisen from the work of Copernicus who first evolved a model of the universe in mechanical and mathematical terms, and thereby changed the emphasis in science from the speculative approach of Aristotle to the experimental procedures which have characterized it ever since. Galileo, the follower of Copernicus, went so far as to declare that only that which was measurable was real, and that the only primary qualities were the mechanical properties of shape, size, position and mass. Thus was born the popular notion of the scientific method as a rigorously objective approach to phenomena, since the only sure means of obtaining knowledge about the universe was considered to be a disinterested detachment. Following such procedures, Newton developed, through the principle of gravitation, a view of nature which was almost exclusively deterministic and mechanistic, and left no room for any supplementary considerations. Newton did, indeed, believe that occa-

sionally a divine intervention was necessary to keep the planets on their paths when his mechanics failed to account fully for observed events but already he had arrived at that concept of a 'billiard-ball universe' of which Whitehead has aptly said: 'the course of Nature is conceived as being merely the fortunes of matter in its adventure through space.'<sup>2</sup>

The expansion of this mechanistic theory of nature to include living organisms was the work of the philosopher and mathematician, Descartes, who, continuing the work of Versalius and Harvey, produced the first scientific textbook of mechanistic physiology, Traité de l'Homme (1664). Descartes' picture of the body is essentially a system of joints, levers, pumps and valves, but because he found it more difficult to consider the human mind within this frame, he postulated two fundamentals, matter and mind. Hence was evolved the Cartesian doctrine of a bifurcate Nature which has so profoundly influenced western thought for three centuries. In England, the germinal book, apart from Newton's Principia, was that of the late seventeenth-century botanist, John Ray. His book, The Wisdom of God Manifested in the Works of Creation, established more than any other the interpretation of nature prevalent until Darwin's time and contributed greatly to the eighteenth- and nineteenth-century atmosphere of satisfied optimism which Willey has described as 'cosmic Toryism'<sup>3</sup> and which clearly underlies Pope's Essay on Man:

<sup>2</sup> A.N. Whitehead, Science and the Modern World (Cambridge, 1926) p. 22

<sup>3</sup> B. Willey, Nineteenth Century Studies (London, 1964), p. 26

All nature is but art, unknown to thee;  
 All chance, direction which thou canst not see;  
 All discord, harmony not understood;  
 All partial evil, universal good;  
 And spite of pride, in erring reason's spite,  
 One truth is clear, whatever is, is right. <sup>4</sup>

So ingrained was this view in western thought until the mid-nineteenth century, that Nature was regarded as definitive evidence for religion, and Paley's Natural Theology (1802) was a standard textbook for the educated Englishman.

There was, however, a growing reaction against this dualism from two quarters - from those who rejected any suggestion of a spiritual dimension at all, and from those who opposed the deistic approach to religion. Many scientists and empiricist philosophers believed in a wholly mechanistic universe which left no scope either for a deus ex machina or for any non-materialist aspect of nature. As early as 1690 John Locke, in his Essay Concerning Human Understanding, had declared that, knowing the position and motion of the components of any entity, one could predict all its properties, while the French scientist, Laplace, had claimed that, given the original position and motions of any particle in the universe, he could predict the entire course of subsequent events. Such an all-embracing belief in a strictly material causality left no room for chance, free will or a deity except as a possible, though remote, First Cause.

Resistance to this mechanistic view of the universe which relegated all spiritual values to a negligible position if, indeed, it did not banish them altogether, came not only from the theologians, William Law and Bishop Butler,

<sup>4</sup>A. Pope, 'Essay on Man', Epistle I, ll. 289.-94

but also from the philosophers, Berkeley and Hume, and from the nature poets of the late eighteenth and early nineteenth centuries. Hume in his Enquiry Concerning Human Understanding (1748) raised a criticism of the inductive method which has never been satisfactorily answered, while William Blake, regarding the deists as 'the enemies of the human race' and of 'universal nature' inveighed against mechanical rationalism with its rigidly biased view of the world.

Mock on, Mock on, Voltaire, Rousseau:  
Mock on, Mock on; 'tis all in vain!  
You throw the sand against the wind,  
And the wind blows it back again.  
The atoms of Democritus  
And Newton's particles of light  
Are sands upon the Red sea shore  
Where Israel's tents do shine so bright. <sup>5</sup>

Now I a four-fold vision see  
And a four-fold vision is given to me.  
... May God us keep  
From single vision and Newton's sleep. <sup>6</sup>

The mechanistic universe of science was to Wordsworth a 'universe of death'.

Sweet is the lore which Nature brings:  
Our meddling intellect  
Mis-shapes the beauteous forms of things - <sup>7</sup>  
We murder to dissect.

The reaction of the Romantic poets further underlined the discord between the aesthetic intuitions of man and the mechanistic philosophy of science; thus Coleridge, wrestling with the human dichotomy, attempted to resolve it into 'one vast harmony'. Whitehead claims that:

<sup>5</sup>William Blake, 'Mock on, Mock on, Voltaire, Rousseau'.  
Poems from MSS. c. 1803.

<sup>6</sup>Poem in a letter to Thomas Butts, 22nd Nov. 1802. "With happiness stretched across the hills".

<sup>7</sup>William Wordsworth 'The Tables Turned', Poetical Works  
ed. de Selincourt, (Oxford, 1946).

We gain from these poets the doctrine that a philosophy of Nature must concern itself at least with these six notions: chance, value, eternal objects, endurance, organism, inter-fusion.

8

Yet, however much these and other dissenting voices might be heard questioning the efficacy of the mechanistic approach to science, belief in the necessity of a scientific method based on the principles of detachment and objectivity remained unaltered, at least within the citadels of science itself, until the twentieth century, and all protests were dismissed as poetic reaction, unrelated to the problems of science.

b) The Machine

Nineteenth-century England saw an unprecedented social change following upon the industrial revolution and the vast proliferation of mechanical objects which began to impinge on the consciousness of even the most isolated families. As the railway network spread rapidly through England during the 1830s, the mechanistic mode of thought found a new symbol in the machine, a symbol which had the effect of further accentuating the dichotomy between romantic and scientific thought. Whereas the Romantics had rejected the mechanistic mode of thought, with its idea of a cosmos fixed and determined by inflexible laws, as intellectually stifling, the Victorians found that technology had created a system which, in its economic and social upheavals could be physically and spiritually stifling as well. The machine was regarded by many as a direct contravention of

nature, imposing on man an alien rhythm and an unnatural set of values which could only destroy the creative and intuitive impulses previously considered the highest good in human experience. Yet despite their criticism of the philosophy of the machine, the Victorians were rarely prepared to forego its benefits, and this created a dilemma which few cared to follow to its conclusion.

The most complete treatment of the machine in Victorian literature is to be found in the writings of Thomas Carlyle. In 1829 he already foresaw the influence which the machine would exert on social, individual and spiritual life, and wrote:

'It is the Age of Machinery in every outward and inward sense of that word...Not the external and physical alone is now managed by machinery, but the spiritual also...For the same habit regulates not our modes of action alone, but our modes of thought and feeling. Men are grown mechanical in head and heart as well as in hand.'

Yet while Carlyle rejected the machine image as a philosophic metaphor, he was greatly attracted to actual machines, and especially to their efficiency and productivity. The central chapters of Sartor Resartus dramatise the general pattern of regenerative conversion, passing from the 'Everlasting No' (representing the despair arising from the materialist position) through the 'Centre of Indifference' to the 'Everlasting Yea' (an awareness of the broader cosmic dimension); only then may the individual come to see the universe as organic rather than mechanistic and experience a complete conversion from scientific materialism to transcendentalism. Although in Sartor Resartus it would

q. Thomas Carlyle, 'Signs of the Times', Works of Thomas Carlyle (London, 1896 - 9), vol. XXVII, p. 59.

seem that this is accomplished chiefly by a sleight-of-hand exchange of one set of metaphors for another, Carlyle was nevertheless striving towards a definite goal - that of breaking the link in popular thought between the machine and mechanistic philosophy by showing how technological progress could serve transcendental ends and by infusing the machine with the qualities of life.

"The shuttle drops from the fingers of the weaver and falls into iron fingers that ply it faster. The sailor furls his sails and lays down his oar; and bids a strong, unwearied servant, on vaporous wings, bear him through the waters!" 10

Here the machine becomes morally justified as the inspiring helper of the Carlylean worker-hero and as a weapon with which man can do 'personal battle against Necessity and her dark brute powers to make them reasonable and serviceable'. 11

Seeing the machine as a spiritualised symbol, Carlyle was able to welcome technology without accepting the methodology of science, to applaud inventors such as Watt, Brindley and Arkwright who were untrained in theory, while censuring theoretical scientists whose working philosophy was materialistic. This transcendental interpretation also allowed Carlyle, unlike most of the Victorians, to find some aesthetic value in the industrial smudges on the landscape. Manchester, he admits, may not be beautiful, but it is 'wonderful...fearful' 12, and perhaps '...as sublime as a Niagara, or more so.' 13 Clearly, in Carlyle's

10 *ibid.* vol. XXVII p. 59-60

11 T. Carlyle, "Corn Law Rhymes", *Works*, XXVIII p. 138

12 T. Carlyle, 'Past and Present', *Works*, vol. X, p. 228

13 T. Carlyle, 'Chartism', *Works*, vol. XXIX, p. 182

mind, Manchester has become a symbol rather than a reality, a sacrament of fruitful productivity, but his anti-intellectual rhetoric, while it swayed his contemporaries emotionally, could scarcely survive a rational appraisal.

The social novelists of the mid-century, Charles Kingsley, Dickens, Elizabeth Gaskell and Disraeli, saw no such transcendental glory behind the factory grime; but neither were they reactionary in their attitude. They inveighed against specific aspects of the industrial centres, the social upheavals and economic fluctuations which made the lives of those dependent on the machine so precarious, but they did not suggest that machines should be abolished, only that working conditions should be made more sanitary and congenial.

Dickens's response to the machine was more ambiguous. On the one hand Tom Rouncewell, the successful industrialist of Bleak House, is one of the most sympathetic and eloquent of Dickens's socially capable characters, while at the conclusion of the same novel the highly commended Esther and Woodcourt depart from the rural south to make their home in the industrial north. Moreover, Dickens clearly delighted in the jumble and confusion which followed in the wake of technology - the sprawling suburbs mushrooming around the railway to house the workers, suburbs where the disorderly maze of streets and alleys stood as a virtual mockery of 'the mighty course of civilization and progress'.<sup>14</sup> But when the machine stands for disciplined action, he parts company with it. Hard Times attacks a state of mind symbolised by the machine, utilitarianism, the creed born

<sup>14</sup> Charles Dickens, Dombey and Son (London, 1960) Chap. 6

of an industrial age, and in particular its more mechanistic form as propounded by the Benthamites. In the description of Coketown the symbol of the machine as a 'mad elephant' emphasises how alien to normal human rhythms is the ceaseless repetition of mechanized labour:

'...no temperature made the melancholy mad elephants more mad or more sane. Their wearisome heads went up and down at the same rate, in hot weather and cold, wet weather and dry, fair weather and foul. The measured motion of their shadows on the walls was the substitute Coketown had to show for the shadows of the rustling woods; while, for the summer hum of insects, it could offer, all the year round, from the dawn of Monday to the night of Sunday, the whirr of shafts and wheels.' <sup>15</sup>

The same sense of relentless energy, of inhuman rhythms, is apparent in the description of Dombey's train journey, associated, in the novel, with the 'remorseless monster, Death'. The speed and noise of the locomotive render insignificant the peaceful scenes of human life past which it rushes. There is no exhilaration in Dickens' description, only monotony, for the relentless flashes of sensation experienced as the train roars on its way, merge into one pattern 'so ruinous and dreary'.<sup>16</sup>

Even worse, to Dickens, is the patterning of education on the concept of man as a machine. The much vilified M'Choakumchild and Gradgrind are merely following the spirit of the age and applying to education the principles so successful in industry. Yet although Dickens mistrusted the rational mind, he never called for the elimination of the machine for he was not prepared to renounce the products and material benefits it provided. Carlyle and

<sup>15</sup>Charles Dickens, Hard Times (New York, 1966) Bk. II, Chap. 1, p. 85

<sup>16</sup>Charles Dickens, Dombey and Son, (London, 1960) Chap. 20

Dickens exemplify the ambiguity of the Victorians towards science and technology, their belief that it was a good practical servant but a bad guide in morals and thought. Both rejected materialist philosophy while embracing the practical benefits of technology.

Their contemporary, Ruskin, however, was less accommodating. He professed to reject the entire materialist system, both in theory and in practice, founding, as part of his protest, the Guild of St. George on the principle that 'food can only be got out of the ground and happiness out of honesty'. Besides his practical efforts to persuade his contemporaries that a return to a pre-industrial society was both possible and the only true good, he published Fors Clavigera a collection of letters containing, amongst other subjects, schemes for a form of agrarian communism.

Ruskin's treatises inspired his friend Morris to write a utopian novel, News from Nowhere, the culmination of Victorian primitivism as it had developed from the Romantics. This novel, directly provoked by Bellamy's Looking Backward, describes a socialist society in which not only machine work but any belief in the validity of work per se is repudiated in favour of a life in which the spontaneous release of creative energy is the chief good. This is the converse of Carlyle's view, and taken together, these two extremes would seem to suggest that the basically romantic philosophy of the Victorians could accommodate the machine only when it shed its mechanical qualities and became endowed with human and moral attributes.

With the work of Samuel Butler, however, the machine

assumed a new role in literature. It came to be discussed not merely in its own right, but as an instrument of satire directed against another issue, for it was Butler who first saw the relevance of evolutionary theory to the machine. Before his first novel, Erewhon, Butler had published several semi- and pseudo-scientific treatises elicited by his reading of The Origin of Species, but they contain little that is original and are virtually a restatement of the main tenets of Darwinism. However, 'Darwin among the Machines' (1863), 'Lucubratio Ebria' (1865) and 'The Mechanical Creation' (1865) show an ingenious extrapolation from Darwin's theory to ideas about the future development of man. These essays, transferred almost in toto to Erewhon, form the chapter 'The Book of the Machines' in which the Erewhonians, being far-sighted Darwinians and hence realising where evolution is leading, decree the destruction of all machines except the most basic. Inverting the usual metaphor of parts of the body as mechanical contrivances, the Erewhonians see machines as extensions of the body, arising by an evolutionary process from the needs of man and gradually attaining to a position of such importance for him that they are no longer his servants but the very necessities of life which he must tend and serve lest they fail him and leave him helpless. Clearly, say the Erewhonians, machines are therefore the next evolutionary stage of development, about to replace man as the crown of creation. Butler, being still at this time a devout Darwinian, was greatly disturbed by those readers who realized that Erewhon contained in embryo a criticism of orthodox Darwinism and therefore regarded the book as a

satire of The Origin of Species. He wrote hastily to Darwin, disclaiming any intention of disrespect;<sup>17</sup> and indeed the extreme primitivism of the Erewhonians in destroying their machinery can be more validly read as a satirical gibe at Ruskin and his followers who, in denying the efficacy of a materialist conception of the universe, ranged themselves against Darwin and Huxley. Nevertheless, the 'Book of the Machines', as Butler himself was later to realize, certainly challenges one basic Darwinian postulate, namely that fortuitous circumstance could be the origin of modification in species. Proceeding from this divergence, Butler came to elaborate a scheme of purpose and design which directly repudiated the whole Darwinian theory. Originally he had developed the idea of machines as extensions of the human body simply for its potential as a witty inversion which could be used to underline a further principle; but gradually the possible truth involved in this apparently flippant notion began to dawn upon him. Two years after Erewhon, Huxley published in the Fortnightly Review the text of an address delivered to the British Association for the Advancement of Science 'On the Hypothesis that Animals are Automata and its History' defending with experimental data the hypothesis that man is not merely like a machine, but is a machine.<sup>18</sup> Such a view was immediately repugnant to Butler and for the rest of his life it became increasingly intolerable. In The Unconscious Memory Butler recalls his intellectual

<sup>17</sup> See the 'preface' to the second edition of Erewhon.

<sup>18</sup> T.H. Huxley, 'On the Hypothesis that Animals are Automata and Its History', Fortnightly Review, Vol. XVI (Nov. 1874) 555-580.

conversion from this mechanical view of a mindless universe to a vitalistic belief which stressed the centrality of mind and intelligence in the universe. Where Huxley and Tyndall extrapolated from the simplest living things and from inanimate matter to a materialist concept of man, in which consciousness was seen as merely a minor by-product of biological evolution, Butler began from the level of human consciousness and imputed a similar faculty to all living beings. His next work, Luck or Cunning? was directed against 'the present mindless, mechanical, materialistic view of nature...its very essence is to insist on the presence of a mind and intelligence throughout the universe to which no name can be so fittingly applied as God.'<sup>19</sup>

Ironically, having inverted the biological assumptions of Darwin and Huxley to produce the metaphor used in Erewhon, Butler then proceeded to revert to the original concept of limbs and organs as machines. In The Unconscious Memory he wrote:

In 1870 and 1871 when I was writing Erewhon, I thought the best way of looking at machines was to see them as limbs which we had made and carried about with us or left at home at pleasure. I was not however satisfied...I returned to the old subject...and proposed to myself to see not only machines as limbs but also limbs as machines. I felt immediately that I was upon firmer ground...What would follow then if we regarded our limbs and organs as things that we had ourselves manufactured for our own convenience?'<sup>20</sup>

However, the system of thought which Butler derived from this postulate was radically different from that of Huxley

<sup>19</sup> H.F. Jones, Samuel Butler, Author of Erewhon (London, 1919) I, p. 385

<sup>20</sup> S. Butler, The Works of Samuel Butler ed. Jones and Bartholomew, vol. VI (London, 1923) pp 17-18

and the mechanists. Whereas they assumed that the whole body was nothing more than one machine, in a universe which was itself a yet more vast machine, Butler assumed the contrary proposition - that limbs qua machines were the material manifestations of man's conscious or unconscious desire to develop - and he proceeded to derive a vitalistic concept of evolution as a volitional process more akin to Lamarckism than to the Darwinism which he had at first embraced.

Thus Butler's view of the machine proves on examination to be like Carlyle's, a partial one. Whereas Huxley and the mechanists saw the machine as a model of predictable activity, self-powered and self-regulating, Butler after the first edition of Erewhon ignored this aspect and stressed the useful-servant character of the machine which had always to be brought into being by the will and ability of a designing spirit, a position ironically close to Paley's. Thus his penchant for making a postulate half in jest and then pursuing it with all seriousness to the utmost lengths, prevented Butler from reaching a more complete understanding of the machine and its role in society. Indeed, unlike Carlyle, Dickens and Ruskin, in their several modes, Butler never amplified his objection to mechanistic thought to formulate a social or moral criticism. 'The Book of the Machines' remains separate from the main narrative strand of Erewhon and no firm conclusions are drawn or even implied as to the relations between the absence of the machine and the quality of Erewhonian life. Nor, in Erewhon Revisited, is the reintroduction of the machine correlated with any social changes.

In complete contrast to Butler's philosophical approach is that of Jules Verne, his French contemporary, by far the

best known of Wells's predecessors and usually regarded as the father of modern science-fiction. Verne's interest in science was confined almost exclusively to its technological aspects and his treatment of it was virtually only an extension of the perennial wonder-tale. It is significant that nearly all his major works and most of the less well known ones were conceived and published as a series of adventure stories, entitled collectively Les Voyages Extraordinaires. In these stories, science functions chiefly in providing a novel means of travel for the adventurers who could thereby more legitimately encounter strange environments and creatures, newer and more taxing difficulties. Even within this limited scope, however, Verne's exuberance was greater than his originality. His 'inventions' are, almost without exception, exaggerations of those which technologists of the time were known to be developing. On the few occasions when he describes inventions for which he knows of no current research, he writes in a semi-satirical style almost ridiculing the plan, presumably lest he himself be ridiculed. The 'Nautilus' of Twenty Thousand Leagues Under the Sea is described in considerable detail, but so far from being, as many have supposed, Verne's own invention, it is in all essentials no more than an elaboration of Robert Fulton's original invention (also called 'The Nautilus').<sup>21</sup> The originality of Verne's treatment lay chiefly in the use to which he put his submarine, picturing

<sup>21</sup> Fulton, an American, had built the first practicable submarine and had sailed it in French waters, even offering it to Napoleon, who had, however, refused it. Later, a French inventor perished in a similar vessel off the coast of Le Crotoy.

it as supporting an almost self-contained underwater community, and as being swift and manoeuvrable enough for use as a decisive weapon in naval warfare. Similarly, his 'Victoria' of Five Weeks in a Balloon (1863) is based on a paper read to the French Academy of Sciences by a French military engineer, Captain Meusnier.<sup>22</sup> Verne's most original means of transport is undoubtedly that described in From the Earth to the Moon. The overall idea was probably derived from Poe's burlesque of the space-travel story, The Unparalleled Adventures of One, Hans Pfaal, where the hero is represented as reaching the moon in a balloon. Verne rightly mistrusted such a form of motive power and his substitute is basically conventional - a gun with greatly increased projectile power fires a capsule out of range of the earth's gravitational field. Verne indeed treats this with the greatest seriousness devoted to any of his inventions and professes to divulge the necessary technical details - size, weight of the projectile, location and dimensions of the firing gun, and the quantity of explosive required. Nevertheless, his interest in such details remains little more than dilettante, as evidenced by the number of technical errors he perpetrated.

<sup>22</sup> I.O. Evans, Jules Verne, His Life and Work (London, 1965) p. 38. Verne's innovation, a considerable one, lay in making the balloon dirigible and capable of rising and falling without loss of its vital supply of gas, and his method though distantly related to those early experiments in ballooning, which issued in such fatal results, seemed revolutionary, at least on paper, although the fact that it seems never to have been tried in practice suggests that it entailed flaws obvious to the expert.

Some of these Verne could scarcely have been expected to foresee,<sup>23</sup> but he could have avoided other errors had he bothered to consult reputable contemporary scientists.<sup>24</sup> There are blunders in his technical calculations for almost the entire voyage.<sup>25</sup> Verne seems to have made some of his errors in a moment of abstraction, for in other places it is apparent that he knew better.<sup>26</sup> However, the sum total of these and other errors throughout his work is witness to the secondary nature of Verne's interest in science.

<sup>23</sup> The projectile fails to reach its destination because it is deflected by the gravitational pull of a large meteor which has become an earth satellite or second moon. It is now known that no such earth satellite exists, but such an hypothesis was in fact current in 1870. Nor was Verne's description of the chasms at the North Pole unthinkable at the time of publication of The Adventures of Captain Hatteras, although it is now known that there are no chasms there through which the light of the aurora emerges, or which could lead to the interior of the earth. Verne had, in fact, tried to make his use of a 'hollow earth' theory as scientific as possible by consulting the French seismologist, Charles Saint-Claire de Ville. It was a then-current theory—the possibility of the Italian volcanoes being connected by underground fissures—which suggested to him the idea that these in turn might lead to an immense subterranean cavity as described in Journey to the Centre of the Earth.

<sup>24</sup> Actually Verne had had his calculations checked by his cousin, the mathematician, Professor Henri Garcett, who also apparently overlooked this point. See I.O. Evans, op. cit.

<sup>25</sup> Even Verne's descriptions of the state of free fall or weightlessness indicate a failure to understand fully what that state entails. Ardan's leap would not have left him suspended, nor could the wine have been poured out in their celebration.

<sup>26</sup> Barbicane of Around the Moon remarks that whenever the sun sets on the moon, the earth rises over the opposite horizon, whereas Verne was surely aware that since the moon has always the same face orientated towards the earth, the earth as seen from the moon would not rise or set but would remain almost fixed in the sky, with only a slight oscillation due to the moon's libration.

Science to him was useful primarily as a source of marvels, and though he evolved considerable skill in introducing scientific facts, particularly geographical discoveries, which interested him most, into fiction, his foremost concern was with the excitement of the tale and the amusement of his readers. He showed no interest in deriving from his mechanical inventions any philosophical or universal implications or even in assessing their immediate sociological significance, and it is here that his work differs most from that of Wells, despite the frequent charges of similarity between the two.

For most of his career, then, Verne may be said to have divorced in his mind the broad concepts of science from the technological marvels of the machine age by the simple expedient of ignoring the former, but during the later period of his writing, he came to fear and distrust the potential misuse to which science might be put by unscrupulous politicians or power-crazed scientists. In Sans Dessus Dessous Barbicane and Nicholl, two of the astronauts who had appeared in the earlier work, Journey to the Moon, invent a super-explosive to tilt the earth's axis, thus making available for exploitation the mineral wealth alleged to be buried at the poles, regardless of the adverse effects on the rest of the world. This mistrust of the progress of materialist science is even more apparent in one of Verne's later novels, Le Maître du Monde, a sequel to Robur le Conquerant. In the earlier novel, Robur was presented as an essentially noble figure symbolizing the science of the future and warning of the evil possibilities of science:

'Citizens of the United States...I go; and I take my secret with me...It shall belong to you on the day when you are educated enough to profit from it and wise enough not to misuse it. Farewell.'<sup>27</sup>

Yet in the sequel, Robur has become utterly ruthless and evil, determined to dominate mankind through his invention, the triphibious 'Epouvantable' which he believes will give him complete power over the whole world. Again, Tomas Roch, the inventor of Face au Drapeau, becomes embittered and insane, while Marcel Camaret, the brilliant scientist of L'Etonnante Adventure de la Mission Barsac, becomes a raving and dangerous lunatic.

Nevertheless, despite his fears of the possible evil ends which technology might be made to serve, Verne never approached the depths of despair which drove Wells to write Mind at the End of its Tether. Science may become over-proud and may subdue, perhaps even destroy, mankind but in Verne's canon there is always an imminent, supernatural and non-scientific vengeance - the lightning flash which destroys Robur at the height of his conquests or the demon which tempts and chastens the proud Zaccharius.

It is apparent then, that although Verne's novels have always been regarded<sup>as</sup> masterly science-fiction, his attitude to technology was considerably naïve, and his work added little or nothing to that of the writers previously discussed, who struggled with the problems and meaning of the emerging technology in a machine age. His uncritical acceptance of technological innovations by-passed the need to justify the values of the machine age, for in his books

<sup>27</sup> Quoted by I.O. Evans, Jules Verne and his Work (London, 1965) p. 113

the inventions are simply superimposed on a basically romantic society where individual courage and initiative are still the norm, and the machine-age mentality, which so distressed his English contemporaries, is as remote from his work as from the traditional adventure story.

In England, however, consciously or unconsciously, the writers of the period still wrestled with the dichotomy. While fundamentally romantic and vitalistic in their approach to science, particularly the life sciences, they were, with the exception of Ruskin and Morris, not prepared to sacrifice, even in theory, the benefits of Victorian industrial progress by returning to a fully pastoral society. Although undoubtedly tempered by hedonistic considerations, their acceptance of a mechanised society was not entirely on materialist grounds. It was probably also influenced, perhaps unconsciously, by the correlation tacitly assumed in the Protestant ethic to exist between material progress and moral development. With the furore occasioned by The Origin of Species, this aspect of industrialism became increasingly important, for if man was not, by descent, but a little lower than the angels, then it was eminently desirable that he should be rapidly progressing towards that state. It was a comforting and easy extrapolation from the manifest strides which man was making in industry, in control over nature and in material prosperity, to a complacent belief that mankind in general, and the English middle class in particular, were making significant progress on all moral fronts as well.

The work of Rudyard Kipling, which is largely contemporary with that of Wells, presents an interesting example

of the lengths to which the justification of the machine could be taken. Justification had been thought necessary by earlier writers precisely because the machine represented values which were considered unnatural and opposed to organic rhythms. Yet Kipling not only endowed the machine with the acceptable quality of usefulness, as Carlyle had done; but even ascribed human qualities to it. In his early stories, published under the title The Day's Work (a title with a significantly Carlylean ring) he deliberately set out to create a literature of the machine age, of engineers and machinery, and like Carlyle, he distinguished technology itself and the men who practised it, from its theoretical basis, rationalism. 'The Bridge Builders' and 'The Brushwood Boy' stress the transcendental forces which underlie technical achievements and insist that the latter can be understood and explained only in relation to this spiritual world. Thus Kipling, like Carlyle, strove to harmonize vitalistic theory with mechanical fact by emphasising the partial nature of the latter and seeing it as the embodiment of spiritual forces rather than of deterministic laws. In 'Wireless' (1902) one of the characters is supposedly a reincarnation of Keats and receives spiritualistic messages on the radio. The Kiplingesque hero of the story is a radio experimenter, a technically competent man who is nevertheless aware of the limitations of technology; the 'villain' is the rationalist who refuses to accept the possibility of 'messages coming out of nowhere'. For Kipling the machine symbolised more than a neutral value. Edmund Wilson has shown how it came to represent for Kipling the positive virtue of emotional restraint which was central

to his scheme of values.<sup>28</sup> Kipling, therefore, created an entirely new genre, by personifying the machine as hero. The Ship that Found Herself (1895) is a thinly-veiled moral and psychological fable, while The Secret of the Machines celebrates the obedience of the machine to its immediate superior, the engineer. Ironically, as Kipling's machines became more human, his characters returned to the more mechanically orientated values - discipline, obedience, submission and self-sacrifice to the state become the cardinal virtues, whether in Her Majesty's frontier soldiers or in McAndrew, a Carlylean hero of the technological age embodying the older doctrine of work as a moral good. Sussman rightly concludes that Kipling's early adventure stories fail through inconsistency.<sup>29</sup> Although their subject is technology, their effect is to deny the influence of technical change, for literature of the machine which dwells on physical heroism had little relevance to the actual conditions of most machine workers in Kipling's time. Some few mechanized tasks require physical courage but most do not, and by emphasising the persistence of the heroic virtues, Kipling tacitly denies the psychological and social changes created by the machine and fails to describe the real effects of the machine on human sensibility. In his later work Kipling's thought has matured from this adventure story atmosphere which conveyed primarily a sense of the excitement of the mechanised world, to a fuller realization of the shattering effect which mechanization might have upon the mind of the worker. 'As Easy as A.B.C.' (1907)

<sup>28</sup> E. Wilson, The Wound and the Bow (New York, 1941) pp. 105-181

<sup>29</sup> H.L. Sussman. Victorians and the Machine (Harvard, 1968)

is an early expression of this theme, later developed more fully in 'With the Night Mail'. Here Kipling attempts to describe a totally mechanized society, and suggests a concomitant decay in psychic energy - a fin de siècle ennui pervading the whole of life. But it was only after the war that Kipling came to realize fully the detrimental psychological effects of the machine on society. At this juncture technology, in his thought, is reunited with a proudly mechanistic theory of science, and the two are condemned together. 'Unprofessional' (1930) is a fictionalised attack on the mechanistic assumptions of science, and the concluding verse explicitly propounds an organic model of the universe, in defiance of technology.

Ultimately Kipling came to see in the intuitive self the only safe-guard of the psyche in a technological era; he thereby returned full circle to a restatement of the romantic position. Thus although he seemed to many the literary spokesman of the technological era, and perhaps envisaged himself in this rôle, extending the language of fiction to express a broader subject matter, Kipling was fundamentally as opposed as his predecessors to a mechanistic view of the universe or of human nature, and like them he was unprepared to recognize fully the implications of technology for society. When he professed to celebrate the machine for its own sake, he was in fact presenting a distorted, even escapist view, a machine with human attributes divorced from the mechanistic philosophy which inspired its production. When he considered more realistically the social and moral implications of the machine, qua machine, he was forced to reject it as the Romantics before him had

done.

It becomes apparent then, that despite the profusion of images based on the machine in nineteenth-century literature, none of the authors we have so far considered, with the possible exception of Ruskin and Morris, were consistent in appraising the full significance of the relation between technology and the philosophy of science. It was only with the work of Wells that a more realistic assessment of their interrelation appeared in literature. For Wells, technology was a by-product of science, unimaginable on a large scale without the skilled scientific mind which produced it. Wells's scientists are not the untrained inventors whom Carlyle liked to imagine; they have been trained in scientific method, the philosophical basis of science. Wells thus stressed the close relationship between the technological benefits which few wished to repudiate, and that scientific rationalism which many rejected. If anything, he tended to weight the balance in the contrary direction, for although he sought to convey to his readers the excitement of scientific research and the honourable disinterestedness of pure science, particularly the necessity for rationalist thought, he was fully aware of the dangers of an ungoverned technology. His scientific romances never involve a machine-hero, as Kipling's do; the protagonist is always the scientist himself, and it is his personality alone which can humanise the machine's values, not any intrinsic quality of the machine itself.

Wells was, moreover, the first to see the real possibility of an aesthetic value in technology. Bulwer Lytton had cautiously suggested this possibility in The Coming Race

(1871) where the narrator is amazed by the agricultural machinery he encounters in the highly evolved underground society of Vril-ya:

Its forms were new to me and for the most part very graceful; for among these people art being so cultivated for the sake of mere utility exhibits itself in adorning or refining the shapes of useful objects. Precious metals and gems are so profuse among them that they are lavished on things devoted to purposes the most commonplace; and their love of utility leads them to beautify its tools.<sup>30</sup>

But Lytton made no effort to envisage what such a design might entail, being chiefly impressed, it seems, by the precious metals and gems, whereas Wells attempted to inspire engineers to a new concept of aesthetics in machine design which should be not less, but more practical.

There is nothing in machinery, there is nothing in embankments, and in railways and in iron bridges and engineering devices to oblige them to be ugly. Ugliness is a measure of imperfection. A thing of human making is for the most part ugly in proportion to the poverty of its constructive thought and to the failure of its producer fully to grasp the purpose of its being. Things made by mankind under modern conditions are ugly primarily because our social organization is ugly, because we live in an atmosphere of snatch and uncertainty and do everything in an underbred, strenuous manner. This is the misfortune of the machine, and not its fault.<sup>31</sup>

Besides this belief in the potential beauty of technology, Wells parted company from the Primitivists on other grounds as well, for, unlike Carlyle, who vindicated the machine by incorporating it into his doctrine of the intrinsic moral value of work, seeing it as an unflagging worker, which inspired and assisted the human workers beside it, Wells rejected utterly any suggestion of a moral value in physical

<sup>30</sup> E. Bulwer Lytton, The Coming Race (London, 1872) Chap. 18, p. 161

<sup>31</sup> H.G. Wells, A Modern Utopia, ch. 3, viii, pp. 99-100

work for its own sake. On the contrary, the chief virtue of the machine for him consisted in its ~~eliminating~~<sup>i</sup> manual labour and hence its freeing of the individual for the fuller development of more creative powers. Indeed it was partly for this reason that Wells despised the Primitivists and their laborious schemes for hand-work, for he realised that such tasks would leave little or no time for any other pursuits.

Yet Wells was by no means unaware or uncritical of the potential social evils of mechanization. The nineteenth century had feared the impact of the machine on the physical well-being of society - the threat of fewer available jobs, of subjection to the rapidly fluctuating supply and demand of a mechanized age, and hence the power of the capitalist over the worker, the dirt and grime of industrial towns and the blot they made upon the landscape; some pointed out also the moral degradation which appalling physical conditions could foster and accelerate;<sup>32</sup> but none foresaw the full extent of the threat which the twentieth century has witnessed to the inner life of the person. Wells however moves clearly from a nineteenth-century to a twentieth-century awareness in realizing that the machine could invade personal privacy to hitherto unimagined psychological depths. The 'babble machines' of When the Sleeper Wakes and the continuous subliminal advertising of 'A Story of the Days to Come' are the most obvious precursors of Brave New World, but Wells was also aware of the more subtle mental pressures exerted by a 'synthetic' way of life in which no food betrays its origin, where everything, even the air itself, is mass-processed and ori-

<sup>32</sup>e.g. C. Kingsley, Alton Locke (London, 1850); Health and Education (London, 1879); Sanitary and Social Essays (London, 1889)

ginality is virtually precluded from society.

c) The Aims of Science

Technology was clearly the aspect of science which most impinged on the consciousness of writers untrained in a scientific discipline and on their reading public. Thus it is scarcely surprising that until the latter half of the nineteenth century it was technology which received the major share of attention, both from its supporters and from the antagonists of scientific rationalism. Indeed there were few examples in English literature before Wells of a consideration of scientific theory as opposed to its technological products. Bacon's New Atlantis (1627), the first such treatment in English, will be discussed more fully below in the section on utopian literature, but mention may be made here of the 'House of Salomon' which embodies an idealized description of the general role of science in society. Bacon, as a natural scientist, believed implicitly in the progress of science and the regulation of human life by the scientific spirit. The 'House of Salomon' a college of natural philosophy, is an essential part of Bacon's utopian system, which was founded on the belief that technological productivity is the most important of sociological factors. The hierarchy of students who constitute the House are the real aristocracy of the island, dedicated to 'the study of the works and creatures of God.'<sup>3</sup> and to scientific research by experimental method. The elevated spirit of these citizens who practise a communism of knowledge is voiced by one of the inhabitants:

Thus, you see, we maintain a trade not for gold, silver or jewels, nor for silks, nor for spices, or any other commodity of matter; but only for

<sup>3</sup>F. Bacon, 'New Atlantis' pp. 119-214, Francis Bacon (Chicago, 1952) p. 210

God's first creature, which was light; to have light, I say, of the growth of all parts of the world.<sup>34</sup>

Bacon's immediate aim was to induce King James to found a Salomon's House in England, but James took no interest in the scheme. Nevertheless, soon after Bacon's death, the principle was in fact implemented in England with the founding of the Royal Society, which was acknowledged as being due to the prophetic scheme of 'Salomon's House' in the 'New Atlantis',<sup>35</sup> its early researches being, moreover, modelled on those described by Bacon.

Despite its noble conception, the Royal Society and its researches came to be ridiculed a century later by Swift, who considered them impractical and distracting. Gulliver visits Laputa, the flying island, and its neighbouring continent, Lagado, but finds the so-called wise men so involved in their speculations as to be incapable of coping with practical affairs. At Lagado he discovers the professors at the Academy of Projectors engaged in extracting sunshine from cucumbers and similarly absurd projects. Swift also hints at the potential evil resulting when human mechanical ingenuity is directed by folly and greed.

Whereas Bacon in the seventeenth century and Swift in the eighteenth had affirmed or denied the value of scientific investigation in its own right, the nineteenth century showed an increasing preoccupation with the vexed questions of free will and determinism, chance and design. None of the major English novelists of the period could avoid touching upon this problem, which had arisen, at least in part, from the

<sup>34</sup> *ibid.* p. 207

<sup>35</sup> J. Nichol, Francis Bacon, His Life and Philosophy (Edinburgh, 1888) Vol. II p. 236

growth of science and the corresponding vindication of scientific rationalism, and George Eliot wrestled with it in almost every novel. Few of these attempts were couched in scientific terms - some of the minor novelists were deliberately mystical, even obscurantist - but Bulwer Lytton provides an interesting exception in that, while affirming belief in a supernatural element, a wisdom beyond the understanding of science, he attempted to defend his views on scientific grounds. His interest in the Rosicrucians led him to consider the then-unexplained phenomenon of electricity, and to speculate upon what elixir, force or gas might constitute the 'vital principle'. Zanoni (1842) and A Strange Story (1862) are two of his attempts to introduce occult powers into the novel, not primarily, as in the Gothic novel, for their mysterious effects, but in a factual manner, as though he were carrying out a scientific investigation.

d) The Theory of Evolution

In the latter half of the nineteenth century the problem of scientific rationalism became inextricably linked with the major preoccupation of the period - the theory of evolution, for this, it was quickly realised, placed the life sciences on the same materialistic basis as physics. Any possibility of a divine principle acting in the scheme of creation was eliminated - except in the doubtful, though possible, rôle of a First Cause - by the over-riding emphasis on chance as the sole source of the variations upon which natural selection acted. To the average citizen this element of chance seemed even more alarming than the godless determinism of the physicists, who proclaimed irrevocable law and order throughout the inanimate world. Evolutionary

theory became a universal issue and inevitably produced its own crop of discussion novels. In these it was rarely treated per se, but increasingly allusion was made to it. Even before the work of Wallace and Darwin crystallized in the publication of The Origin of the Species Peacock had noted in Headlong Hall (1816) and Melincourt (1817) the vaguely formulated antecedents of the theory. The earlier novel is an Aristophanic comedy in which an ape with human attributes forms part of the discussion between an optimist, a pessimist and a 'status-quo-ite'. This theme is further developed in Melincourt with the appearance in society of Sir Oran Haut-ton, an orang-outang whom Mr. Sylvan Forester, a rich young philosopher, has educated to everything but speech and for whom he has bought a baronetcy and a seat in Parliament. Sir Oran (for whose conception Peacock was probably indebted to the eighteenth century work of Tyson on the comparative anatomy of the orang-outang and man<sup>36</sup>) has an amiable and chivalrous personality, and, like the noble savage of Rousseau's imagination, far exceeds in good nature his rivals for the hand of the heroine, Anthelia Melincourt.

Disraeli, a conservative in religion as in politics, repudiated the increasing popularity of evolutionary thought and in Tancred (1847) ridiculed the doctrines propounded in Chambers's Vestiges of the Natural History of Creation (1844). Nevertheless, by the early 1850's, discussion of evolution was widespread enough for Thackeray to make casual allusion to it in illustration of a second point in The Newcomes (1853-5).

How can I tell the feelings in a young lady's  
mind, the thoughts in a young gentleman's bosom?  
As Professor Owen or Professor Agassiz takes a  
fragment of a bone and builds an enormous, forgotten

monster out of it, wallowing in primaeval quagmires, tearing down leaves and branches of the plants that flourished thousands of years ago, and perhaps may be coal by this time - so the novelist puts this and that together... <sup>37</sup>

Charles Kingsley, who characteristically saw in science yet another proof of the love of God, sought to bridge the widening gulf between the biologists and the church. In Glaucus (1855), a natural history work, he treated explicitly the relation to theology of the so-called Transmutation or Development theory, the precursor of Darwinism. However, he introduced the issue into the novel only twice. In the feverish dream sequence of Alton Locke (1850) the delirious Alton, before coming to a spiritual rebirth, undergoes in his mind, like an embryo in the womb, all the developmental stages of pre-human evolution - the crab phase, the ostrich, the mylodon and the ape.<sup>38</sup> A similar but simplified progression occurs in Kingsley's Water Babies where Tom also proceeds up the evolutionary scale, working out the beast until he becomes perfected as a new species. Yet the same book also satirised what Kingsley considered the hairsplitting tactics of Huxley and Owen in the Hippocampus minor controversy.

By 1871, Bulwer Lytton was writing easily of the development of the Vril-ya, the 'coming race', by means of natural selection in the struggle for existence. The heroine, Zee, explains to the narrator:

Wherever goes on that early process in the history of civilization by which life is made a struggle, in which the individual has to put forth all his powers to compete with his fellow, we invariably find this result - viz., since in competition a vast number must perish, nature selects for preservation only the strongest specimens. <sup>39</sup>

<sup>37</sup> W.M. Thackeray, The Newcomes, (Boston, 1891) Vol. II, p. 340

<sup>38</sup> C. Kingsley, Alton Locke, chap. 36

<sup>39</sup> E. Bulwer Lytton, The Coming Race, Chapter 15, page II4

Yet Lytton's attitude is not unambiguous. As though in partial withdrawal from such endorsement, he later includes what seems to be a parody of evolutionary theory and its supporters. Aph-Lin, one of the Vrilya, explains:

In what we call the Wrangling or Philosophical period of History, which was at its height about seven thousand years ago, there was a very distinguished naturalist, who proved to the satisfaction of numerous disciples such analogical and anatomical agreements in structure between an An [i.e. a man] and a Frog as to show that out of the one must have developed the other. They had some diseases in common, they were both subject to the same parasitical worms in the intestines; and, strange to say, the An has in his structure a swimming bladder, no longer of any use to him, but which is a rudiment that clearly proves his descent from a Frog...In the Wrangling Period of History, whatever one sage asserted, another sage was sure to contradict...and therefore another sect of philosophers maintained the doctrine that the An was not the descendant of the Frog, but that the Frog was clearly the improved development of the An. <sup>40</sup>

Moreover, in Kenelm Chillingly published two years later the protagonist, who is clearly Lytton's spokesman in criticism of society, explicitly denies any relationship between man and the beasts.

After the first immediate shock of the claim to kinship with the lower forms of life, the aspect of evolutionary thought which most disturbed thoughtful people was the emphasis on the rôle of chance in the process. Tennyson grappled with the problem throughout In Memoriam:

Are God and Nature then at strife  
That nature lends such evil dreams?  
So careful of the type she seems,  
So careless of the single life;

That I, considering everywhere  
Her secret meaning in her deeds,  
And finding that of fifty seeds  
She often brings but one to bear,... <sup>41</sup>

<sup>40</sup> ibid, Chapter 16, pp. 133-4

<sup>41</sup> Alfred, Lord Tennyson, In Memoriam, lv.

and Hardy's determinism which pervades all his novels, was a philosophy derived largely from his too-hasty conclusions about an apparently ruthless, even malevolent, natural process. Evolutionary theory as such, however, becomes explicit only once in Hardy's novels. In A Pair of Blue Eyes, Henry Knight, hanging precariously over a cliff, reviews in imagination the whole evolutionary sweep of development and derives therefrom a pessimistic view of man's continuing similarities to the primitive ancestral Trilobite.<sup>42</sup>

Perhaps the strongest opposition to the idea of chance and accident in the developmental scheme is to be found in the writings of Samuel Butler. We have already discussed Butler's concept of machines as a consciously evolved supplement to man's intellect and sense of need, and his belief that the same sense of need underlay all adaptations observable in evolutionary development. This, of course, is in direct opposition to the Darwinian emphasis on 'chance variations'. In Luck or Cunning? Butler frankly aligned himself with Lamarck against Weissmann and the other neo-Darwinians, proclaiming himself the champion of the teleological theory of evolution against the mechanistic principles of the ultra-Darwinians. But he later went beyond Lamarck's principles to maintain that unconsciously or instinctively performed actions must arise from our memory of having done them before, and that therefore each of us actually is in a sense part of

<sup>42</sup> T. Hardy, A Pair of Blue Eyes (London, 1960) Chapter 22.

the primordial cell which never died or dies, but has differentiated itself into the life of the world, all living beings whatever being one with it, and members one of another.<sup>43</sup>

An essential feature of the evolutionary process as Butler sees it is an inner self, continuous with the 'Race Memory', which plays a vital part in guiding each individual through the maze of situations and conflicting sociological patterns encountered during development. It is this 'race memory' which Butler intends by the unconscious or sub-conscious voice of Ernest in The Way of All Flesh:

...That other Ernest that dwelt within him and was so much stronger and more real than the Ernest of which he was conscious. The dumb Ernest persuaded with inarticulate feelings too swift and sure to be translated into such debatable things as words, but practically insisted as follows: '...Obey me, your true self, and things will go tolerably well with you, but only listen to that outward and visible old husk of yours, which is called your father, and I will rend you in pieces even unto the third and fourth generation, as one who has hated God; for I, Ernest, am the God who made you.'<sup>44</sup>

This directing force, encountered as the unconscious self of each individual, came to have a mystical, if not theological significance for Butler, but, unlike Paley, he envisaged it as acting within the whole process, rather than as the supernatural managing director of the teleologists' system. Butler's force is the process itself:

a living tangible person...who did of his own cunning, after infinite proof of every kind, hazard and experiment, scheme out and fashion each organ of the body.<sup>45</sup>

<sup>43</sup>. S. Butler, The Way of All Flesh (New York, 1965) Chap. 31 pp. 128-9. Butler's thesis rests upon two basic propositions: firstly that an action performed consciously represents an imperfect mastery of that action by the individual, and secondly that the individual can remember only those things that he has performed or experienced in his own person.

<sup>44</sup>. S. Butler, ibid. pp. 128-9

<sup>45</sup>. S. Butler, Evolution Old and New (London, 1923) p. 298

The Way of All Flesh is, in fact, a dramatization of Butler's scientific and moral ideas. The four generations of Pontifexes form a segment of the evolutionary line and are intended to demonstrate how the evolutionary process follows a general course which, despite lapses and regressions, proceeds towards a 'higher' kind of life overall. Moreover, this process is shown to involve the identity of memory and heredity, the transmission of acquired characters, the essential unity of life, and the absence of any complete break between the generations. Overton, a largely Butlerian figure in the novel, affirms this continuity of the generations on several occasions, as here (my italics):

Accidents which happen to a man before he is born in the persons of his ancestors will, if he remembers them at all, leave an indelible impression on him; they will have moulded his character so that, do what he will, it is hardly possible for him to escape their consequences. If a man is to enter into the Kingdom of Heaven he must do so not only as a little child, but as a little embryo, or rather as a little zoosperm - and not only this but as one that has come of zoosperms that have entered into the Kingdom of Heaven before him for many generations. Accidents which...belong to the period since a man's last birth are not, as a general rule, so permanent in their effects. <sup>46</sup>

The Way of All Flesh is the first English novel where a biological theory is actually embodied in the story, and not merely appended as a discussion between the characters (it is significant that Luck or Cunning? was written contemporaneously with the first part of The Way of All Flesh, the novel being virtually an illustration of the former treatise). Despite minor inconsistencies in the working out of his theory in the interests of plot, and in places a certain, perhaps inevitable, sacrifice of characterization to didacticism, The Way of All Flesh remains the most vivid and sustained

<sup>46</sup> The Way of All Flesh, Chapter 63, p. 270

dramatization of a scientific theory in the novel until the work of Aldous Huxley, three decades later.

Besides the novels of Butler which dealt with the theory of evolution itself, there appeared also a flood of novels concerned with the effect of evolutionary theory on the lives, and particularly on the religious sensibilities, of contemporary characters. Mrs. Humphry Ward's sensitive study, Robert Elsmere (1888) in which the protagonist finds himself unable to reconcile an academic appraisal of history and of evolution with formal religious teaching, proved instantly popular and formed the model for many other novels arising from the conflict of science with religious orthodoxy. It also evoked counter attacks from, among others, Marie Corelli, whose Ardath (1889) and The Mighty Atom (1896) both mocked and thundered against the new science.

Nevertheless, the last decades of the nineteenth century saw an unspoken agreement between the scientists and the clerics to let the conflict lie in abeyance. Many religious leaders believed that a compromise had been reached, whereas most scientists and an increasing number of laymen merely concluded that science had won the day, thus obviating the need for further discussion. Whatever the reason for the silence, it led to the collapse of a dramatic and fruitful theme in the novel - the Sturm und Drang of a mind forced to choose between the traditional views of orthodox religion and the radical postulates of science. The novel of spiritual conflict arising from scientific theories almost disappeared for some decades, the last and probably the most powerful being Edmund Gosse's sensitive autobiographical account of his own conflict with his father in Father and

Son. (1907)

The Education Act of 1870 and particularly the growth of adult education groups, also issued in a great demand for books and lectures to popularize and make accessible and interesting to the lay public the results of scientific research and speculation. If public lectures and the publications of learned societies fulfilled part of this craving for knowledge they by no means extinguished the natural human desire for a story. Science, whether genuine or counterfeit, became a new ingredient in the mixture, which ranged from the 'shilling shockers' - pseudo-scientific horror tales - to the disciplined and strictly accurate novels of Wells.<sup>47</sup> Henkin, in his detailed study of Darwinism in the novel, distinguished three sub-groups within the evolutionary romance: the anthropological romance, the romance of eccentric and aberrant evolution and the romance of the future.<sup>48</sup>

The first of these, the anthropological romance, developed from the eighteenth-century concept of the 'noble savage' extended to incorporate the idea of a 'missing link', not fossilized, but living. J. Compton Rickett's The Quickening of Caliban (1893) and J. Provand Webster's The Oracle of Baal (1896) betray their ancestry - the wonder-tale

<sup>47</sup> One of the few qualified popularisers of science in this period was Grant Allen, who had been a biology teacher before turning to novel writing, but he was never successful in combining the two and his work falls into two distinct categories - popular scientific work and social novels.

<sup>48</sup> L. Henkin, Darwinism in the English Novel, 1860 - 1910 (New York) 1963) Chapter 9.

on which scientific terms have been loosely grafted. This group also includes Henry Curwen's Zit and Xoe (1887), almost a parody of evolution in its efforts to picture the process in a vastly accelerated form. By contrast, the sophistication and finesse of Wells's 'Story of the Stone Age' (1899) which presents imaginatively one crucial period in the evolution of man, the invention of the flint-headed axe, judges these earlier attempts and shows the immense improvement which could be gained by greater attention to scientific probability in creating a sense of immediacy and actuality.

In the second group, the products of an aberrant evolution, there appeared the more scientifically respectable off-spring of the Calibans, the Anthropophagi and the Brobdingnagians of earlier fantasies. Henceforth such monstrous beings were not merely 'discovered' without explanation, but were seen as the result of adaptation to a strange environment or, later, as the science of genetics became popular knowledge, as mutants, though this latter 'explanation' often proved merely a facile excuse for describing improbable biological freaks.

One of the first of these attempts was Mary Shelley's Frankenstein (1818) which might perhaps have been classified as merely a Gothic horror tale, had not its author insisted in the preface that it should be regarded as scientifically possible, and described how it was inspired by a discussion between Shelley and Byron on the biological researches of Erasmus Darwin.

The event on which this fiction is founded, has been supposed, by Dr. Darwin, and some of the physiological writers of Germany as not of impossible occurrence. I shall not be supposed

as according the remotest degree of serious faith to such an imagination; yet, in assuming it as the basis of a work of fancy, I have not considered myself as merely weaving a series of supernatural terrors.<sup>49</sup>

and again:

They [Byron and Shelley] talked of the experiments of Dr. Darwin (I speak not of what the Doctor really did, or said that he did, but, as more to my purpose, of what was then spoken of as having been done by him) who preserved a piece of vermicelli in a glass case, till, by some extraordinary means, it began to move with voluntary motion. Not thus, after all, would life be given. Perhaps a corpse would be re-animated; galvanism had given token of such things; perhaps the component parts of a creature might be manufactured, brought together and endued with vital warmth.<sup>50</sup>

Frankenstein's monster is not simply brutal and depraved, but has elements of the 'noble savage' of previous literature. As originally created, it possesses natural goodness and a blank mind, but its nature becomes soured by the revulsion which its physical form evokes. It pleads with Frankenstein:

Remember that I am thy creature; I ought to be thy Adam; but I am rather the fallen angel, whom thou drivest from joy for no misdeed. Every where I see bliss from which I alone am irrevocably excluded. I was benevolent and good; misery made me a fiend. Make me happy and I shall again be virtuous.<sup>51</sup>

One of the first attempts to envisage creatures who had evolved in a totally different environment was R.E. Dudgeon's Colymbia (1873) which describes a subterranean offshoot of

<sup>49</sup> M. Shelley, Frankenstein, Preface to the 1818 edition.

<sup>50</sup> ibid. Introduction to the 1831 edition, p. 9

<sup>51</sup> M. Shelley, Frankenstein (London, 1969) Chapter X, p. 100

humanity, but the author's limitations in scientific background and literary ability become apparent as soon as the novel is compared with Wells's 'In the Abyss' (1897) where the traits of the submarine creatures are shown as directly related to the environment of their evolutionary development.

With the publication of Darwin's Descent of Man (1871), and the overt discussion of man's own evolution which had at first been regarded as an heretical suggestion, writers began to speculate as to the direction in which the man of the future might evolve. Early novels of this type were naïvely optimistic, predicting a race of physical supermen characterized by a highly developed intellect and moral sense. One of the most influential of these was Bulwer Lytton's The Coming Race (1871), which attempted to reconcile scientific thought with a belief in the existence of occult forces undetected by experimental means, and advocated that natural science should concern itself with psychic phenomena. His future race is highly developed intellectually and emotionally self-controlled, so that sorrow, passion, poverty and crime are unknown. As a result of their superior intelligence (the Vril-ya represent a race seven thousand years in advance of nineteenth-century man) they have gained control over vril, an allpervading force which the narrator attempts to describe thus:

I should call it electricity except that it comprehends in its manifold branches other forces of nature, to which, in our scientific nomenclature, different names are assigned, such as magnetism, galvanism, etc. These people consider that in vril they have arrived at the unity in natural energetic agencies.<sup>52</sup>

<sup>52</sup> E. Bulwer Lytton, The Coming Race (London, 1872) chapter 7, p.

Vril can be used to influence weather, temperature, and the minds and bodies of animal and vegetable organisms, as well as constituting a purely physical force of destruction, but the wise and moral Vril-ya invariably use their power responsibly for the public good.

By 1863 Thomas Henry Huxley had begun to point out that evolution followed no moral laws, that the cosmic process would not necessarily produce beings who were morally, mentally or even physically superior by our current standards, and gradually the early optimistic predictions in the novel became tempered with more pessimistic warnings of a future race of degenerates. Erewhon was one of the first of these pictures of a race decadent by contemporary standards and set a pattern for most which followed. Butler had immediately realised the satirical potential which the genre offered for criticism of current theories but the opportunity of pointing out the evil tendencies in contemporary society by portraying the physically regressive or morally degenerate offspring it might foster was but poorly realised before Wells, whose 'Time Machine' was the first of his series of such representations. There are no adequate literary precursors of Wells's Eloi and Morlocks, or his creatures of the abyss. Verne's Amiens in the Year 2000 A.D. (1875) was concerned almost wholly with technological development - electric street-lighting, the suckling machines, the social organization under which doctors are paid only by healthy patients and bachelors taxed severely. Verne's silence on the possibility of any but technological evolution was not accidental. As a devout Roman Catholic and a loyal Frenchman (whose sympathies, it

may be assumed, were closer to Lamarck than to Darwin) he made an eclectic use of anthropological and geographical discoveries, but refrained from committing himself in biological controversy. In The Eternal Adam (1910) he adopted Cuvier's doctrine of catastrophes (which had been proposed in support of the fixity of species) in order to deride belief in unlimited progress. He does posit a transformation of species to the extent that seaweeds are said to adapt themselves to life on the barren rock of Atlantis, and, in time, to give rise to new plant life, but there is no suggestion that Verne would have extended this idea of plant adaptation to the animal kingdom. Indeed a key sentence which might be thought to lead towards the expression of such a view is abruptly cut off for no apparent reason:

Along the watercourse we can see the former marine animals, mostly molluscs, and crustaceans, in the process of becoming terrestrial. The air is furrowed by flying-fish, birds rather than fish, their wings having enlarged beyond all reason and their incurved tails allowing them to... <sup>53</sup>

In Journey to the Centre of the Earth, Verne accepted the current view of geological epochs but still attempted to reconcile them with Genesis by equating the 'days' with epochs. He speaks of 'the ladder of animal life on which man occupies the highest rung'. <sup>54</sup> This concept of a scala naturae, representing discrete steps in development, had been invalidated by Darwin's researches but Verne was not prepared to accept the alternative belief in a continuum of life. Indeed he

<sup>53</sup> Quoted by I.O. Evans, op. cit. p. 170

<sup>54</sup> J. Verne, Journey to the Centre of the Earth (Harmondsworth 1970) Chapter 20, p. 121

explicitly dissociated himself from Darwin's Descent of Man.<sup>55</sup>

When laymen began to realize more fully the enormous tracts of time necessary for evolutionary changes to occur, speculations about man's future development had to be set so far ahead in time as to lose much of their appeal. The desire for immediacy, even in a theme such as this, led many writers to transfer the more highly developed creatures of their evolutionary imagination to other planets, bringing them into contact with contemporary humanity by space journeys, either as explorations or invasions.

Realisation that the inhabitants of other planets would probably not be like men had come even before Darwin's work. The anonymous Fantastical Excursion into the Planets (1839) presupposed that the size, gravity, climate and differences in the length of days and years must indicate a corresponding variety in life forms, but before Wells's work, literary efforts to populate other planets produced only grotesque offspring of the eighteenth-century horror-tale, making little or no attempt to explain the imagined creatures in evolutionary terms, or to envisage non-terrestrial evolution. Percy Greg's Across the Zodiac (1885) had featured Martians, pictured as a future race of men, physically human but spiritually decadent, while George du Maurier's novel, The Martian (1896) combined elements of Gothic supernaturalism with touches of modern science. Man's equivalent on Mars

<sup>55</sup> In an interview in 1901 Verne spoke of his book, The Great Forest which was based on attempts made by an American scientist, Garnier, to learn the language of the apes: 'I try to recreate the race intermediate between the most perfect of monkeys and the least perfect men... but I am far from arriving at the conclusions of Darwin whose ideas I do not in the least share.' Quoted by C. Lemire, Jules Verne 1892-1905 (Paris, 1908) p. 102.

is described by du Maurier as amphibious because descended not from apes but from an animal similar to the seal or sealion, and as having, through countless incarnations, acquired a highly developed moral sense as well as the ability to practise thought-transfer. Du Maurier's ideas, although interesting, are not worked out in any great detail, for the author's chief concern is the human drama on which Martia, a Martian spirit, intrudes at critical points, as adviser to the real protagonist, Barty.

Wells's <sup>The</sup> War of the Worlds constituted the first really successful attempt to imagine an entirely alien form of life which should accord with biological theory and represent a possible future development of man. The simple principles underlying the concept of his Martians - viz. that they should exhibit in highly developed form the two traits which had been largely responsible for man's ascendancy, his intellect and his manipulative hand, while most other attributes are shown as atrophied through disuse - were largely responsible for the shock and the revulsion they evoked in readers. Wells continually pointed the evolutionary moral, not only in his description of the Martians themselves, but equally in their temporary supremacy over mankind and their final extinction on earth. In one sense Wells's Martians may be seen as an extension of Butler's 'machines as limbs', but Wells did what Butler with his wholly theoretical interest could not - translate an abstract idea into the concrete and visible reality of imaginative fiction.

#### B. Utopian Literature

We have seen that conjectures about man's future

development contained a potentially satiric element. This was even more pronounced when the social mores of this future world were imagined, although, as with evolutionary descriptions, the first attempts were not satirical, but formed a strand of the Utopian literature dating from Plato's Republic. Because the Utopian tradition in literature was one of the oldest, Wells had more ideas to build on in this field than in any other genre he chose to exploit, and it will therefore be profitable to discuss some of the ideas which his predecessors had developed. Wells explicitly acknowledged a debt to Plato and to Bacon,<sup>56</sup> but it is easy to underestimate their influence on his ideas and to forget that many of the apparently innovatory ideas of When the Sleeper Wakes, A Modern Utopia, and Men Like Gods had been worked out in considerable detail, though in a different setting, by Plato, More, Bacon and Campanella.

Plato, believing that the most important concept in his own society was justice, described a society in which the whole social hierarchy functioned on this principle, free from the corruption of extreme licence and tyranny, and embodied in its laws and institutions the fundamental unity of the moral individual with a socialist state. Plato's ideal Commonwealth is a city state, which, if dispute should arise, is to be regarded as supreme over the individual's will, because it alone is considered indispensable. Within the state are three classes of citizens who perform different functions:

(a) the teaching and ruling class, chosen for their wisdom,

<sup>56</sup>H.G. Wells, Experiment in Autobiography, Chapter 9, ii, p. 658; Chapter 9, vii., p. 730.

the labour for truth, (b) the warrior class or 'guardians', whose virtue is valour and who maintain order, both within the State and between neighbouring states and (c) the working class, whose virtues are self-restraint and obedience, and who comprise the slaves, farmers, artisans and traders of the community. For Plato the state is so important that all individual pursuits which might conflict with its interests are forbidden - private property, domestic life, education and instruction, and the choice of rank and profession are all under state control. Health is a major preoccupation, and marital arrangements are directed almost solely towards the improvement of the race and state. As the family unit is considered a natural enemy of the state, children are removed from their parents and brought up communally, (though Plato later realised the dangers of this and in Book V of The Laws renounced the communism of women and children).

Thomas More, writing from within a Christian framework, took as his first principles the 'natural virtues' justice, temperance, fortitude and prudence, and his Utopia (1516) is described accordingly, the influence of Plato being tempered by that of Augustine's Civitas Dei. Whereas The Republic had been conceived as beyond realization (Plato himself said that 'perhaps it is laid up as a pattern in heaven, where those who wish can see it and found it in their own hearts')<sup>57</sup> More's Utopian is a deliberate effort to show how the evils of his own society might be brought under control, and England become an ideal community. More's first assumption, consistent with both Platonic theory and early Christian practice, is the

<sup>57</sup>Plato The Republic, Book 9, Conclusion, p. 369

community of property and the abolition of class distinctions. Money is thereby rendered redundant, dress is simple and all labour is for the common good. Meals are taken communally, not within the family group, becoming occasions for education and for cultural exchange. All political power is vested in a single person, reminiscent of the Tudor absolute monarch, but so far from a system of divine right, there is a democratic process whereby the Syphogrants, representatives of the people, elect the Prince. He must rule only for the people, and all decisions relating to the public good must be debated for several days in the council.

Like Plato, More does not propose social equality so much as equal social opportunity for all. It is not his birth, but his individual gifts, which determine a man's place in society. As in The Republic, More's Utopian government exerts extensive control over the details of everyday life, but families are state-controlled, rather than abolished, as in Plato's scheme. Health is of considerable importance, and no marriage may be consummated until the health of both parties is assured. More also introduces several important education factors: education is universal, practical in content, and extends throughout life. City-dwellers take their turn in the country to learn agriculture and 'so commit no errors which might otherwise be fatal and bring them under a scarcity of corn'.<sup>58</sup> To ensure a widespread education for all, More estimates the energy resources of his community and calculates that if each member works six hours per day, this will be sufficient

<sup>58</sup> T. More, Utopia in Morley edition of Ideal Commonwealths (London, 1893) p. 91

for the communal needs so that the rest of the day may be spent by all in creative leisure and educational activities. The pursuit of scientific theory is regarded as part of their religion, since it is considered to be a means of seeking for the truth. This concept was to play an important rôle in Wells's social theory where it seems to have been regarded by many critics as a Wellsian innovation.

Both Plato and More proposed models of social and political theory which concentrated on man's moral and intellectual development. Bacon, on the other hand, was the first to assume that technological progress was the most important social factor and to base his New Atlantis (1626) on apparently materialistic principles. His proposed social mores were derived largely from productivity requirements for he held that nothing was impossible to man if he held the key to nature's secrets. We have seen in the previous section that Bacon's book was not merely a catalogue of technological achievements but dealt also with the philosophy of science, for Bacon believed firmly in the regulation of human life by the scientific spirit.

In Bacon's scheme, as in Plato's and More's, the end of government is the welfare of the people, and the King rules only because of his ability. Unlike Plato, however, Bacon glorifies the family as the unit of society which celebrates a special ceremony, the Feast of the Family, held in honour of him whose family numbers at least thirty living members over three years old. Thus, in the New Atlantis there are no communal tables, only the family unit gathered around its private board, for Bacon saw strong family ties as the best means of ensuring healthy intelligent children for the State.

It is in this cause that Bacon, like More, also gropes towards the eugenic ideal in the selection of marriage partners.

Bacon's chief innovation is, however, the

college called Salomon's House - the noblest foundation that ever was upon the earth, and the lantern of this Kingdom....the end of our foundation is the knowledge of the causes and the secret motion of things and the enlarging of the bounds of human empire, to the effecting of all things possible.<sup>59</sup>

As a Renaissance scholar, Bacon believed that the systematic use of knowledge and the consequent control of nature would elevate human society, not only intellectually, but materially and morally as well, for he saw ignorance as the source of all social evils and of most human suffering. Twelve scholars are sent abroad each year to study the affairs and science of other countries, and return to collate their findings with the existing body of information to which all have access. In this, Bacon envisaged an idea which was to become central to Wells's sociological thought, the institution of a 'world brain', where knowledge from all sources would be analysed, codified and made freely available to all.

Campanella's City of the Sun (1623) also describes a city-state with a despotic prince, a priest, Hoh or Metaphysicus, who is the supreme head of both temporal and spiritual matters, and he too is elected by the people from among those considered competent to rule because of their intellectual ability.

Like Plato, Campanella was vigorously opposed to a close-

<sup>59</sup>F. Bacon, op. cit., p. 210

knit family unit lest it interfere with the power of the state over the individual, and he not only forbids private property and money, but advocates that women and children be regarded as belonging to the whole society. The citizens live in communal dwellings, sleep in dormitories and eat in public dining rooms, a way of life, which has come, in the twentieth century, to represent the worst type of anti-utopia.

Although it is unlikely that he knew More's work, Campanella proposed a similar system of labour division under which each citizen would work for four hours per day, thus leaving everyone time for leisure and education, and obviating the need for slaves. Labour, indeed, becomes a new type of prestige, and a new *élite*, an aristocracy of labour, arises.

For Campanella, too, eugenics is a primary consideration in the selection of marital partners, who are chosen by the magistrates, for the state is permitted complete domination over the individual in order to eliminate selfish egoism. Certainly Wells was aware of Campanella's system of eugenics, since he refers to it as a possibility in The Research Magnificent.<sup>60</sup>

It is apparent that all these early Utopian writers championed the good of the state over that of the individual whose privacy, property and personal emotions were therefore sacrificed in varying degrees. If they appear less frightening to us than the anti-utopias of the twentieth century it is only because they are not dramatized within a recognizably contemporary society; indeed it is interesting to note that many of the allegedly Utopian principles already

<sup>60</sup> H.G. Wells, The Research Magnificent, chap. 5, xxi, p. 223

mentioned loom large in twentieth-century writing as the mark of tyranny and anti-utopia.

A more fictional approach to utopian thought was pioneered by Baron Holberg in whose Journey to the World Underground (1742) Nicholas Klimius travels to the centre of the earth and finds there another solar system. One of its planets, Nazar, supports a race of people whose conventions are an inverted form of those on earth, while on another planet, Mutak, the sick are gaoled as social criminals, criminals by earthly standards being treated for illness - a situation which Butler was later to exploit for the purpose of social satire in Erewhon.

The first half of the nineteenth century saw a large number of actual utopian experiments, many of which emanated from the desire to escape the spread of industrialism. America seemed particularly hospitable to those who instigated expeditions thither to found a rural, pre-industrial settlement on the lines suggested by the writings of Emerson, Thoreau and Ruskin, and Wells himself refers explicitly to the Oneida community, founded in 1848.<sup>61</sup>

The new stress on individualism in the nineteenth century had also inspired the Utopian socialist movements. Deriving their views in part from Bentham, they held that the object of society was not to subdue the individual, as previous utopians had assumed, but rather to ensure the maximum happiness for each of its members. Saint-Simon, Fourier, Cabet, Louis Blanc and Robert Owen all sought in varying ways to free humanity from the tyranny of governments, and like the French philosophes of the eighteenth

<sup>61</sup>H.G. Wells, Experiment in Autobiography, chapter 7, v, p. 469

century, sought the kingdom of reason as the necessary preliminary to justice. Like Bacon, all believed that, given a favourable environment, man would virtually attain perfection, and hence their utopian schemes depended chiefly on plans to educate their fellows to understand and foster this proper environment. Despite their emphasis on the autonomy of the individual, however, they still retained from the earlier writers the idea of the socialization of property and of the means of production, and they still described their ideal as being realized only in some distant 'nowhere', with few practical suggestions as to how it might actually be established given the current imperfect reality.

There were, however, two factors which increasingly militated against the idea of a static perfection. The first was the spread and popularization of the Hegelian philosophy of history which inspired some hope of accomplishing social ideals hitherto regarded as impossibly remote. There was a new stress on the development of efficient and opportunistic tactics whereby the ideal of perfection might become implemented in the foreseeable future. All modern writers have been influenced, whether consciously or unconsciously, by this outlook, and hence their works differ fundamentally from the early utopias. The later works have a sense of anticipation; they stress continuity with the present by showing men as they are rather than as idealised characters, and by emphasizing possible causal links between the present and the future, or, within the frame of reference of the utopian characters, between their present and their past history.

Usually the utopians are portrayed as being more highly developed socially than nineteenth century man, and reminisce about crucial points in their history which have led to the new system.

The other formative influence on the new trend in utopian thought came from evolutionary theory, which gave a new impetus to the reformers by suggesting, albeit obliquely and perhaps erroneously, that society also might be evolving towards a more perfect state. Once this critical line of approach was embarked upon, it was inevitable that it should lead to what are now virtually ecological questions: What will be the social consequences of a change in human nature? How would a society without animal instincts, 'the ape and the tiger' of Huxley's much-quoted phrase, survive or develop? Would all incentive cease with the decreasing need for struggle and competition? Would the heights of human experience and the themes of art and literature vanish if man were released from the need for sublimation and self-control? Or would man, bereft of his aggressive social instincts, become effete and eventually doomed to extinction in the evolutionary panorama?

Of these complementary hopes and fears, the first two representatives of significant literary merit are Lytton's The Coming Race and Butler's Erewhon. Between them they formed the basis for virtually all utopian and anti-utopian literature in the latter half of the nineteenth century and much of the twentieth.

We have already mentioned Lytton's future race of men, the sub-terranean Ana, amongst whom the Vrilya form an aristocracy by reason of their superior control over nature,

using vril. Through its agency they have tamed their environment, abolished physical toil and poverty and hence all political struggles arising from inequality between citizens. They have indeed attained to their own ideal of civilisation, which one of them defines as 'the art of diffusing throughout a community the tranquil happiness which belongs to a virtuous and well-ordered household'.<sup>62</sup> Yet despite his highly-evolved characters, Lytton failed to make his utopia very inviting to his readers, or even, it seems, to himself. Basically this is because he was unable to envisage any but a static perfection. He drew schematic links between his own society and that of his future beings but, like almost all writers before Wells, failed to realize fully the essentially dynamic quality of life or to see that any apparent evolutionary goal can be only a stage towards a further development.

The Ana of the community are, on the whole, an indolent set of beings after the active age of childhood. Whether by temperament or philosophy, they rank repose among the chief blessings of life. Indeed, when you take away from a human being the incentives to action which are found in cupidity or ambition, it seems to me no wonder that he rests quiet.<sup>63</sup>

Lytton makes his utopia even less interesting for his readers by insisting that it be a wholly rational society in which scientific invention is highly developed and social evils unknown, but where the arts are held in disrepute. It is explained that this is not an arbitrary prejudice, but an inevitable result of their social system, for its perpetual

<sup>62</sup>E. Bulwer Lytton, op. cit. Chapter 7, p. 41

<sup>63</sup>ibid, Chapter 15, p. 109

harmony automatically precludes those topics which formerly provided the chief source of literary inspiration: - political theories are redundant since the perfect system has been found; speculation on the nature of the All-Good and a state after death are regarded as futile and foolish; the history of wars and revolutions is finished for

We have no events to chronicle. What more of us can be said than that 'they were born they were happy, they died'?<sup>64</sup>

Poetry depicting the passions of ambition, vengeance, illicit love, desire for war-like fame or the character which perpetrates vices and crimes, has become unreal, since such passions are now unknown; this leaves only the poetry of description, considered an insipid subject unworthy of the time necessary to polish words and rhymes into 'verbal or artificial prettiness'.<sup>65</sup>

It is scarcely surprising then that the American visitor who describes this utopia, though fascinated at first, is only too ready to return home to an imperfect and less uniform society:

The virtuous and peaceful life of the people which, while new to me had seemed so holy a contrast to the contentions, the vices, the passions of the upper world, now began to oppress me with a sense of dullness and monotony....I began to feel that whatever our dreams of perfectability, our restless aspirations towards a better and higher and calmer sphere of being, we, the mortals of the upper world are not trained or fitted to enjoy for long the very happiness of which we dream or to which we aspire.<sup>66</sup>

Lytton had followed More and Bacon in projecting forward and magnifying the current ideal of human virtue until such

<sup>64</sup> *ibid*, Chapter 17, p. 149

<sup>65</sup> *ibid*, Chapter 17, p. 150

<sup>66</sup> *ibid*, Chapter 26, pp. 251-2

a character became the universal norm, but by the nineteenth century this procedure proved disastrous for the acceptability of his book, since by Lytton's time there was no longer any universal consensus, even in theory, as to what constituted the human ideal. Moreover, current interpretations of evolutionary theory, developed in the extreme form by Nietzsche, had replaced the ideal of Christian altruism with that of a less benevolent and more forward-looking imperialism as the spearhead of human evolution, and the tendency in later utopian novels has been, increasingly, to describe the development of the Nietzschean superman.

Butler's Erewhon (1872) also describes a static society but disputes many of the assumptions of The Coming Race. Unlike Lytton, Butler foresaw that future development would be along the path of technology, and he accordingly despised Ruskin and the Primitivists<sup>67</sup>; but instead of expecting a plethora of social benefits from this scientifically-advanced society, he envisaged a concomitant physical atrophy in men, who would become so dependent upon their machinery that the latter might be said to have superseded their masters on the evolutionary scale, reducing them, functionally, to mere slaves tending their machines. Realising this, the Erewhonians are moved to destroy, while there is yet time, all mechanical contrivances except the very simplest. Thus the novel represents a partial return to the pastoral conventions of the Romantic escapist utopias, for the Erewhonian situation before the destruction of the machines is fully

<sup>67</sup>The 'prophet' in Erewhon, Chapters 26-7, is a recognisable portrait of Ruskin.

intended, beneath the mocking tone, as a warning against the physical, and perhaps mental atrophy, which Butler considered a real danger to the future of humanity.

Edward Maitland's By and By, a Historical Romance of the Future (1873), published the same year as Erewhon, was apparently written as an answer to the dreary uniformity of The Coming Race, for it postulates a future civilisation in which individuals have, through the same steps as the Vrili-ya, developed a wide and varied range of personality with a corresponding enrichment to society. In the Preface to the 1875 edition, Maitland claims that his novel belongs:

Both by character and purpose to a category wholly distinct from any to which they [The Coming Race and Erewhon] can be assigned. For while in the first place they do not pretend to describe a probable, or even possible state of society, By and By contemplates a condition of things ~~early~~ imaginable and resulting from the natural development of existing tendencies in knowledge and thought; and in the second place while they offer nothing that can serve as suggestion or caution for use in the future, By and By indicates the direction and spirit in which society must develop if it would arrive at certain results.<sup>68</sup>

To this extent Maitland dimly foresaw the kinetic utopia which Wells was later to develop fully, but there were few if any intermediaries. Most writers continued to equate a rational harmonious society with stagnation of the individual and ultimately, with the extinction of the species. In 1886, W.H. Hudson depicted a future society whose psychological and moral evolution was similar to that of Lytton's Coming Race, but in the preface to the second edition of

<sup>68</sup> E. Maitland, By and By, a Historical Romance of the Future (London, 1875) Preface, p. iii

A Crystal Age (1906), he made a virtual recantation:

Now I remember another thing which Nature said - that earthly excellence can come in no way but one, and the ending of passion and strife is the beginning of decay. <sup>69</sup>

Edward Bellamy's Looking Backward (1888) was the first genuine attempt to come to terms with the machine age and to apply evolutionary theory to industrial organisation. Bellamy stressed that human nature had not changed during the period of Julian West's sleep from 1887 to 2000, but only the conditions of life, namely the environment, which had altered man's motives for action. The city of the year 2000 is not smoky or squalid with industrialization, but clean and beautiful. This change has been achieved by a system of socialism which has nationalised all means of production and decreed a definite period of industrial service, 24 years, for each individual. No wages are paid, but all citizens share in the national wealth, and the highest social honours are won by the most conscientious workers - a return to Campanella's aristocracy of labour.

Despite Bellamy's doctrinaire socialism, his novel nevertheless evoked a counterblast from Morris, who, as a disciple of Ruskin, urged a pastoral socialism without machines. Morris's News from Nowhere (1890) presents a socialist society which has returned to fourteenth-century arts and cottage handicrafts. This literary sparring between the Primitivists and the supporters of technological advancement, was based largely on a lack of understanding by both parties of the proper rôle of science in society.

Havelock Ellis's little-known book, The Nineteenth Century -

69

W.H. Hudson A Crystal Age (London, 1906) Preface pp.vii -viii

A Dialogue in Utopia (1900) attempted to remedy the deficiency. Two citizens of a future society review the nineteenth century in retrospect. One of the disputants, an historian who specialises in the nineteenth-century period, explains the peculiar imbalance which the misunderstanding of science evoked at that time:

Science being to them a novelty, a matter to dispute about, consisted largely of talk. It played a part in life which was conspicuous out of all proportion to its real effectiveness. ...The absurd antagonism to science fostered an equally absurd arrogance on the scientific side, which reacted by increasing the antagonism. Enormous as the mission of science must have then appeared, it was of course foolish to worship science...science never taught the art of thinking, for the most skilful of mathematical thinkers could make the grossest elementary blunders in thought. Science never taught the art of living, for the man who was a perfect instrument for scientific thought could yet remain on a lower moral level than the lowest savages. And how little science could do for the other arts, the whole nineteenth century remains an everlasting monument.<sup>70</sup>

All the writers hitherto discussed had been content to imagine a future society which by perfecting its environment, (either by advances in technology or by disregarding all industrialization and returning to a pastoral existence) would have significantly raised the general level of education, happiness and devotion-to-the-state of its citizens. Certainly all of these writers considered man's present physical shape and form adequate for the future if only his moral and intellectual capacities could be further developed. However, as Darwin's theory had established the broad concept of continuous development so Francis Galton,<sup>71</sup> applying to human heredity Darwin's conclusions from the

<sup>70</sup> Havelock Ellis The Nineteenth Century - A Dialogue in Utopia (London 1900) pp. 40, 48-49

selective breeding of animals, inspired a novel feature of the utopias written towards the turn of the century - the idea of man's possible physical development. In his Hereditary Genius (1869), Galton had coined the term 'eugenics' and stressed the importance of breeding in producing desirable characteristics, since such breeding is, in effect, controlled natural selection. Although Plato and More had both, in a sense, advocated preventive eugenics, the Utopian writers of the mid-nineteenth century had concentrated on sociological and moral development as the means for achieving utopia. But 1882 saw the publication of a novel, A Thousand Years Hence (pseudonym: 'Nunsowe Green') which relied on eugenics as the chief means of establishing a super-race. Here the state selects élite individuals for state marriages, and the children of such unions, awarded special public care, constitute in time a 'natural aristocracy' which is thus increasingly selected until it becomes universal. This conception is clearly a precursor of Bernard Shaw's more complete treatment of eugenics in Back to Methuselah and Wells's insistence on it in A Modern Utopia and Men Like Gods.

There were few precursors, however, of Wells's still more forward-looking view of the biological changes which might ultimately characterize the man of the far-distant future. The only one with any claim to possibility is Meda, A Tale of the Future (pseudonym, Kenneth Folingsby, 1892), which pictures the future descendants of the human species in the year 5575 A.D. as being small and light, their bodies dwarfed by a large head. The author explains these differ-

ences as the result of a change in diet, whereby the body is 'spiritualised' while the moral and intellectual powers are greatly developed. This man of 5575 has such control over his environment and over his own development, that he can discard useless organs at will and has refined his bodily functions so as to be able to live on air alone. Crude as Folingsby's notions and explanations are, they may nevertheless be seen as not totally incompatible with evolutionary doctrine, if we compare his picture of future men with Wells's *Man of the Year Million*, his *Selenites* and *Martians*, where the evolutionary rationale underlying the development of such creatures is fully understood and sketched in by the author.

It is important to notice that none of these utopias were written by men with scientific training, and it will therefore be interesting to consider in Chapter 4, below, how many of Wells's innovations in his utopian novels are the result of his education, and which of the earlier ideas he found compatible with this.

#### C. Journeys in Space and Time

By tradition, utopias are not immediately accessible, but are distant in space or time, otherwise their chief function - either as incentive or as warning to the writer's own contemporaries - would be lost. At first they were situated in geographically remote places (the earliest ones in various unexplored areas of the globe), then, as such regions became fewer, inside the earth or on other planets. Later still, with the popularisation of evolutionary theory,

and increasng realisation of the dimensions of the geological time-scale they came to be set in the future. In order to visit such utopias, long journeys were necessary, journeys through space or time, and accordingly there came into being a vast stream of space-travel literature which remained the primary emphasis in science-fiction until the 1960's.

The earliest journeys were usually made somewhat naïvely in dream or fancy, thus neatly obviating the need for difficult descriptions of the mechanical means used to convey the narrator to his destination. In Ariosto's Orlando Furioso, Astolfo travels on the 'hippogriff' to Paradise, whence St. John conveys him in a chariot to the moon.

Kepler's Somnium (1634) also avoids any attempts at a realistic explanation. Duracotus dreams that he is taken by a Daemon or Spirit of the Moon, to the world of Levania. Kepler, himself an eminent astronomer and a student of Tycho Brahe, was certainly well aware of the current knowledge about the moon; his descriptions of lunar geography and climatology are in accord with Kepler's laws and, with the exception of the serpentine monsters, consistent with what he could have observed through his telescope. However, like Wells, he presupposes the existence of air and water on the moon, although Galileo had denied the possibility of this. Presumably Kepler felt that this inconsistency was less reprehensible than conducting his hero to an environment devoid of these commodities.

Whatever its imperfections, Kepler's dream-travel is

certainly more realistic than Cyrano de Bergerac's Voyages to the Moon and the Sun (1659 and 1687) which ignore completely seventeenth-century science and attempt to describe fantastic interplanetary locomotion in quasi-scientific terms which render the whole effort absurd. By contrast, Gulliver's Travels (1726) being less ambitious, remains entirely realistic, for Swift is content with visiting terrestrial and contemporaneous lands.

Inevitably, after the Montgolfier Brothers' invention of a land transport balloon in 1783, many tales of flying by mechanical means were devised, the fictional inventions being, apparently, far more efficient than the actual, for although the Montgolfier balloon was not dirigible and no practical dirigibles were perfected until a century later, the fictional aeronauts explored at will. Poe's The Unparalleled Adventures of One, Hans Pfaal was in fact a burlesque on this kind of space-travel story. The hero is represented as travelling to the moon in a balloon until the last paragraph confesses, somewhat unnecessarily, that the story is a hoax.

The first scientific attempts to describe journeys which were not at the time technically possible were those of Jules Verne. Since he limited his fictional inventions for the most part to machines on which preliminary research was already proceeding, Verne's predictions were frequently realised and he speedily acquired the reputation of a prophet. Aware that technological progress was accelerating, he telescoped what seemed at the time impossibly distant

inventions into the foreseeable future, using flying machines, submarine travel and interplanetary rockets as viable means of transporting his protagonists on their varied adventures. His Journey to the Centre of the Earth (1864) was not inconsistent with certain current geological theories of the formation of the earth or with a Lamarckian evolutionary theory. It presents an account of a journey which, however much it may strain coincidence and rely on the almost superhuman powers of the taciturn Icelandic guide, did not actually violate contemporary notions of the possible. In this early story, Verne does not invent any machines to transport his characters; they merely descend an extinct volcano in Iceland, proceed down various strategic shafts and sail across a subterranean sea. Nevertheless, the story remains sadly marred by its even more incredible ending, for Professor Lidenbrock and his party re-emerge intact from the centre of the earth, their raft borne on a lava flow through the crater of Stromboli which their own blasting operations have caused to erupt.

In his Journey from the Earth to the Moon (1865) and Around the Moon (1870), Verne seems to have been more concerned to make his stories credible by the introduction of facts and figures. He envisages a space capsule which is to be fired from an enormous cannon, half-buried in the earth. Members of the Gun Club of Baltimore who sponsor the experiment have furnished themselves with a lengthy report from the Harvard Observatory, carefully calculating the necessary escape velocity, the consequent charge of gun-cotton required and the rocket's trajectory, and have 'solved' the problem

of recoil-shock after departure by an elaborate device entailing three feet of water as a shock absorber. The whole idea of a space gun is known now to be entirely impracticable, although Verne seems to have thought it feasible; nor does he appear to notice that the third passenger, unforeseen during the Harvard calculations, would necessitate a larger quantity of gun-cotton propellant. We have discussed already some of Verne's omissions in these Journeys, his technical errors which he later slurred over and never attempted to correct, and his inability to imagine accurately the effects of free-fall, but nevertheless he did foresee that the only means of changing the course of a space ship would be by the use of rockets. Of all the locomotory methods favoured by his characters, the one which proved most popular with his readers was the 'Nautilus' in Twenty Thousand Leagues Under the Sea. This submarine, although patterned on Robert Fulton's actual 'Nautilus', was furnished with many elaborate additions which Verne seems not to have realised were inappropriate. The 'Nautilus' runs aground, strikes several icebergs, rams various other vessels, and tortuously pursues a school of cachalots, submerging and surfacing with amazing rapidity, yet during these manoeuvres none of the crew (unprovided with safety equipment) sustains an injury, and Captain Nemo's collection of bric-a-brac remains undisturbed.

Verne's only contribution to a literature of flying machines was Robur the Conqueror (1886) but he firmly believed that the future of aviation would lie with the 'aeronef' or heavier-than-air machine, rather than with the 'aerostat' or balloon, a point on which he differed from the

early Wells, who, until the turn of the century, placed his faith in dirigible balloons.

'The Albatross', Robur's aeronef, is a helicopter built of compressed paper (a prophecy of plastics and fibre-glass?) and designed on the plan of a clipper-ship,<sup>71</sup> her hull or frame having a flat deck above which are three deck-houses and a steering cabin. Instead of masts and sails she has thirty-seven uprights, each bearing two contra-rotating screws at her prow and stern. The motive force is electricity, generated by special batteries of enormous power. Yet despite his interest in the techniques involved in transporting his adventurers to strange places, Verne took little trouble to imagine any logical sequence of events which might occur during the voyage.

One of the best descriptions of an interplanetary voyage in this period was Percy Greg's Across the Zodiac (1880). The science in the book is carefully worked out with logical and minute explanations of the flight to Mars. The journey is made in a metal car propelled by a force, 'apergy', generated aboard the vessel by electricity (this also provides a continuous supply of oxygen by the decomposition of carbon dioxide). Greg considered the gravitational effects on the narrator in the car, which is insulated by cement walls with small, round windows, and also discussed the topography of Mars in terms consistent with current scientific observations.

When we consider Wells's journeys through space in relation to those of earlier writers, the most striking

71

One English translation is entitled The Clipper of the Clouds

innovation is not a technological one, for Verne, and, to a lesser extent, Greg, had made frequent use of technological terms and concepts; it is chiefly the confidence with which Wells describes the journey, a confidence engendered by the fact that he has derived its details from an almost faultless knowledge of scientific principles. As Verne saw only too clearly, Wells's use of cavorite (a substance allegedly unaffected by the force of gravity) to propel his characters to the moon, is not based on any known material, whereas the impulse from a cannon, if it were a very large cannon with a very large amount of gun-cotton, might conceivably be expected to drive an object an unprecedented distance.<sup>72</sup> Yet when we read the two accounts, Wells's method seems the more coherent and convincing. Once we accept the fact of cavorite, everything else follows in clear and logical steps, whereas Verne is forced to keep enunciating statistics and theories of doubtful validity, diverting our attention from the actual journey without any significant gain in the credibility of his story. Moreover, having brought his characters into an orbit around the moon, Verne lacks the daring to describe their landing there; he feels insecure recounting anything beyond what he actually

<sup>72</sup>When asked his opinion of Wells's novels which had been compared to his own, Verne is reported to have replied: 'No, there is no rapport between his work and mine. I make use of physics, he invents. I go to the moon in a cannon ball discharged from a cannon. Here there is no invention. He goes to Mars in an airship which he constructs of a metal which does away with the laws of gravitation. Ça, c'est très joli. But show me this metal. Let him produce it. Wells is a true product of the English imagination.' Quoted by J. Kagarlitski, The Life and Thought of H.G. Wells, trans. M. Budberg (London, 1966) p. 113.

knows and therefore extrapolates only timidly and from accepted data. Wells, on the other hand, has such belief in scientific method, in logical deductions from data, that he boldly applies the same methods to imaginary data and treats the whole synthesis as completely valid, so that his confidence infects the reader.

Like Kepler, Wells ascribes air and water to the lunar environment, though he can scarcely have been unaware that this was considered highly unlikely at the time when he was writing.<sup>73</sup> Again, his assumption of a cavernous system within the moon was clearly convenient in the context of his story, but it was also a valid means of accounting for the known fact of the moon's low density compared with that of the earth, and as such was not finally eliminated until analysis of actual moon-rock samples in 1969 provided another and more authoritative explanation. Given Wells's hypothesis of a spongy texture, it was also feasible that air would be trapped in an underground honeycomb system and that water would be concentrated in an underground sea. Thus none of Wells's detailed descriptions of the moon defied possibility in their day, and the consequences of his postulates were all logically derived.

Even more elusive than subterranean or extra-terrestrial civilisations were the utopias set in a future time. Once again, the easiest means of locomotion to a utopia of another era was the dream, and it proved extremely popular

<sup>73</sup> It was not decisively discounted by scientists until spectroscopic analysis was developed later in the twentieth century. Indeed, more recently still, apparatus left on the moon's surface by the Apollo 15 mission seems to have detected a cloud of water vapour on the lunar surface.

in nineteenth-century literature of this genre. Mercier's Memoirs of the Year 2500 is couched in a dream and Bellamy's Looking Backward (1888) follows a dream pattern to transport Julian West to the year 2000. Bellamy attempts some realism in that West is introduced as an insomniac who has been hypnotised into an unnaturally deep sleep in 1887 before waking to find himself in the year 2000. Yet there is a surprising twist to the conclusion of Bellamy's novel. West, who enjoys living in the twenty-first century, is preparing to lecture on the nineteenth, when he falls asleep to dream that he is again living in 1887, but finally wakes in the year 2000 again. This irresolution seems to suggest that Bellamy would have preferred to transport his protagonist literally to the year 2000 if he had had any idea how to do so, and hence his unwillingness to dismiss the hero's experience as merely a dream. Even as late as 1906 Hudson's A Crystal Age makes no attempt to explain why, after his mountain fall, the protagonist regains consciousness in a completely different civilisation, presumably of a different era, which has never heard of European culture.

Undoubtedly the most ingenious method of 'time travel' appearing in literature of this period apart from Wells's time machine, is that described in Camille Flammarion's Lumen. Flammarion, a French astronomer, famous for his observations of double stars and star-shift, and founder of the Astronomical Society of France in 1887, was best known for his L'Astronomie Populaire, but his scientific exactitude is also displayed to advantage in the dialogues which constitute Lumen. Lumen, the spirit of a recently deceased

man, returns to converse with a close friend, still living. He explains that because, in the last moments before his death he had been gazing at the star Capella, his soul when released from his body, had flown immediately to that star with the rapidity of thought, which is far swifter than the speed of light. This set of circumstances results, effectively, in his travelling backwards in time, as he painstakingly explains to his bewildered friend:

The light of a star takes a certain time to reach the earth and this time naturally depends on the distance which separates the star from the Earth....Therefore we see the heavenly bodies not as they are at the moment we observe them, but as they were when the luminous ray which reaches us left them.... In like manner, the ray of light which leaves the Earth can only arrive at Capella in the same period of time....I crossed this distance with the swiftness of thought. On the very day of my death I found myself on this star, which I had admired and loved so much all my life [and thus] ...I had before my eyes not, as it was natural to suppose, the Paris of long after my death, but in reality the Paris of the past, old Paris at the beginning of this century, or at the end of the last century.<sup>74</sup>

Flammarion is clearly fascinated with the apparent paradoxes which such a situation poses. The concept of selfhood seems to waver when Lumen, travelling in thought from Capella back to Earth, reviews his own childhood, youth and maturity:

I was there before my eyes...I who now think and see these things, I am myself, and this child is me also. Am I then two beings, one there below on Earth and the other here in space? ... both according to nature and by the laws of science, I see at once a child and an old man.<sup>75</sup>

<sup>74</sup>C. Flammarion, Lumen, (London, 1897) pp. 35-37, 43, 25-6

<sup>75</sup>ibid, pp. 48-9

The traditional notion of time as progressing always in one direction, is also apparently undermined under these circumstances, and the incredulous friend exclaims:

Quaerens: 'Time retrogressive'! These two words involve a contradiction in terms. Dare one believe it? You start today for a star and you arrive yesterday! what do I say - yesterday? You will arrive there a hundred years ago! The farther you go, the sooner you will arrive! Terms in grammar must be remade for such extraordinary reckoning.

Lumen: Know that time is not an absolute reality, but only a transitory measure caused by the movements of the Earth in the Solar system....The present of the world is no longer a momentary actuality which disappears as soon as it has appeared,... it is, on the contrary, an effective reality, which flies away from this world with the swiftness of light, sinking for ever in the infinite, and remaining thus an eternal present.<sup>76</sup>

Flammarion also accounts in this way for the omniscience of an 'Infinite Being whose ubiquity holds everything in eternal permanence ...[for] the future will be as inevitably the outcome of the present, and is as logically deducible from it, and exists in it as exactly, as the past itself is therein inscribed for those who are able to decipher it.'<sup>77</sup> Ignoring the presence of extra-terrestrial matter which could absorb light rays, Flammarion also endeavours to find a scientific explanation for an 'eternal now':

An act, once accomplished, can never be effaced, and no power can ever cause it to be as if it had never been, ... It became incorporated in a ray of light; eternal, it will transmit itself eternally into infinitude.<sup>78</sup>

<sup>76</sup> ibid, pp. 125-6

<sup>77</sup> ibid, pp. 128

<sup>78</sup> ibid, pp 120-1

Ingenious as Flammarion's book is, however,, it can scarcely be classified as fiction. In design it most resembles the Platonic dialogues, and in essence it comprises the philosophical musings of an astronomer on the theme of the velocity of light - hence the title of the book and of the 'protagonist'. As such, it represents an interesting introduction to Wells's early story, 'The Time Machine', the procedure of which - the positing of a certain set of conditions and the logical deduction from them of all the possible consequences - is very similar, although Wells begins by proposing a set of circumstances very different from Flammarion's. The chief and very important difference in method is that Wells successfully incorporates his scientific and philosophical speculations into the fabric of fiction; his story is never merely a transparent excuse for introducing a didactic point: rather, the two are integrally related for the first time in literature.

Nevertheless, it is extraordinary that such a remarkable work as Lumen should have been overlooked and that the two most frequently cited precursors of 'The Time Machine' should be Hinton's Scientific Romances (1886) and Oscar Wilde's short story, 'The Canterville Ghost' (1887). Charles Hinton's Scientific Romances included an essay 'What is the Fourth Dimension?' which discusses the concept of the fourth dimension as a further spatial extension, by the analogy of an inhabitant from a two-dimensional universe inspecting a three-dimensional one. Hinton later developed this idea further in The Fourth Dimension (1906), but all his technicolor plates of solid figures and his pages of geometrical

diagrams fail to make his ideas very concrete and he seems never to have suspected that his elusive fourth dimension might be Time.

An even less likely candidate for the predecessor of 'The Time Machine' is Wilde's essentially humorous story. The reference to a fourth dimension is of the most incidental, half-jesting kind, and Wilde certainly does not envisage it as being related to time, for, like Hinton, he still thinks in terms of a fourth dimension of space. During one of the frustrated ghost's many exits, there occurs the following sentence (my italics):

There was evidently no time to be lost, so, hastily adopting the Fourth Dimension of Space as a means of escape, he vanished through the wainscoting and the house became quite quiet.<sup>79</sup>

Neither of these examples can qualify as a valid precursor of Wells's detailed and carefully elaborated treatment of time and time-travel in 'The Time Machine'. This latter, usually considered as one of the most brilliantly written but wildly impossible of the scientific romances, is in fact also one of the most original pieces of thinking ever contributed by literature to science. Few of its readers at the time of its publication, and comparatively few since that time, have considered it seriously as other than myth, and even Wells himself seems later to have deprecated the whole idea, confessing that time-travel was in fact impossible. However, this in no way detracts from the merit of the story nor from the fact that, as I shall discuss at some length in the next chapter, in his understanding of the concept

<sup>79</sup>Oscar Wilde, 'The Canterville Ghost', Lord Arthur Savile's Crime and Other Prose Pieces (London, 1908) p. 76

of a fourth dimension as time, Wells was so far ahead of his contemporaries that scarcely any of them were capable of appreciating this aspect of his story.

Wells's exploration of time travel did not preclude him from speculating also on a fourth spatial dimension as the location for a utopia. In The Wonderful Visit, 'The Plattner Story' and Men Like Gods, he envisages another world, physically identical to our own, and existing side-by-side with it in a four-dimensional space. No direct contact between these parallel worlds is possible except by a passage through the fourth dimension, which the Angel, Gottfried Plattner and the characters of Men Like Gods effect, but Wells makes little effort to describe the possible method involved in such a passage. Plattner's transition is effected by the explosion of a mysterious green powder, and the most explicit 'explanation', in Men Like Gods, relies upon some enigmatic phrases about experiments in the 'F' dimension. Thus in his use of a fourth dimension as space Wells resorted to the subterfuges of the earlier writers, and virtually presented his readers with a fait accompli as the prelude to his utopia.

#### D. The Scientist in Literature

Despite the interest which technology aroused among writers, the figure of the scientist in literature was long in developing from the traditional alchemist-figure, perhaps best portrayed in Marlowe's Doctor Faustus. Marlowe's protagonist is a man of learning who, through pride and delight in his own intellectual achievements, comes to believe that all things are knowable, that knowledge is a source of

power in all fields and that human emotions and sympathies must yield to the desire for yet more knowledge. But Faustus is also shown as being intellectually weakened and corrupted by the very powers of his intellect. The pranks involving his invisible disguise are the sport of children, not of one who allegedly possesses all knowledge. This is an aspect of the narrow-minded intellectual which few writers after Marlowe considered until Wells's creation of Griffin, the 'invisible man'.

In nineteenth-century literature, the scientist-as-alchemist is presented most frequently as the villain. In Charlotte Dacré's Zofloya (1806) a Moorish student of chemistry dabbles with spells, incantations and poisons and uses hypnotism for evil purposes. Mary Shelley's Frankenstein (1817) dwells on the Faustian theme of the overweening pride, akin to madness, of the protagonist in his desire to create life. When he hears Captain Walton confess a similar fanaticism about reaching the North Pole he explicitly links it with his own. Walton relates the discussion between himself and Frankenstein:

One man's life on earth were but a small price to pay for the acquirement which I sought; for the dominion I should acquire and transmit over the elemental foes of our race. As I spoke, a dark gloom spread over my listener's [Frankenstein's] countenance... 'Unhappy man! Do you share my madness? Have you also drunk of the intoxicating draught?... It was the secrets of heaven and earth that I desired to learn.'<sup>80</sup>

Before Wells's novels there had been little development from this mediaeval concept. Browning's Paracelsus (1835) is still a Faustian figure in that he represents a spirit

<sup>80</sup>Mary Shelley, op. cit. Letter IV, p. 28 and Chap. 2 p. 37

devoted to a mistaken, if elevated, ideal for which he is prepared to sacrifice all other concerns in life. Browning stresses the moral that, although Paracelsus seeks an intensification of experience and consciousness, believing that therein lies more knowledge, he in fact achieves only a dissipation of his powers and the evaporation of his formerly immense energies - 'I had it fast, but it has somehow slipt away from me'<sup>81</sup> - to a state bordering on insanity before his final religious vision. Paracelsus is represented as being driven by a fiery zeal, and a proud conviction of his own intuition as the sole criterion of truth:

\*...What fairer seal  
Shall I require to my authentic mission  
Than this fierce energy? - this instinct striving  
Because its nature is to strive? ...  
...How know I else such glorious fate my own,  
But in the restless irresistible force  
That works within me?'<sup>82</sup>

Such a trait was later to be regarded as an essential and approved characteristic of the scientist, but in this poem it is seen as reprehensible, as further indication of a Faustian hubris.

Hawthorne's short story 'The Birthmark' (1846) is also of this genre, describing a chemist, Aylmer, who, with his dwarfed apprentice, concocts potions against a laboratory background of bubbling mixtures brewing in gigantic furnaces.

It was partly this view of the scientist, still prevalent throughout the first half of the nineteenth century which prevented a fully sympathetic study of such a character

<sup>81</sup> Robert Browning, 'Paracelsus', Works of Robert Browning (Oxford, 1953) V p. 58

<sup>82</sup> ibid., I, p. 18

in literature, but it must also be remembered that professional scientists, in the modern sense, were unknown until the century was well advanced.<sup>83</sup> With a few exceptions, 'cultivators of science' as they were previously called, had been amateurs with sufficient private means to ensure the leisure necessary for their pursuits. Elizabeth Gaskell's Lord Hollingsford in Wives and Daughters (1866) is such a wealthy amateur scientist, while Roger Hamley in the same novel represents one of the first professional scientists in the modern sense. Having no money of his own, he is dependent on grants for his research. 'Full of natural history and comparative anatomy', Hamley seems to have been based, at least in part, on Charles Darwin, whom Elizabeth Gaskell knew well, for his character and experiments are similar to those of Darwin, and his travels parallel those of 'The Beagle' on which Darwin had sailed. This, however, is not the aspect of Hamley which the author is concerned to show, and he never develops into a major character in the novel.

Charles Kingsley, himself a keen follower of scientific discoveries, admired scientists, regarding them as co-workers in the discovery of the wonder of God's creation, and his friendship with Huxley, albeit based partly on a misunderstanding,<sup>84</sup> seems only to have strengthened this attitude, Dean Winnstanley, of Alton Locke (1850), in part a self-portrait of Kingsley, is pictured sympathetically as an

<sup>83</sup> The very word 'scientist' was coined only in the nineteenth century by the Cambridge cleric and philosopher, Whewell. See H. Rose and S. Rose, Science and Society (Harmondsworth, 1970) p. 9

<sup>84</sup> See e.g. C.S. Blindermann, 'Huxley and Kingsley', Victorian Newsletter. XX (Fall, 1961) 25 - 8.

amateur scientist<sup>85</sup> whose acute and meticulous mind delights in attaining some new insight into the order of creation. Again, Tom of The Water Babies (1863), having been tried and tested at length, emerges with a clean soul, worthy to take his place in the world as 'a great man of science'.

We have seen that Dickens's Tom Rouncewell, the industrialist of Bleak House, is not an unsympathetic character, but apart from his practical capabilities when contrasted with the effete Dedlock strain, his character can scarcely be said to be developed as the study of a scientist. Verne's scientists, too, hardly begin to come to life as realistic characters, their function in his novels being almost entirely as mouth-pieces. Professor Otto Lidenbrock in Journey to the Centre of the Earth is one of the liveliest, with his overstated eccentricities, but nevertheless he serves chiefly as a motive force for the expedition, and like the other characters, he is entirely subsidiary to the adventure itself. Indeed, the passive role of these explorers, as they are borne along on the improbable lava flow, is an apt representation of their subjection to circumstances throughout the novel. Again, the travellers of Journey to the Moon are barely differentiated into separate personalities and become submerged under the mass of data with which Verne tries to assure the reader of the exactitude of his story. The most cursory comparison with The First Men in the Moon is sufficient to show how incomparably superior is Wells's artistry in using character as an integral part of the story,

<sup>85</sup> Kingsley himself had spent much time collecting specimens with his friend, Philip Gosse, for the aquaria which Gosse had been the first to use and popularize.

adding to, rather than detracting from its credibility. Ardan, Nicholl and Barbicane embody the flippant attitude of a boy's adventure story as they casually throw theories back and forth as unconvincingly as the theories themselves are improbable.

Stevenson's Dr. Jekyll, although he is introduced as a recognizably ordinary citizen, increasingly partakes of the scientist-as-alchemist figure, and behind the doctor's zeal for his research, the hubris motif is still prominent. Theoretically Jekyll might equally well have attained to a more perfect moral state, instead of a more depraved condition, but we are scarcely convinced of this in the story, for the alchemical overtones are too considerable. Bennett rightly criticised this novel on scientific grounds ('After Wells,' he said, 'it comes feeble.'<sup>86</sup>) but in fact it has almost universally been regarded as an allegory rather than an unsuccessful attempt at realism.

The fullest picture of a nineteenth-century scientist in English literature is certainly George Eliot's presentation of Lydgate in Middlemarch (1871). Lydgate is especially interesting because he is the first scientist in literature who, so far from being condemned, or, as in Hamley's case, mildly reproved, by the author for a single-minded pursuit of knowledge to the exclusion of all else, is in fact criticised by George Eliot for the reverse trait - a failure in devotion to his vocation. Lydgate's research was inspired by Bichat's work on tissue culture in Paris at the beginning of the nineteenth century<sup>87</sup> (Lydgate has studied in Paris)

<sup>86</sup>Quoted by A. Cruse, After the Victorians. (Woking, 1938)  
p. 169

<sup>87</sup>See, e.g., H.T. Pledge, Science since 1500 (New York, 1939)  
p. 152

but we are told comparatively little about his actual research; it is his character which concerns the author and the conflicting interests and circumstances with which dedication in any field must do battle. The rector, Farebrother, has good reason to realise Lydgate's danger, having himself chosen an uncongenial vocation when poverty prevented him from achieving his ambitions as an amateur naturalist, and he warns Lydgate that independence is vital to his scientific integrity:

'You must keep yourself independent. Very few men can do that. Either you slip out of service altogether, and become good for nothing, or you wear the harness and draw a good deal where your yoke-fellows pull you.'<sup>88</sup>

Yet Lydgate's great gifts, both moral and intellectual, and his high ideals, are frustrated not only by circumstances and environment, but also by the faults of his own nature, symbolised and strengthened by his unfortunate marriage to a beautiful but shallow and unsympathetic wife:

Lydgate's spots of commonness lay in the complexion of his prejudices which, in spite of noble intentions and sympathy, were half of them such as are found in ordinary men of the world. ... that distinction of mind which belonged to his intellectual ardour, did not penetrate his feeling and judgment.<sup>89</sup>

The intrinsic relation between Lydgate's character and his potential as a scientist, is repeatedly demonstrated throughout the novel, for both are at their highest point when Lydgate arrives in Middlemarch and both deteriorate in a parallel manner as he is drawn professionally and personally into the web of parochial gossip and entanglements

<sup>88</sup> George Eliot, Middlemarch, (London, 1959), Bk. II, Chapter 17, p. 152

<sup>89</sup> ibid., Bk. II, Chapter 15, pp 130-1

which finally saps his will and his idealism. It was probably because George Eliot understood so clearly the essential characteristics of the scientific spirit that she realised her inadequacy to develop Lydgate more fully as a successful scientist. His professional failure is an integral part of the overall conception and plan of the novel, but it may also be a strategic recognition by the author of her inadequacy to present the inner and the professional life of a devoted scientist. A similar hesitancy is observable in nearly all Wells's scientists who become major characters, as will be seen in Chapter 9, below.

As late as 1892, George Gissing's portrait of Godwin Peak as a man of scientific training and interests carries little conviction. His ruling passion is apparently a desire to have what he believes his own aristocracy of person recognized by those socially superior to him, and this gives rise to an unreasonable scorn and hatred of all social inferiors. His motives are derived from no rational views; they are purely emotional and Peak himself makes no attempt to justify them on any scientific basis:

'All sorts of arguments can be brought against my prejudice, but the prejudice is ineradicable. I respect hereditary social standing, independently of the individual's qualities.... Birth in a sphere of refinement is desirable and respectable; it saves one, absolutely, from many forms of coarseness. The masses are not only fools, but very near the brutes. Yes, they can send forth fine individuals - but remain base...I say only that at present the lower classes are always disagreeable, often repulsive, sometimes hateful... the London vulgar I abominate, root and branch. The mere sound of their voices nauseates me; their vilely grotesque accent and pronunciation - bah!'<sup>90</sup>

<sup>90</sup> George Gissing, Born in Exile (London, 1970) part III, chap. 2, pp. 134-5

Again, his diatribes on the theme of the rival claims of science and religion, a controversy which might have been expected to occupy a central position in his thoughts since he is both a scientist and an aspiring theological student, betray no hint of a scientific approach; rather they spring, like his social theories, from personal dislikes and a vindictive temperament.

'I often rejoice to think of it!' he cried.  
'How magnificent it is that so many of the solemn jackasses who brayed against Darwin from ten to twenty years ago should live to be regarded as beneath contempt! I say it earnestly: this thought is one of the things that makes life tolerable to me!'

'You have need of charity, friend Peak,' interposed Earwaker. 'This is the spirit of the persecutor.'<sup>91</sup>

This, then, was the literary heritage to which Wells succeeded, but in order to assess the degree of his originality in literary contribution it is necessary to examine not only his predecessors, whether known or unknown to him, but also his own educational background. It is the contention of this thesis that the chief formative influences on his thought came, not from these earlier writers whose work in incorporating scientific concerns and the figure of the scientist into literature stopped, almost without exception, far short of Wells's own, both in scope and depth of treatment, but from his teachers and his training at the South Kensington Normal School of Science. In this sense, his literary contribution must be said to be highly original. In the next chapter therefore, I wish to consider briefly Wells's formative years and the impact which his studies appear to have made on his thinking, and then to attempt-

<sup>91</sup>ibid, part III, chap. 1, p. 120

some assessment of the degree to which his writing may validly be considered scientific in nature.

SECTION I Wells's Scientific BackgroundChapter 1 The Major Influences on Wells's Thought

Despite the great advances made during the nineteenth century in the understanding of electrodynamics, thermodynamics and electromagnetism, and of the basis of chemical reactions, it was the Darwinian revolution in biology that captured the public imagination, justifying the phrase 'Darwin's century', and it is important to understand why evolutionary theory did involve such a revolution in thought.

Until the mid-nineteenth century, the knowledge of physics was so vastly in advance of biology that a mechanistic interpretation of living things was almost inevitable and there was, understandably, a marked similarity between the physics and the biology of the time. Physics had its fixed ultimate entity - the atom - and biology also held to the fixity of its entity - the species. The great biological classifier, Linnaeus, concluded that there were as many species 'as the different forms which the infinite Being created in the Beginning'. These species were traditionally arranged by biologists in ascending order of complexity, in a scala naturae, despite the difficulty of accommodating on it those organisms which seemed to fall between classifications and hence to require ever more closely-spaced 'rungs' for their position on the 'ladder'.

A further mechanical assumption of biologists of the period was the teleological one - that all organisms had been created for a specific purpose, by analogy (characteristically a mechanical one) with the components of a watch, for Paley's famous model of the universe as a watch, made

and set going by a divine and omnipotent Watchmaker, inspired biologists and theologians alike to dwell upon the adaptations of nature as evidence of God's benevolent plan.<sup>1</sup> Paley's Natural Theology and the Bridgewater Treatises of 1838 stand as witness of the lengths to which teleologists would go in confounding utility and adaptation with purpose.

Darwin's theory immediately and irrevocably destroyed both these assumptions - the fixity of species and the argument of purpose from design. Yet it was by no means wholly negative in its tenets, for Darwin's alternative - the progressive evolution of organisms by the mechanism of natural selection acting upon chance variations - proved to be singularly fertile in biology as a whole. In the concluding chapter of the Origin of Species, it was predicted that evolutionary theory would open the way for new developments in the understanding of systematics, ecology ('natural history'), genetics, geographic distribution, psychology and anthropology, and in all these fields Darwinism did indeed produce an efflorescence. Moreover, despite its initial disruptive effect, the theory of evolution soon became a distinctly unifying concept, Huxley wrote in the Contemporary Review of November, 1871:

The gradual lapse of time has now separated us by more than a decade from the date of publication of the Origin of Species - and whatever may be thought or said about Mr. Darwin's doctrines, or the manner in which he has propounded them, this much is certain, that, in a dozen years, the Origin of Species has worked as complete a revolution in biological science as the Principia did in astronomy - and it has done so because, in the words of Helmholtz, it contains 'an essentially new creative thought'.<sup>2</sup>

<sup>1</sup>William Paley, Evidences of Christianity (1794) and Natural Theology (1802)

<sup>2</sup>T.H. Huxley, 'Mr. Darwin's Critics', Contemporary Review XVIII (November, 1871), 443.

This comparison between Darwin and Newton was no mere extravagance. Newton had provided a meaningful interpretation of a mass of otherwise unrelated data about the physical universe, and Darwin performed a similar service for biology by giving it a theme and a unifying philosophy.

Darwin himself was by nature a retiring man, and while he spared none of his sensibilities when grappling with facts, his was scarcely the disposition to engage in the acrimonious public debates which followed the publication of his work and which were frequently more akin to battles than to academic discussions. In these frays it was Thomas Henry Huxley, quickly styled 'Darwin's bulldog', who entered the lists on Darwin's behalf and became, at least for the younger generation, the hero of the struggle, the leader in the impartial search for scientific truth against the reactionary forces in biology, geology and religious orthodoxy.

Certainly this mystique clung about the person of Huxley in 1884 when the young H.G. Wells entered the Normal School of Science, South Kensington, where, for the first year of his course, he was to study biology under its famous Dean.<sup>3</sup> In 1901 Wells wrote of the admiration which he had felt as a student for Huxley:

<sup>3</sup>The stages of Wells's formal education prior to his being awarded a teacher-training scholarship have been well documented, both in his own autobiography and in several biographies, and require no elaboration here. They appear to have had an almost wholly negative effect on his subsequent intellectual development, in that the irregularity of his early education and his consequent unsoundness in understanding basic principles, tended to hinder his tertiary studies. See Experiment in Autobiography, chapter 5 i, p. 204. The relief with which he left such a confused travesty of education behind is reflected in his subsequent hatred of muddled thinking, and his campaigns for better educational systems.

I do not know if the students of today will quite understand how we felt for our Dean - we read his speeches, we borrowed the books he wrote, we clubbed together out of our weekly guineas to buy the Nineteenth Century whenever he rattled Gladstone or pounded the Duke of Argyle. I believed then that he was the greatest man I was ever likely to meet, and I still believe that all the more firmly today. And when people ask, 'Were you not at South Kensington in Huxley's time?', I answer with a vast amount of dishonest implication in my off-handed manner, 'Oh yes, I was one of his men.'<sup>4</sup>

Thirty-three years later, when writing his autobiography, he had not revised his opinion:

That year I spent in Huxley's class was, beyond all question, the most educational year of my life. It left me under that urgency for coherence and consistency, that repugnance from haphazard assumptions and arbitrary statements, which is the essential distinction of the educated from the uneducated mind. ... for a year I went shabby and grew shabbier, I was underfed and not very well housed, and it did not matter to me in the least because of the vision of life that was growing in my mind.<sup>5</sup>

So vivid was the impact of Huxley, in whose class Wells was one of the three to achieve a first class pass, that he wished to continue with zoological research, but since there were no facilities available at that time for scholarship students, he was drafted into the physics class in his second year, and into geology in his third. Unfortunately, the professors of these subjects at the time proved incapable of fanning the flame of inspiration kindled by Huxley - partly because they were apparently less adequate teachers and less compelling personalities, and partly because, as Wells himself later elaborated, the science of physics, apart from its few fundamental laws of the conservation of energy and the

<sup>4</sup>H.G. Wells, 'Huxley', Royal College of Science Magazine, XIII (April, 1901) 211

<sup>5</sup>Experiment in Autobiography, chap. 5i, pp. 201, 204.

indestructability of matter and force, was surrounded by a seemingly impenetrable fog, through which isolated experimental data appeared spasmodically, unconnected with any other known facts.

In the whole world of physics at that time there was nobody with the grasp and power of exposition capable of translating the difficulties of material science into language understandable by the eager student or the unspecialised intelligent, educated man. ... my experience of it has remained that of an outsider trying to adjust his general ideas to what he can overhear. I have never been able to make that adjustment. I am still unable to realize what modern physics is up to. ... My impression is that the Darwin and Huxley of physics have still to come.<sup>6</sup>

Thus the first class student of biology failed his physics year, and, duly humiliated, but subsequently no more inspired by his geology professor's pedestrian methods, proceeded to fail his third year also.

It is not surprising, then, that the chief formative influence on Wells's thought was Huxley's far reaching and synthetic approach. Even in his disappointing physics year at South Kensington he had endeavoured in a halting way to apply the methods of biology to the primary questions of physics and thereby evolved his half-joking, half-serious 'Universal Diagram', from which it should, theoretically, be possible to derive a prediction of any phenomenon by mere deduction. This unsuccessful effort to devise a synthetic approach to physics was later to form the basis of a paper, 'The Universe Rigid', which was, significantly, rejected by Frank Harris, then editor of the Fortnightly Review, as 'incomprehensible'.<sup>7</sup>

<sup>6</sup> ibid., pp. 220-1

<sup>7</sup> ibid., Chap. 6, vi, pp. 356-7

The continuing impact of Huxley's training on Wells's intellectual development can scarcely be over-estimated. The apparently multifarious range of his novels and short stories may be seen, on analysis, to be based upon a relatively small number of fundamental ideas, nearly all of which were derived more or less directly from his scientific training, and in particular from his biological studies. The discussions of order and disorder, of waste and its consequences at every level of society, almost invariably point to the far-reaching responsibility of science, which alone can create order; his interest in themes concerning the dual nature of man, man's place in nature, and the evolving character of life and of the universe in general (which therefore habitually plays havoc with preconceptions in every field of thought) is also clearly derived from his early biological studies. Again, although these themes may at first appear disparate, they can also be seen as closely interconnected in the whole body of Wells's work through his cultivation of that synthetic approach which Huxley had inculcated. Wells described his biology course in retrospect as:

a vivid, sustained attempt to see life ~~more~~ clearly and to see it whole, to see into it, to see its interconnexions, to find out, so far as terms were available, what it is, where it came from, what it was doing, and where it was going.<sup>8</sup>

Huxley's emphasis on accurate thinking, both analytic and synthetic, about the results of carefully-made observations, and on the need for the repeated and objective testing of hypotheses burst like a revelation upon the young Wells,

<sup>8</sup>ibid. Chap. 5,ii, p. 210

clearing his head of its lower middle-class inheritance of muddled thinking and of the related and widely-held assumption that inefficiency in every sphere was normal and unavoidable.<sup>9</sup> Henceforth the Huxleyan standard became his ideal and it was by no means infrequently that he achieved it in his work.

Evolutionary theory in particular seemed to Wells, and may still be regarded as, the nearest approach to a unifying factor in contemporary thought. All life, indeed all cosmology, could be seen as an unfolding of the same underlying process so that, although a missing factor might temporarily block our understanding, all phenomena would ultimately be seen to obey universal laws. No other concept ever made the same impact on Wells - rather the criteria of biology became his yardstick to measure the claims of other disciplines - sociology, politics, religion and morality, while his understanding of even astronomy and physics was deeply coloured by Huxleyan principles. The French critic Georges Connes is scarcely exaggerating when he remarks:

Voici, en Wells, un écrivain qui a édifié toute sa pensée autour de l'idée d'évolution.<sup>10</sup>

Therefore, in order to assess the extent to which Wells's scientific training was basic to his thought, it seems most profitable to trace in broad outline through his work certain principles which are also the basic assumptions of the scientific method, and to show how they were derived from his training in biology.

The first assumption for Huxley, as for all his contemporary scientists, was the need for an objective viewpoint, and it is clear that, in virtually all the novels, with the

<sup>9</sup> See *ibid.* Chaps 2 and 3

<sup>10</sup> G. Connes, Etude sur la Pensée de Wells (Paris, 1926) p.35

partial exception of Kipps, Tono-Bungay and Mr. Polly, Wells's method of looking at the world was almost ruthlessly objective. This is one of the reasons why, although his three best novels contain that depth of pathos which is the mark of great comedy, he was unable to write anything approaching tragedy; the latter mode presupposes an element of identification by the audience with the protagonist while comedy depends, for its fullest effect, on the detachment or objectivity of the audience. Van Wyck Brooks has remarked that Wells saw men chemically and anatomically, and the world astronomically, all of which terms presuppose an analytical gaze;<sup>11</sup> he might, with equal truth, have said that Wells saw life through a microscope or as stuffed remains. The biology classes at South Kensington undoubtedly involved a considerable proportion of microscopy (the atmosphere of this is vividly recaptured in Love and Mr. Lewisham, and in the short story, 'A Slip under the Microscope') while the displays of stuffed animals in the Natural History Museum would have furnished a key part of the visual aids in the study of evolution. Both these methods of looking at specimens involve the utmost alienation of the viewer from the object, which in the second instance is dead and in the first is either an organism on a scale remote from man or else a barely recognizable fragment. No other sections of biology are so far divorced from the actual living organisms, and yet both seem to have influenced markedly Wells's manner of looking at the world. Apart from those stories which

<sup>11</sup>Van Wyck Brooks, The World of H.G. Wells. (London, 1915)

deal directly with such studies - 'A Slip under the Microscope' and 'The Triumphs of a Taxidermist' - there is a significant number of stories in which one or more of the characters has the sensation of being watched like a specimen - 'In the Abyss', 'Under the Knife', 'The Crystal Egg', 'The Star', 'Pollock and the Porroh Man', 'Jimmy Goggles the God', The First Men in the Moon and The War of the Worlds. In three of these - 'In the Abyss', 'Jimmy Goggles the God' and The First Men in the Moon - there is even the simulated effect of looking, or being looked at, through a microscope lens on a larger scale; the circular glass windows of the diving sphere, of the diver's helmet and of Cavor's sphere, are emphasized as being the apertures through which strange forms are scrutinized, while the crystal egg in Mr. Cave's shop and its facsimiles on Mars also suggest, in both shape and function, a similar reference. Again, in 'The Stolen Body', we are told that the disembodied Mr. Bessel felt his observation of those around him to be 'like watching the affairs of a glass hive'.<sup>12</sup>

Wherever there is a sense of being observed, there is a concomitant sense of inferiority, again the counterpart of the sensation felt by the viewer through a microscope. When Marjorie Trafford in Labrador sees the aurora for the first time, she experiences a deep sense of this inferiority, and again Wells resorts to the microscope image:

That night the whole world of man seemed small and shallow and insecure to her, beyond comparison;...one pricked the thin appearances of life with microscope or telescope and came to an equal strangeness. All the pride and hope of human life goes to and fro in a little shell of air between this ancient globe of rusty nickel-steel

<sup>12</sup> Short Stories (London, 1929). p. 1076

and the void of space; faint specks we are within a film; we quiver between the atom and the infinite.<sup>13</sup>

This sense of inferiority is particularly evident also in the opening paragraphs of The War of the Worlds and in the final paragraph of 'The Star' where the Martian astronomers, watching for the changes on the earth as the star passes, remark almost nothing of those events which have loomed so catastrophically in the experiences of men. They record:

'Considering the mass and temperature of the missile that was flung through our solar system into the sun' one wrote, 'it is astonishing what a little damage the earth, which it missed so narrowly, has sustained. All the familiar continental markings and the masses of the sea, remain intact, and indeed the only difference seems to be a shrinkage of the white discoloration (supposed to be frozen water) round either pole'. Which only shows how small the vastest of human catastrophes may seem at the distance of a few million miles.<sup>14</sup>

More subtle, but no less a part of this objective viewing of life, is Wells's general approach to his characters. Rarely, even with sympathetic characters, do we scale the barrier erected by the narrator's deprecatory humour: if a character is not absolutely the butt of Wellsian wit, like Kipps, Edward Ponderevo, Mr. Polly and the other 'little men', he may frequently be distanced by an indulgently avuncular tone which makes him appear significantly smaller-than-life. Lewisham is introduced in this manner and never wholly recovers from the initial diminishing effect:

Mr. Lewisham is seen at his studies....He was called 'Mr.' to distinguish him from the bigger boys, whose duty it was to learn, and it was a matter of stringent regulation that he should be addressed as 'Sir'.<sup>15</sup>

<sup>13</sup> Marriage, Bk. III, Chap. 4, vi, pp. 514-5.

<sup>14</sup> Short Stories, Vol. X, p. 570

<sup>15</sup> Love and Mr. Lewisham, Chap. 1, p. 241

The chief exceptions to this belittling process of characterization are Wells's scientists, or those who, like Remington, are seen as the progenitors of his ideal citizens of the future. That is to say, the chief exceptions are those who, in turn, regard the world scientifically and objectively and with a mind to impose order on its chaos. Even the scientists are not all exempt. Mr. Bensington, in The Food of the Gods, is introduced as being somewhat undersized in every sense, he

...was short and very, very bald, and he stooped slightly; he wore gold-rimmed spectacles and cloth boots that were abundantly cut open because of his numerous corns, and Professor Redwood was entirely ordinary in his appearance.<sup>16</sup>

Neither Bensington nor Redwood completely recovers from the humorous aspersions cast upon the social relevance of their early research and the suggestion of their being, in turn, specimens under Wells's searching gaze is strong:

Until they happened upon the Food of the Gods, ... they led lives of such eminent and studious obscurity that it is hard to find anything whatever to tell the reader about them.<sup>17</sup>

The most striking manifestation, however, of Wells's objective view of life is his preoccupation with the future. His writings about it are by no means escapist in attitude, but offer instead the opportunity for an experiment in deductive thinking. Wells was the first novelist to attempt this seriously from the scientific point of view, although Spencer had effectively done so from the standpoint of philosophy. After the immediate success of Anticipations, Wells attempted to analyse in more detail the implications of a

<sup>16</sup>The Food of the Gods, Chap. 1, p. 4

<sup>17</sup>Ibid., Chap. 1, p. 4

future-based frame of reference. His lecture, 'The Discovery of the Future', delivered to the Royal Institution in January, 1902, examines two fundamentally different ways of thinking:

It will lead into my subject most conveniently to contrast and separate two divergent types of mind, types which are to be distinguished chiefly by their attitude towards time and more particularly by the relative importance they attach, and the relative amount of thought they give to the future of things.

The first of these two types of mind, and it is, I think, the predominant type, ... is that which seems scarcely to think of the future at all, which regards it as a sort of black non-existence upon which the advancing present will presently write events. The second type which is, I think, a more modern and much less abundant type of mind, thinks constantly and by preference of things to come, and of present things mainly in relation to the results that must arise from them.<sup>18</sup>

Wells then proceeds to contrast our knowledge of the past, which is essentially a personal memory of an individual past and only less immediately and less reliably knowledge of impersonal or collective events in the past, with our knowledge of the future, affirming that:

The portion of the future that must remain darkest and least accessible is the individual future. ... the knowledge of the future we may hope to gain will be general and not individual.<sup>19</sup>

Now precisely because one may not know the future in any personal and individual sense, one may feel hope for it, but not a deep emotion, not the emotion which can mentally fondle the well-remembered experiences of the past or the intimate sensations of the present. In this sense the term 'scientific romance' is often misleading in Wells's work, for, tradi-

<sup>18</sup> H.G. Wells, 'The Discovery of the Future' *Nature*, Vol. LXV No. 1684 (Feb. 6th, 1902), 326.

<sup>19</sup> *ibid.*, p. 330

tionally, the romance, which seeks to elicit an emotional involvement on the part of the reader with the events described, has always, for the reasons indicated above, been set in the past or, less often, in the present. On the other hand, in much of Wells's work which is set in the future, we may experience admiration, perhaps even some excitement for those

...beings who are now latent in our thoughts and hidden in our loins, [who] shall stand upon this earth as one stands upon a footstool and shall laugh and reach out their hands amidst the stars.<sup>20</sup>

but it is a cold rather than a warm sentiment, for the 'beings' (the word itself is characteristically impersonal) seem more closely related to their stars than to the present inhabitants of their footstool. This also suggests one reason why the scientific romances, the future histories and the utopias, have never been regarded as major works of literature or even, by some critics, as literature at all. Their characters are too deficient in human sympathy, precisely because they are credible citizens of a future state and not of our past or present systems. The vistas of the dying world in 'The Time Machine' or of the lunar dawn and the awakening of life in The First Men in the Moon, are magnificent in scope and descriptive power, but with the possible exception of the last Martian whose death-cries are heard on Primrose Hill, the characters of these stories fail to stir our love or hate. The only sensations we feel are vicarious ones on behalf of the protagonist - the disgust, for example, of the Time-Traveller at the Morlocks - but even here the emotion we experience is at one or two removes

<sup>20</sup> ibid, p. 331

and thus considerably attenuated.

Another fundamental principle of the scientific method is the desire to impose order upon the universe, to collate the immense mass of data indiscriminately recorded by our senses and to evolve a unifying set of laws which will explain and predict the apparent confusion of phenomena. By the mid-nineteenth century, the Linnaean scheme of classification was already unable to cope with the abundance of Nature's forms which seemed to defy the pigeon-holing mission of the classifiers. Through this confusion the Darwinian theory cut with the sharpness of Occam's razor, both showing why the static and cumbersome Linnaean system had failed and providing a principle which seemed capable of dealing with whatever variations Nature might produce in the future. A modern philosopher has said that:

the panorama presented by evolutionary biology is, though often terrible, magnificent; and to have brought the development of all living things within the scope of a single theory constitutes one of the achievements of the human mind.<sup>21</sup>

For Wells it was even more than this; by drawing together strands from all disciplines and relating in one unifying concept physics, geology, astronomy, sociology and theology as well as biology, it seemed to him to symbolize order itself. The desire for order became a craving in Wells, brought up in a world of confusion and incompetence. The Bromstead described in The New Machiavelli is a vivid picture of the impression which his own native Bromley had seared upon his experiences:

Chaotic indiscipline, ill-adjusted effort, spasmodic aims, these give the quality of all

21. A.G.N. Flew. Evolutionary Ethics (London, 1967) p. 31

my Bromstead memories.<sup>22</sup>

There is a similar picture of the Leadford home in In The Days of the Comet and almost exactly the same atmosphere is described in Wells's autobiographical account of his own childhood.<sup>23</sup> This impatience with semi-accurate, muddled thinking finds expression in several other forms, the most humorous and imaginative being 'The Truth about Pyecraft', a short story describing the strange experiences of a man who expresses his wish to 'lose weight' when he really means to 'lose mass'.

So, too, waste, the natural result of disorder, was anathema to Wells in whatever sphere it occurred. As will be seen in Chapter 5, he reviled it implicitly in almost every novel he wrote, while in Tono-Bungay virtually every possible aspect of waste is presented. Yet also explicit in Tono-Bungay is Wells's faith in science as the answer to this waste.<sup>24</sup>

Science had effectually rescued Wells himself from a drapery store in the Home Counties and shown him the possibilities of individual development. It was small wonder that he believed it could do the same for the whole Victorian era. In the Wellsian canon, discipline, research and planning are the sole means of saving the world from the

22. The New Machiavelli, Bk. I, Chap. 2, vi, p. 49. Characteristically, Remington's slogan in later life when he campaigns against the mute, unquestioning acceptance of such social disorder is 'Love and Fine Thinking' (my italics)

23. Experiment in Autobiography, Chapter 2

24. Tono-Bungay, Chap. 3, iii, pp. 528-9.

insidious destroyer, waste, and these are precisely the credentials with which he endows his scientists, as the leaders of the future. Wells wrote to Sir Richard Gregory, once a fellow-student at South Kensington, and later an eminent scientist:

I am at one with Soddy in believing that if the spirit of science is carried right through human affairs, it means a complete organization of human society for all common ends, educational and economic, and a common general administration of the whole world and all its resources.<sup>25</sup>

and later, New Worlds for Old proclaims in similar terms the value of order, derived from scientific principles, as the only salvation for society.<sup>26</sup>

The principle of order, particularly as it is manifested and becomes of importance in scientific work, is Wells's remedy for virtually all social maladies, and especially that of waste in its widest sense, but such an ideal seems necessarily to involve a cost in the sphere of personal life - the imposition of certain restrictions on individual freedom. Here, however, another characteristic of Wells's utopias is relevant, for in a sense it mitigates the regimentation which is usually regarded as inevitable in a highly-ordered society: that is their non-static quality. The concept of an evolving utopia in which the ideal of perfection is itself changing is effectively a Wellsian innovation in the history of utopian thought, and one which has been largely overlooked by those later writers who have satirized Wells's utopias for the alleged exaction of conformity from all their members.<sup>27</sup> On the contrary,

<sup>25</sup> Quoted by V. Brome, H.G. Wells, (London, 1951) p. 176

<sup>26</sup> New Worlds for Old (London, 1908) Chap. 2, p. 22

<sup>27</sup> E.M. Forster 'The Machine Stops' in The Eternal Moment; Aldous Huxley, Brave New World; George Orwell, 'Wells, Hitler and the World State' in The Road to Wigan Pier, Chapter XII.

Wells regarded order as itself partaking of a kinetic quality, not a stasis: order means for him ordered change.

Like the other aspects of his thought discussed above, this non-static property of Wells's utopias was also derived from his implicit faith in the relevance of Darwinism to all facets of life. The Darwinian emphasis on the continual struggle for survival inspired in Wells a keen awareness of the parallel existential struggle in sociology and politics, although such an awareness should not be taken to imply his moral approbation of those who glibly derived a sanction for laissez-faire policies from Darwinism. In the history of evolution, failure to grow and adapt to change had repeatedly issued in the relative supersession of the static species, if not its total extinction, and Wells consciously applied the same moral to sociological development. Lovat Dickson has said that Wells saw science 'in terms of a drama, not in terms of its essence'<sup>28</sup>, but this is not, as Dickson seems to imply, for an unscientific reason; rather it emerges from his understanding of evolution as a progressive drama - the fossil evidences were frequently referred to as 'the drama of the rocks'. Wells explicitly acknowledges this influence on the conception of his utopias, affirming that one can no longer imagine the kind of

... Nowheres and Utopias men planned before Darwin quickened the thought of the world... [those were all] perfect and static states, a balance of happiness won for ever against the forces of unrest and disorder that inhere in things. ... Change and development were dammed back by invincible dams for ever. The modern utopia must be a kinetic one, seen not as a permanent

<sup>28</sup> L. Dickson, H.G. Wells: His Turbulent Life and Times. (London, 1969) p. 6

state, but as a hopeful stage, leading to a long ascent of stages.<sup>29</sup>

Wells's sociological theories are seen as a direct parallel with biological development; the 'Open Conspiracy'

...is the reaction of a rapidly progressing biological conception of the times....It will [produce] ... a survey of industry, business and finance biologically conceived and judged.<sup>30</sup>

A further theme important in Wells's utopian novels and sociological writings, is that of universalism, particularly the need for free discussion and the public accumulation of knowledge. Wells held firmly that universalism was the only possible creed for a sane, educated man. It seemed to him precisely because scientists most appreciated the necessity for an internationalism of knowledge transcending political or religious frontiers that they of all sections of the Community had made the most rapid, utilitarian progress in recent times. Certainly, an international attitude was an integral part of the scientific heritage, and research was popularly believed to know no political frontiers.<sup>31</sup>

In New Worlds for Old (1908), Wells explicitly links the socialist programme for governmental reform, which he at that time enthusiastically supported, with the communal, non-secret accumulation of knowledge which he affirms to be a fundamental characteristic of research:

Knowledge is power; knowledge that is frankly and truly exchanged - that is the principal assumption of the New Atlantis which created

<sup>29</sup> A Modern Utopia, Chap. 1, p. 7

<sup>30</sup> The Open Conspiracy, Chap. 12, pp. 163, 168

<sup>31</sup> Napoleon had issued a safe-conduct for Sir Humphrey Davy to travel to Paris and address the Institut Français during the Anglo-French Wars and a reciprocal hospitality was extended by the Royal Society to the French scientist-sailor, Chevalier de Rossel, when he was a prisoner-of-war in England. See H.S. Rose and S. Rose, op. cit., p. 180

the Royal Society and the organization of research....these two great processes of human thought [Science and Socialism] are further in sympathy in the demand they make upon men to become less egotistical and isolated. The main difference of modern scientific research from that of the middle ages, the secret of its immense successes, lies in its collective character, in the fact that every fruitful experiment is published, every new discovery of relationships explained. In a sense scientific research is a triumph over natural instinct, over that mean instinct that makes men secretive, that makes a man keep knowledge to himself and use it slyly to his own advantage.<sup>32</sup>

Again, in Marriage, Trafford is moved to contrast the acquisitiveness of competitive private enterprise with the open exchange of data which has been the chief contributory factor in the emergence of science from mediaeval alchemy:

'When men dropped that idea of concealing knowledge, alchemist gave way to chemist', said Trafford, 'and all that is worth having in modern life, all that makes it better and safer and more hopeful than the ancient life began' ...everything that had made Trafford... was antagonistic to such strategic reservations. The servant of science has, as such, no concern with personal consequences; his business is the steady, relentless clarification of knowledge.<sup>33</sup>

In his sociological writings Wells was to extend this principle to virtually every sphere of interest in an effort to lift men above their petty, individual concerns and inspire them to think in terms of a wider frame of reference.

We have seen that Wells looked at the world astronomically and microscopically, extending the reader's awareness to previously unimagined lengths at both ends of the scale, though always with man as the standard of measurement. Yet this standard was itself an ambiguous one, fraught with internal contradictions. As a student of evolution, Wells was fully aware of the 'sub-human' elements in man himself;

<sup>32</sup> New Worlds for Old, chap. 2, pp. 23-4.

<sup>33</sup> Marriage, Bk. II, chap. 3, xvii, p. 383

indeed Darwin's words at the conclusion of The Descent of Man

With all his noble qualities ... with all these exalted powers, man still bears in his bodily frame the indelible stamp of his lowly origin.<sup>34</sup>

remained too controversial and too recent to admit of being forgotten in Wells's life-time. How little Wells was likely to forget man's 'lowly origin', The Island of Dr. Moreau shows only too clearly. Yet neither did he lose hope in the further evolution of man, for it was no inconsiderable cause for hope that the mind of man had advanced so far as to be capable of formulating an explanation of its own ancestry. The Island of Dr. Moreau displays both these aspects of man - Moreau himself is the man endowed with creativity and understanding; the beast-men with their recurrent regressions to a pre-human state stand for the debased human nature which delays the progress of civilization. The moral implications of this novel will be discussed at some length below, but here it may be considered as a physical Jekyll and Hyde parable. Like Stevenson, Wells does not merely describe the duality of human nature; in both stories the 'beast' is victorious. But whereas Stevenson implies that this was the result of mere chance - because Dr. Jekyll happened to drink the transforming potion first at a time when his sentiments were tending towards malevolence so that this aspect of his nature became exaggerated - Wells makes no such concessions. Reversion to the beast, in his novel, is the norm rather than the exception, as Prendick, like Gulliver, discovers on his return to so-called civilization. Dr. Moreau is Wells's

<sup>34</sup> C. Darwin, The Descent of Man and Selection in Relation to Sex (London, 1901), Ch. 21, p. 947

starkest and most sustained treatment of man's dual nature, but it is not the only example. The short story, 'The Reconciliation', describes a similar reversion to the beast of two apparently learned and cultivated gentlemen who deliberately and systematically attempt to batter each other to death, while the closing chapters of The Invisible Man show not only the ruthlessness of the power-crazed Griffin, but also the savage emotions which come to the surface amongst the villagers once fear has stripped away the veneer of civilization. Wells's sociological equivalent of the bestial man is the petty and self-centred individualist who hinders the dawn of a world-centred attitude in society, and there are examples of this type in most of his novels as well as in all his explicitly sociological writings. In many of the novels and stories, these two elements of man's nature are dramatized as the intellectual and the sensual aspects, sometimes embodied in a pair of contrasting characters, the scientist and the sensualist, or the scientist and the irrational romantic - the narrator and the curate of The War of the Worlds, Cavor and Bedford, George and Edward Ponderevo - but in other instances dramatized as an internal, psychological conflict between two aspects of a single character - the ambitious, worldly facet and the gentle, escapist facet of Lionel Wallace's personality in 'The Door in the Wall', the political idealist at war with the passionate lover in Remington and in the dream-protagonist of 'A Dream of Armageddon'. Again, it may be dramatized as a sociological confrontation between two groups or races - between Eloi and Morlocks,

men and Martians, or men and Selenites.

At various stages of his career Wells's ideas of the possible outcome of these clashes alternated between hope and despair and frequently combined both in a warning or an incentive to action, but it is possible to find a basis in the biological climate of the time, for each of these attitudes. Wells's pessimism may have been partly innate, partly influenced by the prevailing fin de siècle atmosphere, as Bergonzi has claimed.<sup>35</sup>, but the main source of it was the pessimism of Huxley who was certainly not blind to the possibility of man's regression or extinction. Indeed, the impact of evolutionary thought on the humanitarian conscience has very frequently produced pessimism - in Huxley as in Tennyson, Clough and Hardy. To what extent Huxley had imparted this attitude to his students at South Kensington we cannot be sure; Wells himself makes no mention of it in his autobiography. His article 'On Extinction', which discusses the probable outcome of man's perseverance along his current unreformed path was published in the same year as Huxley's famous Romanes lecture, 'Evolution and Ethics', the clearest expression of his pessimism, but as early as 1891, in 'Administrative Nihilism', Huxley had already begun to emphasise the amorality and apparent cruelty of the evolutionary process and it can scarcely be thought that such a view would have failed to impinge on Wells. Huxley's Romanes lecture was delivered chiefly as an effort to counter the facile optimism of those who blithely used evolutionary theory to justify

<sup>35</sup>B. Bergonzi, The Early H.G. Wells. (Manchester, 1961)  
Chapter 1.

laissez-faire policies, and in it he expressed a hitherto unsuspected depth of pessimism. The cosmic process, he declared, is a ferment of incessant struggle and change, inevitably entailing great suffering and death; but precisely because of his understanding of the evolutionary 'jungle', of 'nature red in tooth and claw' and of 'the tiger and the ape' aspects of man's nature, Huxley also strove to see some alternative, some hope for the future of the race. This hope he found in his concept of an 'Ethical Process' which had, he believed, arisen through the natural mechanism of evolution, but which must endeavour as far as possible to counter the amoral evolutionary process, substituting willing co-operation for competitive struggle in the moral sphere and hence mitigating the suffering which nature exacts:

Cosmic evolution may teach us how the good and evil tendencies of man came about; but in itself it is incompetent to furnish any better reason why what we call good is preferable to what we call evil than what we had before. ... The practice of that which is ethically best - what we call goodness or virtue - involves a course of conduct which, in all respects, is opposed to that which leads to success in the cosmic struggle for existence. ... Its influence is directed not so much to survival of the fittest as to the fitting of as many as possible to survive. Let us understand once for all, that the ethical progress of society depends not on imitating the cosmic process, still less on running away from it, but in combating it.<sup>36</sup>

Because man is only partially emancipated from nature, he still suffers pain, still struggles against the marks of his lowly origin, and Huxley did not blink from the spectacle of waste and suffering inherent in the natural

<sup>36</sup>T.H. Huxley, 'Evolution and Ethics', in J.S. Huxley and T.H. Huxley Evolution and Ethics (London, 1947) pp. 80, 82

process:

I deem it an essential condition of the realization of that hope [that evil may be abated] that we should cast aside the notion that escape from pain and sorrow is the proper object of life.<sup>37</sup>

In the Eloi of the 'Time Machine' Wells provided a literary symbol of precisely this warning. The Eloi desire above all else to escape from pain and effort, from seeing the unpleasant reality of their situation and seek only comfort and ease, the shallow happiness of an illusion. Their plight and their imminent evolutionary extinction are seen as the natural and inevitable result of their hedonistic attitude.

Three years after 'Evolution and Ethics' Wells published The Island of Dr. Moreau in which the parallels are immediately obvious. Indeed there is almost nothing in Huxley's lecture which did not issue in a literary counterpart somewhere in Wells's work. Huxley had cited the extinction of the Tasmanian aborigines as a recent tragedy of evolution; and the first chapter of The War of the Worlds draws an explicit parallel between the extermination of the Tasmanians and the conflict between Men and Martians.

Huxley's emphasis on the 'cruel' amorality of Nature is restated by Wells explicitly and at length in Men Like Gods where Urthred, spokesman for the superior race, answers Freddy Mush's sentimental and idealised speech about the 'balance of Nature', a favourite nineteenth-century delusion:

These Earthlings do not yet dare to see what our

<sup>37</sup> ibid. p. 82

Mother Nature is. At the back of their minds is still the desire to abandon themselves to her. They do not see that except for our eyes and wills she is purposeless and blind. She is not awful. She is horrible. She takes no heed to our standards, nor to any standards of excellence. She made us by accident; all her children are bastards - undesired; she will cherish or expose them, pet or starve or torment without rhyme or reason. She does not heed, she does not care. She will lift us up to power and intelligence, or debase us to the mean feebleness of the rabbit or the slimy white filthiness of a thousand of her parasitic inventions. There must be good in her because she made all that is good in us - but also there is endless evil. Do not you Earthlings see the dirt of her, the cruelty, the insane indignity of much of her work? With man came Logos, the Word and the Will into our universe, to watch it and fear it, to learn it and cease to fear it, to know it and comprehend it and master it. ...<sup>38</sup>

In The Undying Fire, too, there is an echo of Huxley's fear that man might yet fail to turn back the forces of Nature. However, whereas Huxley's emphasis on ethics led him at times to mistrust even the intellect when it was divorced from a moral education (he strongly advocated Bible-readings in schools as a means of ethical training to balance a scientific education<sup>39</sup>), Wells came increasingly to place his hope for the future of mankind in intelligence and will as the means of overcoming the chance and cruelty of the evolutionary process. This purposive effort is certainly a moral one, but Wells (unlike Huxley) seems to have believed that it could be inspired by, and developed from, reason and intellect alone. The ideal of the Samurai is assumed to be within the reach of anyone - his 'better self' - and thus evolutionary advance appears in his work to result from a better-trained

<sup>38</sup> Men Like Gods, Bk. I, Ch. 6, v.p. 107

<sup>39</sup> T.H. Huxley, 'The School Boards: What they can do and what they may do', Science and Education (New York, 1897) pp. 394-398.

intellect and imagination which inevitably generate a more highly developed moral consciousness and will. Hence Wells's undisguised contempt for the 'natural man' who deliberately isolates himself from the social, and particularly the intellectual advances of Utopia.<sup>40</sup> Moreover, although Wells's Utopians are by no means degenerate or effete, the Samurai are not necessarily the 'fittest' in the physical sense, but rather the fittest to promulgate the new ethical force, the new teleological law. Nowhere in Wells's work, however, is his perceptiveness of the meaning and implications of evolution and of the dual nature of man, so fully expressed as in the comparatively early novel, The Island of Dr. Moreau, which discusses, either directly or by implication, almost all the critical issues which have since been raised by neo-Darwinism. As such it merits a separate discussion here since it illustrates both the ability with which Wells was able to examine and analyse the implications, many hitherto unrealised, of evolutionary theory and the centrality of evolutionary assumptions in his thinking.

Throughout the second half of the nineteenth century evolutionary theories had been reflected with varying shades of accuracy in the English novel, but although these earlier treatments were, in general, better understood in their time than Dr. Moreau, they are universally more superficial and most are now fittingly forgotten.

Amongst the many and varied interpretations which reviewers attached to this story, several suspected an irreligious intent, and Wells later confirmed this when

<sup>40</sup> c.f. A Modern Utopia, Ch. 4, ii, pp. 104-5, and 115

he referred to the novel as 'a theological grotesque'<sup>41</sup>, but as very few of Wells's contemporaries realised fully the extent to which Darwinism had overthrown the postulates of orthodox theology, it was natural that they should miss much of the point of the novel. The initial furore over the interpretation of Genesis was, in retrospect, seen to have been concerned with a minor issue, and gradually sank into relative oblivion when a tacit gentleman's agreement was reached by scientists and clerics alike not to poach on each other's territory. The concept of a rigid deism was preserved for reverence by the faithful, even though most scientists believed that the universe was a closed, mechanistic system. However, the major issues which Darwinian theory raised for liberal theology were not resolved by 'saving face' for the book of Genesis, by simply exchanging the notion of a single creative act in the past for one of continuous creation. There were at least three other aspects of the evolutionary process which struck deeply at both the Christian concept of a loving God, and the humanist belief in the essential goodness and nobility of man. These were firstly the stress on chance variations as the raw material for an arbitrary, non-directional evolutionary process, secondly the inevitable waste thereby involved, since those variations which proved less fitted for survival in the struggle for existence became extinct, and thirdly the consequent pain which must necessarily be suffered by the ill-adapted. A process involving any, much less all, of these aspects seemed irre-

<sup>41</sup>Introduction to Works, Atlantic Edition (London, 1924)  
II, p.ix.

concilable with the Christian concept of God's attributes. Few of Darwin's contemporaries understood these difficulties fully and most who tried to grapple with them took refuge with Charles Kingsley and Stewart Headlam behind the liberal Christianity which sought an amicable alliance with science while avoiding the more difficult areas of controversy:

Thank God that the scientific men have ...  
shattered the idol of an infallible book,  
broken the fetters of a supposed divine  
code of rules; for so they have helped to  
reveal Jesus Christ in his majesty....It  
gives us far greater notions of God to think  
of Him making the world by His spirit through  
the ages than to think of Him making it in a  
few days.<sup>42</sup>

Wells, on the other hand, shows himself aware, in Dr. Moreau of all these theological ramifications of Darwinism, although he is less concerned here with the implications for religious orthodoxy (which, at the time of writing the novel, he disavowed) than with the implications for scientific humanism.

The story in which Wells chose to examine these questions is, in itself, a remarkable strategem to which insufficient critical attention has been paid. Usually the thought of the evolutionary process fails to stir us intensely because our minds are incapable of coping with a span of twenty million centuries; the drama of successive triumphs and defeats is deadened for us by the weight of years and even the possibility of human extinction in some remote future time does not greatly arouse our emotions. Therefore, if he were to awaken his readers to the intensive

<sup>42</sup>Stewart Headlam - a sermon preached in 1879. Quoted by A. Vidler, The Church in an Age of Revolution, 1789 to the Present Day, (Harmondsworth, 1961) p. 119

and imaginative involvement befitting a novel-reader, Wells had somehow to telescope the time scale to manageable proportions. Again, in the evolutionary drama, there are no human actors until the relatively brief few moments before the curtain falls on the present; yet the novel-reader's capacity for experiencing a sense of involvement in a non-human situation is limited. Moreover the 'director' of this drama is either supernatural or non-existent; in either case an audience which looks for a personality behind the scenes is unlikely to be deeply interested. All these difficulties Wells surmounted by his conception of Moreau who, while remaining entirely credible as a somewhat megalomaniac biologist, endeavours to effect a highly condensed form of evolution, to produce human beings, or their like, from their more remote ancestors without all the lengthy intermediate steps. Moreover, his own personal drama is inextricably linked with the whole process and therefore adds considerably to its interest.

This dramatic presentation necessarily involves a certain divergence from strict Darwinian theory, as Wells himself was doubtless aware, but the gain in literary potential is incomparably greater than the exactitude sacrificed in the process. The chief inconsistencies, moreover, are rather with neo-Darwinism than with Darwin's original formulation, for it must be remembered that Darwin himself was not entirely free from a vague, half-conscious hankering for a form of Lamarckism; he, like Wells at the time of writing Dr. Moreau, was ignorant of Mendel's work in genetics which could have helped him to explain the origin of the chance variations he had postulated but could not account

for. Wells presents us with a Moreau who, while endeavouring to recreate an evolutionary situation, confuses cultural with genetic evolution. Acquired cultural characteristics are transmitted by learning, both within and between generations, but acquired physical characteristics are not; yet Moreau expects that his grafting techniques will be as likely to succeed on a permanent basis as Montgomery's teaching of the beast-people. In the event, they prove to be equally impermanent and regressions, both mental and physical, occur within one generation. It is interesting that Wells probably stumbled upon the important distinction between somatic and cultural evolution during the writing of Dr. Moreau, for his article, 'Human Evolution, an Artificial Process', which outlines clearly the basic differences between the two processes, and which was probably the first published paper to do so, appeared in 1896, the year in which Dr. Moreau was completed.<sup>43</sup> However, within the context of the novel, the confusion between the two processes is virtually insignificant, commensurate with such a venial slip as the Wolf-Bear's laugh after Prendick has stated earlier that none of the Beast-folk laugh except the Ape-man.<sup>44</sup>

Moreau, who tries to force his beasts to evolve by non-genetic means, is fully aware of the three aspects of the process outlined above - chance, waste and pain; indeed he accepts them with no apparent signs of regret as self-

<sup>43</sup> 'Human Evolution, An Artificial Process' Fortnightly Review, LXVI (1896), 590-5

<sup>44</sup> Dr. Moreau, Chap. 16, p. 118

evident necessities. Bergonzi has mentioned some of the ways in which the element of chance in the novel is forced upon our attention - the drawing of lots by the three castaways, that most arbitrary of all means of reaching a decision; the chance whim whereby Montgomery feels inclined to assist the dying Prendick - Montgomery himself stresses the extent to which this was mere chance when Prendick tries to thank him. Again, at the very heart of the process, Moreau also stresses chance as the basis of his 'design':

I asked him why he had taken the human form as a model....He confessed that he had chosen that form by chance.  
'I might as well have worked to form sheep into llamas, and llamas into sheep.'<sup>45</sup>

This is perhaps the most brutal assertion of chance at the very centre of the evolutionary process for even the most materialistic and mechanistic scientists had tended to cherish a tacit regard for Man as the crown of creation. Moreau's only concession is an almost arbitrary aesthetic one:

'I suppose that there is something in the human form that appeals to the artistic turn of mind more powerfully than any other animal shape can. But I've not confined myself to man-making...'<sup>46</sup>

There are other emphases on chance in the novel besides those noted by Bergonzi. The result of one of Moreau's experiments 'got loose by accident - I never meant it to get away' and killed a Kanaka.<sup>47</sup> When Prendick reflects on Moreau's experiment he is disgusted at the purposelessness of it all, just as Darwin's contemporaries found the

<sup>45</sup> *ibid.*, Chap. 14, p. 91

<sup>46</sup> *ibid.*, Chap. 14, p. 91

<sup>47</sup> *ibid.*, Chap. 14, p. 97

idea of a cruel and purposeless nature so abhorrent:

It was the wantonness that stirred me. Had Moreau had any intelligent object, I could have sympathised at least a little with him....But he was so irresponsible, so utterly careless. His curiosity, his mad aimless investigations, drove him on, and things were thrown out to live a year or so, to struggle, and blunder, and suffer; at last to die painfully. ...I must confess I lost faith in the sanity of the world when I saw it suffering the painful disorder of this island..<sup>48</sup>

There could scarcely be a more condensed account of the early reactions to Darwinian theory. Again, the very boat in which Prendick eventually escapes, drifts 'on an aimless course' <sup>49</sup> towards the island, with no one to steer or direct it.

Even Darwin had had reservations about the centrality of chance in the evolutionary process; he wrote to his fellow-biologist, Asa Gray:

I cannot think that the world as we see it is the result of chance; and yet I cannot look at each separate thing as the result of design ....I am, and shall ever remain, in a hopeless muddle. <sup>50</sup>

But once chance is accepted, the implication of waste is inescapable. This was immediately seen to be one of the major evils of Darwin's scheme and a severe charge to be levelled against a supposedly benevolent Creator. Cudworth's dilemma seemed oppressively relevant.<sup>51</sup> Moreau is no loving god; he personifies the insentient, mechanistic process which Tyndall and Huxley had so ruthlessly

<sup>48</sup> *ibid.*, Chap. 16, p. 123

<sup>49</sup> *ibid.*, Chap. 21, p. 167

<sup>50</sup> Charles Darwin, *The Life and Letters of Charles Darwin* (London, 1887) Vol. II, p. 312.

<sup>51</sup> 'Consider for a moment the problem of evil. There are four possibilities with regard to evil. Either God is able but not willing to overcome it, or perchance he is not able, though he may be willing. It may be that he is neither able nor willing to overcome evil. Or it remains that he is both able and willing. Only the last would seem to be worthy of a good God, and it does not happen.' R. Cudworth, *The Intellectual System of the Universe*, [1678] (London, 1845)

exposed.<sup>52</sup> This is stated quite explicitly by Prendick:

A blind fate, a vast pitiless mechanism, seemed to cut and shape the fabric of existence, and I, Moreau (by his passion for research), Montgomery (by his passion for drink), the Beast-People with their instincts and mental reservations, were torn and crushed, ruthlessly, inevitably, amid the infinite complexity of its incessant wheels.<sup>53</sup>

though, in this case, unlike the passage quoted above,<sup>54</sup>, Moreau is represented, for the sake of realism, as being almost helplessly caught up in this process, rather than as directing it. In general, the only emotion he feels for wasted life is impatience at the delay it causes him. The six Kanakas he had originally brought to the island as servants are all presumed dead from 'accidental causes' and the early subjects of his experiments were failures:

I began with a sheep, and killed it after a day and a half by a slip of the scalpel; I took another sheep ... it looked quite human to me when I had finished with it, but when I went to it I was discontented with it, ... then I took a gorilla...<sup>55</sup>

The almost arbitrary succession of beasts which passes through Moreau's hands re-enacts the idea of the evolutionary process as Nature's giant experiment, wherein much material must, of necessity, be lost for the sake of a few 'successes'. Moreau is as ruthlessly amoral as the Huxleyan view of nature and indeed his character is virtually a dramatization of the dangers which Huxley had warned would result from an

<sup>52</sup>J. Tyndall's address to the 1874 Meeting of the British Association, published as 'The Belfast Address' in Fragments of Science (New York, 1892) II, p. 201.

<sup>53</sup>Dr. Moreau, Chap. 16, p. 123

<sup>54</sup>Ibid., Chap. 16, p. 123 (see p. 116 above)

<sup>55</sup>Ibid., Chap. 14, pp. 94-5

'imitation' of the 'cosmic process', or from the attempt to derive a social ethic from it. Characteristically, Moreau endeavours to justify his relentless pursuit by just such an appeal to a 'natural' philosophy:

I am a religious man, Prendick, as every sane man must be. It may be, I fancy, I have seen more of the ways of this world's Maker than you - for I have sought His laws, in my way, all my life. ... To this day I have never troubled about the ethics of the matter. The study of Nature makes a man at least as remorseless as Nature.<sup>56</sup>

Waste in any process involving living beings necessarily implies also pain, and pain is one of the most recurrent themes of the novel. It first assails Prendick through the agonized cries of the vivisected puma. To his raw and unaccustomed senses:

the emotional appeal of those yells grew upon me steadily, grew at last to such an exquisite expression of suffering that I could stand it in that confined room no longer...It was as though all the pain in the world had found a voice.<sup>57</sup>

The contrast between Prendick's emotional reaction to the cries and Moreau's unemotional acceptance of the necessity of pain epitomises the difference between the two men: the one cannot bear to know, or be forced to share in any sense the depths of suffering of living beings; the other extols suffering and inflicts it with a grim sense of inevitability. It might, of course, be argued that Moreau is at least the more honest of the two men, since Prendick admits:

Had I known such pain was in the next room, and had it been dumb, I believe - I have thought since - I could have stood it well

<sup>56</sup> *ibid.*, Chap. 14, pp. 93

<sup>57</sup> *ibid.*, Chap. 8, p. 45

enough. It is when suffering finds a voice and sets our nerves quivering, that this pity comes troubling us.<sup>58</sup>

However, it is important to note that, though both men are biologists, they both differ recognizably from Huxley, Wells's ideal biologist, in their attitudes to pain. As we have seen, Huxley, like Moreau and unlike Prendick, did not close his eyes to the spectacle of waste and suffering involved in the evolutionary process; but Moreau does not merely accept the fact of suffering for himself and other creatures; he actively inflicts it - a course of action which Huxley rigorously condemned in his Romanes lecture. Moreau exploits the use of pain to the full:

Each time I dip a living creature into the bath of pain, I say, This time I will burn out all the animal, this time I will make a rational creature of my own.<sup>59</sup>

This bath of pain through which the beasts must pass to be made whole, i.e. more human, is a richly significant symbol, for clearly it is intended to have overtones of the baptismal ceremony, a washing away of original sin and a passing from death into life, just as it is certainly intended to be reflected in Moreau's own name, a condensation of 'water of death'. This is sufficiently emphasised, if emphasis were needed, when Prendick hears Montgomery calling out the name as a disyllable - 'Mor - eau'.

Moreau is also associated with the deists' idea of God and with certain aspects of Judaeo-Christian orthodoxy. Apart from the oblique reference to the ceremony of baptism, the gatherings of the Beast-folk are, whatever the similarity to Kipling's Jungle Book, intended primarily as religious

<sup>58</sup>ibid., Chap. 8, p. 45

<sup>59</sup>ibid., Chap. 14, pp. 98-9

ceremonies involving a litany of prohibition, commandments delivered from on high, and a grovelling acknowledgment of Moreau's omnipotence and rights over them, as they sing hymns on the theme 'all thine'<sup>60</sup>:

'His is the House of Pain',  
'His is the Hand that Makes',  
'His is the Hand that Wounds',  
'His is the Hand that Heals'.<sup>61</sup>

Moreau even follows the Genesis pattern of creation to the extent of 'creating' a serpent-devil:

It was a limbless thing, with a horrible face that writhed along the ground in a serpentine fashion.<sup>62</sup>

But the most startling parallel with Christian orthodoxy is Moreau's mock resurrection. Strangely enough, this episode which one might suppose would be considered highly offensive, if not blasphemous, seems to have passed unnoticed by critics; yet the effect of this grotesque 'resurrection' cannot but be intended to reflect back upon the authenticity of Christian doctrine. The very language used is highly reminiscent of the gospel accounts of the empty tomb:

They seemed awe-stricken and puzzled. 'Where is he?' said Montgomery.  
'Beyond', and the grey creature pointed.  
'Is there a Law now?' asked the Monkey Man...  
'Is he dead indeed?'  
'Is there a Law?' repeated the man in white...  
I suddenly stepped in front of him and lifted up my voice:  
'Children of the Law,' I said, 'he is not dead! ...He has changed his shape - he has changed his body', I went on. 'For a time you will not see him. He is ..there! - I pointed upward - where he can watch you. You cannot see him. But he can see you. Fear the Law'...  
'He is great, he is good', said the Ape Man, peering fearfully upward.<sup>63</sup>

<sup>60</sup> *ibid.*, Chap. 14, p. 99

<sup>61</sup> *ibid.*, Chap. 12, p. 73

<sup>62</sup> *ibid.*, Chap. 14, p. 97

<sup>63</sup> *ibid.*, Chap. 18, pp. 132-3

Moreau, then, represents a nightmarish hybrid, the logical and inevitable outcome, as Wells saw it, of the desire to graft on to a deistic belief in an omnipotent Creator, the postulates of Darwinian theory with all that it entailed, including the assertion of a continuum of creation which acknowledged no gap, no essential difference in kind, between man and his forebears. Wells thus deliberately set out to destroy the hope cherished by liberal theologians, that some valid, if tacit, compromise was possible between science and revealed religion. But he was not yet sufficiently interested in the fate of religion to launch out and devise the outlines of a substitute faith, as he was to do later.

Bergonzi comments that Moreau must have offended not only Wells's more traditionally-minded readers, who objected to the proposition that there was no essential difference between man and beast, 'but at the same time, the romanticising of Moreau, and his specific identification with the arbitrariness and indifference to suffering of what Huxley had called the "cosmic process" would have offended scientifically-minded people.'<sup>64</sup> It seems to me, however, that if 'scientifically-minded' readers were offended, this could only have been because they identified Moreau with their contemporary scientists, an identification which Wells was at pains to discourage by underlining the basic differences between his protagonist and that figurehead of biologists, Huxley, whose Romanes lecture was too recent and too well-known for the contrast to be neglected. Their fundamentally different attitudes to pain and suffering and their diametri-

<sup>64</sup>B. Bergonzi, The Early H.G. Wells (Manchester, 1961)  
Chap. 4, p. 112

cally opposed ethical standpoints have already been discussed. Moreover, in Wells's allegory of an island cosmos, it would seem clear that Moreau is intended to represent not the biologist observing Nature - this is the rôle of Prendick who, if anyone, represents Huxley<sup>65</sup> - but rather the 'cosmic process' itself.

The scale of reality which Wells has succeeded in portraying in the handful of characters on his island (and we should not miss the irony that this island which disposes once for all of the romantic idea of the 'noble savage' is presumed in the Introduction to be Noble's Island) shows the extent of his mythopoeic capacities. But at the same time the realism of the novel - and the recoil of Wells's contemporaries from its vivid pictures of horror testifies to its atmosphere of authenticity<sup>66</sup> - betokens a mind firmly grounded in facts and aware of the full implications of current biological knowledge. Nevertheless, granted this accuracy of detail, Wells's success in creating the sense of a mythical dimension in the novel resides in the slight ambiguity or vagueness. The images do not quite reinforce each other and the resultant blurred and composite picture seems to partake of a complexity all the more striking because of the clarity of the surrounding detail. Is Moreau fully human or a parody of God? Is he a scientist or an allegory of the evolutionary process itself? Apparently he partakes of all these aspects to varying degrees, and therein lies his depth and his stature.

<sup>65</sup>Prendick has studied biology at University College.

<sup>66</sup>The Times (17th June, 1896), p. 17; The Athenaeum (9th May, 1896), p. 615-6; The Speaker (18th April, 1896) p. 430, The Saturday Review (11th April, 1896) p. 368

I have tried to show briefly the extent to which particular assumptions and methods of science, and especially biological concepts, were central issues in Wells's thought, but before attempting an assessment of the scientific quality of his thinking, it seems pertinent to discuss first his attitude to the actual principles of the scientific method since these are frequently considered alien to the literary mind.

The basis of the experimental method, and necessarily therefore one of the cornerstones of scientific theory, is a rejection of fixed and determined 'laws', of unquestionable authorities and infallible doctrines; hence it is descended, philosophically, from the doctrine of Nominalism. From the beginning, Wells ranged himself in the Nominalist camp in the perennial conflict between Nominalists and Realists.<sup>67</sup> In one of his earliest writings, 'The Chronic Argonauts' (1888), he was already stressing this. Dr. Nebogipfel explains to the bewildered minister:

'Opinions of all sorts, ... - Scientific Theories, Laws, Articles of Belief, or, to come to elements, Logical Premises, Ideas, or whatever you like to call them - all are, from the infinite nature of things, so many diagrammatic caricatures of the ineffable - caricatures altogether to be avoided save where they are necessary in the shaping of results- as chalk outlines are necessary to the painter and plans and sections to the engineer.'<sup>68</sup>

<sup>67</sup> 'Realist' in the Mediaeval and philosophical sense, which is almost exactly opposite to the modern and colloquial sense of the word.

<sup>68</sup> 'The Chronic Argonauts', Pt. II, quoted by Bergonzi, op. cit., Appendix I, pp. 209-210.

and three years later, in an article for the Fortnightly Review, Wells claimed that his 'rediscovery of the unique' marked the end of the reign of inflexible laws and involved an open-mindedness to new hypotheses and unforeseen, even unexplained phenomena.<sup>69</sup>

These assertions voice almost the extreme Nominalist position and Wells, in his several explicit restatements of the Nominalist-Realist controversy, repeatedly declared himself a Nominalist, believing that this position alone was compatible with a thorough-going allegiance to the deductive methods of experimental science. His lecture, 'Scepticism of the Instrument', later reprinted in A Modern Utopia, makes this point which is further elaborated in First and Last Things:

We are biassed to believe that, except for perversity, all our minds work exactly alike: Man, thinking man, suffers from intellectual over-confidence and a vain belief in the universal validity of reasoning...Of everything we need to say: this is true, but it is not quite true....All the great and important beliefs by which life is guided and determined are less of the nature of fact than of artistic expression.<sup>70</sup>

Wells's clearest statement, however, one to which he later referred and never revoked, is that in The Work, Wealth and Happiness of Mankind.<sup>71</sup> I quote from it at some length for future reference:

The essence of this vast dispute between Nominalism and Realism which was already beginning in the Greek discussion between the One and the Many...may be stated in a

<sup>69</sup>'The Rediscovery of the Unique' Fortnightly Review, L. (July, 1891) p. 106

<sup>70</sup>First and Last Things, Book I, xii, pp. 222

<sup>71</sup>The Work, Wealth and Happiness of Mankind, Chapter II, i-iv inclusive. Wells refers to this treatment in Experiment in Autobiography, Chap. 5, ii, p. 226

few paragraphs. Indeed one may get very near the heart of the matter in a sentence. We have already said that there are three ways of thinking about words; one may think they are truer or less true than fact, or that they are accurate and fit the fact exactly. For the Realist the word was truer than the experience; for the Nominalist the experience was truer than the word. ... The Realist believed that all individuals are imperfect specimens of the perfect 'type'; the Nominalist ignored the perfect type....The practical defeat of Realism over the larger areas of human interest was obviously a necessary preliminary to the release of experimental science. You could not get men to look at reality until verbal Realism was abandoned. It was so much easier to deduce your beliefs from first principles than to go out to make observations, and, according to the Realists, it was a sounder process. The protest of Roger Bacon was the outcry of a Nominalist in a Realist Age. ...It was Roger Bacon who was the first to ascribe to experiment its proper importance in the pursuit and discipline of knowledge ... he was almost the first human being to stress the supreme importance of verifactory experiment in the search for knowledge. <sup>72</sup>

Wells's firm Nominalist belief in the uniqueness of every entity was, in turn, derived from Darwinism. It is arguable that, by dissolving the Linnaean distinctions between categories, and showing that species were located along a continuum, Darwin had demonstrated the inadequacy of categories and labels and thus, by implication, affirmed the uniqueness of every entity. In 'The Rediscovery of the Unique' Wells made this connection explicitly:

The work of Darwin and Wallace was the clear assertion of the uniqueness of living things; and the physicists and chemists are now trying the next step forward in a hesitating way.<sup>73</sup>

and, later, in A Modern Utopia, he returned again to the point:

<sup>72</sup> *ibid.*, Chap. II, ii, pp. 64-7

<sup>73</sup> 'The Rediscovery of the Unique', p. 111

The boundaries of species have vanished ... individuality carries with it the quality of the unique ... To the modern thinker individuality is the significant fact of life.<sup>74</sup>

Clearly, Wells mistrusted all-inclusive labels under which, on the basis of similarity, similar entities were grouped and thereafter tacitly considered to be identical. He then proceeded to argue that this mistrust was a necessary basis of both the scientific method and Nominalism, since both repudiated tradition and authority in any guise. After the analysis of Nominalism quoted above, Wells went on to characterise scientific method as follows (Wells's italics):

'Observe, try, record, speculate logically, try out your speculation, confirm or correct, communicate to other investigators, hear their communications, compare, discuss logically, establish, and so onward.' This, for all practical purposes, is the method of science. ... Distrust every term, every name you use. Logic is very serviceable as an aid to judgment, but not as a final judge. All the terms you use fit loosely on fact. That is the key persuasion behind the experimental method.<sup>75</sup>

This anti-authoritarian aspect of science made an immediate and lasting appeal to Wells's intrinsically rebellious nature, and it continued to play an important role in his thinking, not merely in the philosophy of science, but in his political and sociological thought also. Unlike orthodoxy in other fields, scientific method makes no claim to infallibility and refuses to rest content with the results it has obtained in the past. The same continued questioning of current hypotheses is one of the most striking characteristics of

<sup>74</sup> A Modern Utopia, Chap. 6, ii p. 164

<sup>75</sup> The Work, Wealth and Happiness of Mankind, Chap. II, ii, p. 67.

Wells's scientific romances in which current scientific assumptions are no more exempt from rigorous consideration than are political or religious ones, for he saw that those who accepted the 'authority' of science as absolute were in fact farthest from understanding the true scientific method.

Whether consciously or unconsciously on his part, Wells's awareness of the limitations of scientific 'truths' led to an interesting feature of his utopias. In science, the greater the number of trained men, the stronger the likelihood of its advance; in authoritarian systems, on the other hand, the greater the numbers of educated and enquiring minds, the stronger the likelihood of the system's breakdown, for with the growth of intellectual independence, dissension under a restrictive system becomes almost inevitable - hence, in a totalitarian state, complete authority is always vested in a relatively small number of people. In common with most scientists, Wells mistrusted the power of those in authority, realizing the ease with which their judgment might be corrupted through their office; yet he also recognized the need for dedicated and strong men in the struggle to institute order and efficiency in society. It is thus significant that in nearly all his plans for a utopia, he depends for leadership chiefly on the scientists of the society. They, because of their training, are considered sufficiently impartial and morally reliable to remain uncorrupted by the mantle of authority; again, because their major interests lie elsewhere they will be glad to lay down their interim power when the masses have been sufficiently educated for self-government; and, perhaps most importantly,

they, because of the strongly anti-authoritarian bias of their training, will continue to examine, question and test the fundamental assumptions and beliefs of their society, and educate others to do likewise. Wells's utopias, unlike almost all that have followed them, pursue the actual policies of scientific method, not some authoritarian travesty of these, and stress the equal responsibility of all citizens. In the scheme of development of the Wellsian utopia there is therefore a growing tendency towards the elimination of any separate governing class. The Open Conspiracy, which describes one of the first stages, is an open invitation to all 'men of good will'; in A Modern Utopia, membership of the social élite, the Samurai class, is open to all who are prepared to follow the Rule, that is to say, it is potentially capable of including all citizens in its ranks should they so desire, while in the utopia of Men Like Gods formal government has become unnecessary for all the citizens have been educated to act responsibly.

I have tried to show briefly the extent to which the assumptions and methods of science, and in particular fundamental, biological concepts, came to form the central issues and themes of Wells's thought and work, but it is necessary to consider whether his manner of thinking, as distinct from the topics with which he dealt, was scientific also, or whether he merely attempted to disguise an essentially non-scientific mode of reasoning by the glib use of overtly scientific material couched in a judicious selection of technological terms.

## Chapter 2 Scientific Method and Wells's Thinking

There has been no universal consensus amongst critics as to whether Wells's thought is consistent with, and influenced by scientific method, but the most interesting point to emerge from a survey of the critical estimates is that while those scientists who are familiar with Wells's work have, for the most part, applauded his scientific perceptivity and the plausibility of his expression, even, in a few cases, regarding it as germinal to their own ideas, literary critics, after the first wave of somewhat indiscriminate enthusiasm, have tended to denigrate Wells's scientific ability and to relegate his work to the realm of interesting fantasy, the scientific content of which is illusory and dependent almost entirely on a display of technical vocabulary. I propose therefore to examine representative estimates from both groups of critics and to attempt some assessment of the reasons for this apparent anomaly.

It has been noted that Wells, having attained a first class pass in biology, proceeded to fail his second and third years at the South Kensington Normal School of Science, and thus left that establishment without the desired B.Sc. qualification. However, during his years as a school-teacher at Henley House, he seems to have had little difficulty in passing the Intermediate Science Examination in July, 1889 with second class honours in zoology or in gaining the diploma of Licentiate of the College of Preceptors in the same year.<sup>1</sup> The following year, while working at

<sup>1</sup> Experiment in Autobiography, Chap. 6, v, p. 334.

Briggs's Tutorial College, he presented himself to the London University examiners for the B.Sc. degree, gaining first class honours in zoology and the first place in the second class honours list in geology. In 1891, he was awarded a Fellowship of the College of Preceptors and the Doreck Scholarship. During this time at the Tutorial College, he also published a Textbook of Biology, partly for financial reasons but also because of his concern about the poor methods then current in the teaching of biology, a matter for which he was to feel a responsibility throughout his career. After Wells gained his B.Sc. degree, there was an interval of fifty-one years before he was awarded a doctorate from London University for his thesis 'On the Quality of Illusion in the Continuity of the Individual Life in the Higher Metazoa, with particular reference to Homo sapiens', but during this interim period the esteem in which his scientific reputation was held by his contemporaries may be partially gauged from the fact that, as early as 1902, he was invited to lecture to the Royal Institution, an honour usually reserved for eminent specialists. The text of his lecture was printed in full in Nature, (February 6, 1902) and in the Smithsonian report for the same year, both publications of the highest repute in the scientific world. Later, following the publication of his book, Natural Science and the Classical System in Education, he was chosen to write the 1916-1918 report of the League for the Promotion of Science in Education (Harrison and Sons, 1919). He was also invited to contribute to the 1925 edition of the Encyclopaedia Britannica

a sixty-page section entitled 'A Forecast of World Affairs'.

These were no mean distinctions to be conferred upon a man who was not a professional scientist. Moreover, apart from these formal honours, there exists considerable evidence of the regard in which Wells was held by contemporary scientists. When he wrote to Arnold Bennett:

Ray Lankester will tell you I've never jarred on the exacting sensibilities of a critical scientific mind.<sup>2</sup>

he was not overstating the case. Ray Lankester, formerly a fellow-student at South Kensington, was at this time Director of the Natural History Department and Keeper of Zoology at the British Museum, and soon to be knighted for his outstanding work in Zoology. He remained a firm friend of Wells, whose work he clearly admired since he was not only one of Wells's consultants for the Outline of History, but also edited Wells's Natural Science and the Classical System in Education, and reviewed Anticipations for Nature in the following highly complimentary terms:-

Mr. Wells has a thorough knowledge of and considerable training in, the great branches of science - physics, chemistry, astronomy, geology and biology. This course of study operated, in the case of Mr. Wells, upon a mind naturally gifted with an extraordinarily vivid imagination....the really wonderful range of knowledge....the scientific accuracy of the abundant details, the absolute restraint of the weird histories recounted, within the limits of what scientific criticism must admit as possible - nay, even probable, given the one initial miracle of anyone having and recording experience of such things - lend a special charm to Mr. Wells's writings wanting in those of all other masters of this kind of literary craft from Swift to Jules Verne.<sup>3</sup>

<sup>2</sup>Letter from Wells to Bennett, 19th August, 1901, reprinted in Arnold Bennett and H.G. Wells (ed. Harris Wilson), (London, 1960) p. 59

<sup>3</sup>E.R. Lankester, 'The Present Judged by the Future' Nature, LXV. Supplement, (March 13, 1902) iv - v.

In January of the same year, an anonymous review of The First Men in the Moon had appeared in Nature, making similar, almost eulogistic claims:

Verne's work was imaginative enough to hold the attention, but full of scientific blunders and improbabilities of the most glaring character. Mr. Wells has produced a book of a very different character; he has made himself master of the little we know about the moon, and thought out the possibilities with the greatest care, and the result is a narrative which we will venture to say is not only as exciting to the average reader as Jules Verne's but is full of interest to the scientific man. ...it is worth reading the book with minute care to see if one cannot catch Mr. Wells in any little scientific slip. Some writers are so easy to catch that the game is not worth playing; but Mr. Wells is a worthy opponent, and we are glad to see that his scientific rank has been recognized by the Royal Institution who have invited him to lecture.<sup>4</sup>

Arnold Bennett recorded that:

Those who prefix 'pseudo' to the scientific part of Mr. Wells's novels are not the men of science. One may pleasantly observe the experts of Nature, a scientific organ of unrivalled authority, discussing the gravitational phenomena of The First Men in the Moon, with the aid of diagrams, and admitting that Mr. Wells has the law on his side.<sup>5</sup>

Later, the physicist, Ludwig Silberstein, in his Theory of Relativity quoted with approbation the words of Wells's Time Traveller.

'There is no difference between Time and Space except that our consciousness moves along it.'

<sup>4</sup> 'A Lunar Romance', Nature, LXV, (Jan. 9, 1902) 218

<sup>5</sup> Arnold Bennett, 'Herbert George Wells and his Work', Cosmopolitan Magazine, XXXIII (August, 1902) 466

and commented in a footnote:

It is interesting to remark that even the forms used by Minkowski to express these ideas as 'three-dimensional geometry becoming a chapter of four-dimensional physics', are anticipated in Mr. Wells's fantastic novel. Here is another sample illustrative of what is now called a 'World tube': 'For instance, here is a portrait (or say a statue) of a man at eight years old, another at fifteen, another at seventeen, another at twenty-three, and so on. All these are evidently sections, as it were, Three-Dimensional representations of his Four-Dimensional being which is a fixed and unalterable thing.' Thus Mr. Wells seems to perceive clearly the absoluteness, as it were, of the world tube and the relativity of its various sections.<sup>6</sup>

One of the most remarkable of Wells's 'prophecies', that of atomic warfare in The World Set Free, was fully appreciated by both contemporary scientists and later physicists. Inspired by Frederick Soddy's Interpretation of Radium, Wells wrote in Spring, 1913, to A.T. Simmons, then editor of the Times Educational Supplement, that he had:

suddenly broken out into one of the good old scientific romances again, and I want to know quite the latest about the atomic theory and sources of energy. I've read and mastered Soddy's very good little book and I want more. My idea is taken from Soddy. Men are supposed to find out how to set up atomic degeneration in heavy elements, just as they found out long ago how to set up burning in coal. Hence limitless energy. Will you do me the kindness to write under the enclosed just whatever books you think will give me tips for this.<sup>7</sup>

If Wells obtained such a list, he apparently studied it to good effect as a background to his speculations. In 1913, when his novel was written, physicists had no proposals for splitting the atom, yet 1933, the year in which the scientists of the novel first allegedly succeeded in constructing fission

<sup>6</sup> L. Silberstein, The Theory of Relativity (London, 1914) p.

<sup>7</sup> Quoted G. West, op. cit., p. 119

bombs to be used in the 1956 holocaust, was actually the year in which the Joliot-Curies first produced radioactive phosphorus by bombarding aluminium with beta particles, the first step in tapping atomic energy. Again, in the novel, Wells's scientists discover a substance, carolinium, which has the same properties and uses as plutonium, an element isolated only much later when uranium was bombarded with neutrons and which, with uranium, is now the most important atomic fuel. The concept of using atomic degeneration to provide nuclear power, the possible uses of this power, and the details of the process as described in this novel elicited perhaps the most interesting tribute of all to Wells's scientific acumen, for the distinguished physicist, Leo Szilard, acknowledged a practical debt to Wells, as though to a fellow-scientist:

In 1932, while I was still in Berlin, I read a book by H.G. Wells. It was called The World Set Free. This book was written in 1913, one year before the World War, and in it H.G. Wells describes the discovery of artificial radioactivity and puts it in the year 1933, the year in which it actually occurred. He then proceeds to describe the liberation of atomic energy on a large scale for industrial purposes, the development of atomic bombs, and a world war which was apparently fought by allies of England, France, and perhaps including America, against Germany and Austria, the powers located in the central part of Europe. He places this war in the year 1956, and in this war the major cities of the world are all destroyed by atomic bombs. ...This book made a very great impression on me, but I didn't regard it as anything but fiction. It didn't start me thinking whether or not such things could in fact happen. I had not been working in nuclear physics up to that time...<sup>8</sup>

<sup>8</sup>L. Szilard, 'Reminiscences', Perspectives in American History (Cambridge, Mass., 1968) p. 99

But in 1933, while attending a British Association meeting, Szilard suddenly realized how a chain nuclear reaction could be set up. In 1934 he applied for a patent to cover his invention because, he writes:

knowing what this would mean - and I knew it because I had read H.G. Wells, - I did not want this patent to become public.<sup>9</sup>

In 1936 Wells was again invited to lecture to the Royal Institution, this time on his ideas for the setting up of a world encyclopaedia which should be the work of the best minds of each generation in every country. The following year, he developed this concept further in an analytic lecture to the British Association for the Advancement of Science, later reprinted as 'The Informative Content of Education'.<sup>10</sup>

More recently, Julian Huxley, himself a distinguished biologist, has described Wells as:

a rare combination of scientist and humanist ... If his agility of mind and the insatiable range of his interest stood in the way of that focussing of his energy on a particular problem, which is needed for successful scientific research, yet he certainly was one of the chief agents in bringing the free curiosity and the experimental spirit of modern science, to bear upon political and social thought and action.

And if, as I have suggested, he tended to under-rate some activities, such as the arts, it is certainly true that his intensely human nature and broadly humanist interests, kept him from any narrowness of scientific or intellectual approach.<sup>11</sup>

<sup>9</sup> *ibid.*, p. 102.

<sup>10</sup> Both these lectures were reprinted in *World Brain*.

<sup>11</sup> J.S. Huxley 'H.G. Wells', *The Spectator* CLXXVII (August 16, 1946), 161

In the light of such testimony from scientists, the adverse criticisms of the non-scientists who doubted the accuracy of much of Wells's work, are the more difficult to understand; yet, they have become, if anything, more numerous over the years. In 1895, Israel Zangwill published a would-be refutation of 'The Time Machine', and in 1914, Pitkin delivered an attack allegedly from the viewpoint of philosophy on what he considered the logical impossibility of time-travel. Pitkin, however, seems scarcely to have read the story for, by taking exception to points which Wells had explicitly answered and elaborated, he demonstrates chiefly his own failure to understand post-Newtonian physics. Since Pitkin's attack most of Wells's literary critics have hastened to display their own intellectual sophistication by implying that his thought was not scientifically respectable.

There are basically two lines of critical attack involved: one claims that Wells was committed by his philosophical position of Nominalism to an essentially anti-scientific view of the universe, and the other, less extreme, that his methods of writing, and in particular his scientific romances, were, while not anti-scientific, certainly unscientific in their rationale. Since the former charge would, if it were true, be the more fundamentally damaging, it will be considered first.

Anthony West's article in Encounter, 1957, the most far-reaching criticism on this point, asserts that Wells's extreme nominalism is virtually a restatement of Hobbes's position which:

...is the foundation stone of the mechanistic view according to which the whole world is nothing but a mere heap of dust, fortuitously agitated; and the universe a similar abnegation. It is impossible to believe in progress if you believe in a universe in which mind figures as a local accident, and which, by its nature, cannot support any permanent moral order or indeed, any permanent thing. That Wells was deeply committed to this view is evident from his first novel, The Time Machine.<sup>12</sup>

Clearly, if Wells did hold to the Hobbesian view that there is:

Nothing in the World Universal but Names, for the things named are, every one of them, Individual and Singular.<sup>13</sup>

it would have been inconsistent for him to profess any faith in scientific method, for although the procedures of science presuppose a Nominalist scepticism, and a consequent determination to test all theories against repeated experimentation, they nevertheless assume also that phenomena can be rationally understood and that, at least at a statistical level, order and predictability will become evident when sufficient data has been obtained. Thus the scientific method in its entirety involves both Nominalism (in its experimentation, which is essentially deductive) and Realism (in its theorizing, which is essentially inductive), both aspects being equally necessary for the overall progress of scientific investigation. If Wells seemed, at times, to emphasize the former, he was certainly not unaware of the required balance. The 'programme' of research which he outlined in one of his most boldly Nominalist passages

<sup>12</sup> A. West, 'H.G. Wells', Encounter VIII, no. 2, (February, 1957) 53.

<sup>13</sup> T. Hobbes, Leviathan, I, iv

includes 'logical speculation', that is, theorizing, as an integral part of the process<sup>14</sup> while in First and Last Things, in The Work, Wealth and Happiness of Mankind and in his autobiography, he dealt explicitly with the apparent anomaly. In the autobiography, after emphasising the uniqueness of every entity and the need for repeated experimentation to check each generalization posited, he continues:

This pragmatistical view of nature leaves a working belief in causality intact. We can still believe that exactly the same cause would produce exactly the same effect. We are sustained in this belief almost invincibly by the invariable experience that the more similar the cause the more similar the effect. Our minds seem to have been built up from the beginning of time upon such experiences. Nevertheless we can recognize that there is a quiver of idiosyncrasy in every sequence and that nature never repeats herself. There never has been, it seems, exactly the same cause and exactly the same effect. Because the universe continues to be unique and original down to the minutest particle of the smallest atom, that is no reason for supposing it is not nevertheless after the pattern of the rational process it has built up in the human mind. ...the direct, adequate, dynamic causation of every event, however minute, remains the only possible working hypothesis for the scientific worker.<sup>15</sup>

West seems to have identified Wells's philosophy with that of Hobbes primarily because both hold to a Nominalist position, but it must be realized that Hobbes's view, the extreme materialistic reduction, is certainly not the only nominalistic philosophy (in fact its complete antithesis, sensationalistic idealism, is equally as nominalistic)

<sup>14</sup>See p. 126 above

<sup>15</sup>Experiment in Autobiography, Chap. 5, ii, pp. 225-6.

and certainly Wells did not admit to holding an extreme materialistic position.

Nevertheless, Bergonzi supports West's contention and appears to find support for his view in 'The Rediscovery of the Unique', Wells's first explicit attempt to outline his nominalistic position. The article sets out to show that:

Those scientific writers who have talked so glibly of the reign of inflexible law have been under a serious misconception. It [the rediscovery of the unique] restores special providences and unverified assertions to the stock of credible things, and liberty to the human imagination.

and it ends with a parable:

Science is a match that man has just got alight. He thought he was in a room - in moments of devotion, a temple - and that his light would be reflected from and display walls encrusted with wonderful secrets and pillars carved with philosophical systems, wrought into harmony. It is a curious sensation now that the preliminary splutter is over, and the flame burns up clear, to see his hands lit, and just a glimpse of himself, the patch he stands on visible, and around him in place of all that human comfort and beauty he anticipated - darkness still.<sup>16</sup>

Bergonzi finds in this passage a demonstration of Wells's 'scepticism about the beneficent possibilities of science', but such an interpretation surely involves a misunderstanding of Wells's position.<sup>17</sup> When Wells speaks of 'those scientists who have talked so glibly of the reign of inflexible law', he is clearly not intending to imply that all scientists

<sup>16</sup> 'The Rediscovery of the Unique', Fortnightly Review L. (July, 1891), 106, 111.

<sup>17</sup> B. Bergonzi, op. cit. p. 168.

do so, for in the same article he cites the work of Darwin and Wallace as a 'clear assertion of the uniqueness of living things'. Moreover, although, as we have seen, Wells was certainly not blind to the limitations of scientific theory and experimental procedures, he was nevertheless sure that they were the best equipment we at present have in the search for truth; it is the 'physicists and chemists [who] are now trying the next step forward in a hesitating way'. Indeed, the point of the parable is not the feebleness of the glow produced by science, but rather the fact that it illuminates the darkness at all, since, in the terms of the parable, nothing else has done so before it; Science shows us at least where we are and hence the point from which we must proceed in our exploration of the universe. Even though the more we learn the more we realise the extent of our ignorance, this realisation is itself a salutary one.

Wells is merely affirming here, as he almost invariably does, the genuinely scientific view that a theory is never an end in itself, but only a tool, an effort to co-ordinate and explain the phenomena which we observe and that it can never be more than a model of reality. The model approximates most closely to the reality in sections of atomic physics; it is least accurate in biological systems; but in no case can it ever be equivalent to the reality itself; it can only 'fit loosely on fact. That is the key persuasion behind the experimental method.'

Science never professes to present more than a working diagram of fact. She does not explain. She states the relations and associations of facts as simply as possible.

Her justification for her diagrams lies in her increasing power to change matter. The test of her theories is that they work. She has always been true and continually she becomes truer. But she never expects to reach Ultimate Truth. At their truest her theories are not, and never pretend to be, more than diagrams to fit, not even all possible facts, but simply the known facts.<sup>18</sup>

Wells's humility about the limitations of science is certainly no reason for considering his mode of thinking anti-scientific; indeed it tends to demonstrate the contrary position, for flexibility and a willingness to modify, to change or even to demolish a previously held theory or diagram, is one of the most essential characteristics of the scientific method. But this does not necessarily mean that Wells was successful in his attempts to express scientific thought, or that his own thought was scientifically accurate. It therefore becomes necessary to consider next the criticisms of those who believe that his way of thinking failed to satisfy the criteria of scientific method and that he was therefore, albeit unconsciously, fundamentally unscientific in outlook.

Jules Verne was amongst the first to assert that Wells's stories did 'not repose on very scientific bases... Wells is a true representative of the English imagination, and later Brome, comparing Wells with Verne, made the distinction that:

<sup>18</sup> The Work, Wealth and Happiness of Mankind, Chap. II, ii, p. 67, iv, p. 76

Jules Verne dealt with the actual possibilities of invention, things which might, in all reality come about, where Wells used scientific ideas as a pure literary vehicle, an exercise in fantasy, the most attractive and original way of saying what he wanted to say.

Gilbert Murray claimed that Wells 'knew nothing to the bottom' and was 'much more literary than scientific', always trying 'to make the facts fit some theory that had just occurred to him rather than make his theory fit the facts'. Likewise Ward, in his survey of twentieth-century literature, regards Wells as 'no thinker; he was an imaginative artist gone astray' and Raknem after quoting a considerable amount of evidence to the contrary, states categorically that 'Wells had not the mind of a scientist. He had neither the patience to pursue a subject nor the ability to take a strictly scientific view'.<sup>19</sup>

More recently, Bergonzi, one of the foremost of modern Wellsian critics, has developed Anthony West's thesis that Wells's thinking was not basically scientific but imaginative, and claims that pseudo-scientific elements, grafted on to an essentially romantic education, were never quite at home in his mind. He writes:

I refer to them as 'romances' rather than 'scientific romances' since, apart from anything else, the adjective is not always appropriate. There are no 'scientific' elements for instance, in a novel such as

<sup>19</sup>See Verne's contrasting of Wells's work with his own, as quoted by J. Kagarlitski, The Life and Thought of H.G. Wells (London, 1966) p. 113; V. Brome, H.G. Wells, A Biography (London, 1951) p. 70; G. Murray 'Gilbert Murray's Reminiscences of Literary Giants', John o'London's, II, (April 14, 1960) 427-8; A.C. Ward, Twentieth Century Literature (London, 1964) Chap. II, p. 34; I. Raknem, H.G. Wells and His Critics (Oslo, 1962) p. 206.

The Wonderful Visit, or in stories like 'The Country of the Blind' and 'The Door in the Wall'.<sup>20</sup>

This assessment appears to have arisen from Bergonzi's implied definition, unjustifiably narrow as it seems to me, of 'scientific' as meaning actual or scientifically possible:

It is true that Wells had a scientific education and frequently employed scientific language as a kind of rhetoric to ensure the plausibility of his situations; but these situations may have only a tenuous, or even non-existent connection with the actual possibilities of science.<sup>21</sup>

and Bergonzi goes on to quote The Invisible Man as an example of a non-scientific, because fundamentally impossible, situation. However, all four of these examples are in fact quite definitely related to scientific concepts in ways less superficial than the mere use of technological jargon, and it is worth discussing these four cases in some detail in an effort to resolve the anomaly between the disparate assessments of Wells's work.

Certainly The Wonderful Visit, which has the form of a fairy tale with a bias towards social satire, is one of the ~~last~~ least scientific of the romances, and clearly the Angel is not intended to be regarded as a member of some new species. Wells himself called him 'a being who is free from ordinary limitations'.<sup>22</sup> Nevertheless even within such an unlikely framework, Wells has inserted a small vignette of a scientist, a figure which will be traced through

<sup>20</sup>B. Bergonzi, op. cit., Chap. I, pp. 16-17

<sup>21</sup>Ibid., chap. I p. 17.

<sup>22</sup>The Wonderful Visit, ix, p. 141

Wells's work in a later chapter. Dr. Crump, the village physician, is a satirical portrait of the scientist, who, so to speak, cannot see the wood of reality for his pre-conceived theoretical trees. The satire is somewhat heavy-handed and the portrait crude compared with that of Dr. Moreau which followed it, but Crump is nevertheless a credible personality and forms a significant link in the development of the scientist as a fictional character.

More important than the particular figure of Crump, however, is the fact that the basis and moral of the story is quite definitely a scientific one in that it calls for a fresh investigation of phenomena, without any labels, preconceptions or formulae. The vicar confesses to the Angel:

'I had taken it as a matter of course until you came into my life.'<sup>23</sup>

This taking things 'as a matter of course' is the antithesis of the scientific attitude and Wells almost never does it. The impulse underlying the scientific romances, and stated explicitly in The Wonderful Visit, is the refusal to take things at their traditionally-accepted value; beneath the varied shades of wit, humour, pathos and beauty of the story, is the firm nominalist intention to question everything and to discover the reasons for its existence.

When we turn to 'The Country of the Blind', which contains an expanded form of the moral hinted at in Dr. Crump - the intolerance of men towards whatever they do not understand (one is, of course, reminded of the further proverb implicit in the story, 'there are none so blind

<sup>23</sup>The Wonderful Visit, Chap. 18, p. 172

as they that won't see') - we find again an 'unscientific' setting, for the story is cast in almost mythical terms. But the way in which the theme is worked out is evidence of a biologically-trained mind behind it. Edward Shanks remarked on this as early as 1922:

Mr. Wells is the myth-maker of the scientific modern world ... no fairy-tale country for him, nor anything inconsistent with biological impossibilities! The settlers did 'not think of germs and infections' but Mr. Wells does. And the consequences of 'the strange disease' that blinded them are worked out in a complete accordance with what we know of the adaptability of human intelligence.<sup>24</sup>

Wells's ultra-montane race is blind for micro-biological reasons, and he has shown in some detail how cultural evolution, through acquired adaptive characteristics, enables men to overcome a disability which might otherwise have led to their extinction. This is seen much more clearly if the story is read in conjunction with Wells's article, 'Human Evolution, an Artificial Process', in which he compares the different contributions of two kinds of evolution, genetic and cultural:

Natural Selection is selection by death. ...The evolutionary process now operating in the social body is one essentially different from that which has differentiated species in the past and raised man to his ascendancy among the animals. It is a process new in this world's history ... the only considerable evolution that has occurred since [the Paleolithic Period], so far as man is concerned, has been ... a different sort of evolution altogether, an evolution of suggestions and ideas.<sup>25</sup>

In order to appreciate fully the originality of 'The Country of the Blind', it is necessary to understand how new this concept of cultural evolution was in 1904. Wells

<sup>24</sup>E. Shanks, 'The Work of H.G. Wells', London Mercury, V (March, 1922), 509

<sup>25</sup>'Human Evolution, An Artificial Process', Fortnightly Review LXVI (1896) 590

realized that only by this means could survival be ensured in an ecological situation which would normally decimate a population, if not render it extinct within a single generation; but few, if any, of his contemporaries understood the significance of the idea. They tended either to rush into an erroneous Lamarckism, accepting Lamarck's theory of the inheritance of acquired characteristics, or else to reject completely any evidence which seemed to support it. Thus the story is, amongst other things, a biological parable, however little it has been recognized as such, by Wells's contemporaries or by later readers.

'The Door in the Wall' also partakes very largely of the aura of fairy-tale, even of myth, albeit one that is psychologically valid. But the theme of this story involves as well a question to which Wells returned repeatedly in his writing - the contrast between the aesthetic and the scientific inclinations of man and the difficulty of choosing between them. Like The Sea Lady and 'The Beautiful Suit' the story ends with the death of the protagonist who has finally counted the life of concrete reality and worldly ambition well lost in his search for ephemeral beauty. The theme recurs in several guises in Wells's work, for it is part of a wider contrast between experimental and imaginative knowledge, or between science and aesthetics, a conflict which was all too pertinent to Wells's own experience. Bergonzi, amongst other critics, has seen Wells as being caught on an intellectual battle-ground between his scientific training in rational thought and his inherent gift of a vivid imagination. Inkings of this dichotomy apparently assailed

Wells during his science course at South Kensington, when poetry seduced his attention from geology practical work,<sup>26</sup> and he has portrayed a similar struggle in several student characters - in Lewisham, in William Hill of 'A Slip Under the Microscope' - and at greater length in George Ponderevo's dalliance with art. Thus even a manifest fairy-story, 'The Door in the Wall', provides grist for the mill of Wells's scientific approach - in this case a question, partly psychological, partly sociological, raised by his own student experiences. It is certainly conceivable that an extension of this dichotomy continued to dog Wells in the literary field - how far was his imagination justified in leaping beyond the limits of the scientifically acceptable postulates of his day? or, alternatively, how far did a desire for scientific accuracy emasculate his potential literary gifts?

However, the most surprising of Bergonzi's examples of an 'unscientific story' is The Invisible Man. Certainly, in a letter to Arnold Bennett, Wells admitted that the process described in the novel as producing invisibility in living tissues was not scientifically possible, and himself pointed out to Bennett another more awkward difficulty in the scientific rationale of the story:

There is another difficulty ...which really makes the whole story impossible. I believe it to be insurmountable. Any alteration in the refractive index of the eye lens would make vision impossible. Without such alteration the eyes would be visible as glassy globules. And for vision it is also necessary that there should be visual purple behind the retina and an opaque cornea and iris.<sup>27</sup>

<sup>26</sup> Experiment in Autobiography, Chap. 5, iii

<sup>27</sup> Letter to Arnold Bennett, October, 1897, reprinted in Arnold Bennett and H.G. Wells, pp. 34-5

But Wells goes on to indicate why, although well aware of these biological shortcomings of his story, he nevertheless persevered with it:

On those lines [i.e. taking account of the above] you would get a very effective short story but nothing more.<sup>28</sup>

Indeed, these objections scarcely affect the story at all, as a scientific romance. The whole atmosphere of the story is a factual one, almost as though Wells has accepted the challenge to take one of the most magic of fairy-tale situations, the cloak of invisibility, and treat it scientifically. This he does with manifest success. Instead of the standard coup d'oeil transformation, we have a careful analysis in optical terms of what invisibility would entail, reinforced by scientific parallels and analogies together with a suggestion, albeit impossible in practice, as to how such a process might be effected, the whole passage being treated in the most factual and mundane manner:

The essential phase was to place the transparent object whose refractive index was to be lowered, between two radiating centres of a sort of ether-eal vibration of which I will tell you more fully later. No, not these Röntgen vibrations - I don't know that these others of mine have been described, Yet they are obvious enough. I needed two little dynamos, and these I worked with a cheap gas engine...<sup>29</sup>

Yet, striking as this technique of simulating authenticity is, it is not the most important aspect of the story. Wells is far more concerned with the psychological effect on a scientist, Griffin, of this power so suddenly within his grasp. As such, the relevance of the story to science and

<sup>28</sup> ibid., p. 35

<sup>29</sup> The Invisible Man, Chap. 20, p. 128

scientists was already considerable in Wells's own day and seems even more pertinent today.

At the end of his study of the scientific romances, Bergonzi sums up his thesis that Wells's attitudes and interests are basically aesthetic and literary rather than scientific:

The picture that will have emerged from them [the preceding chapters] of the young Wells as a symbolic and mythopoeic writer whose work has closer affinities to poetry than to the conventional realistic fiction of his time, will no doubt seem strange and even incredible to those who are more familiar with his later career.... It is true of course that Wells had received a scientific education and that his later attitudes were severely positivistic. Yet, as we have seen, he had been absorbing fictional romance from childhood, long before he embarked on his studies at South Kensington.<sup>30</sup>

Wells himself was certainly aware of these rival claims in his own personality. In his autobiography he recalls the conflict between them during the years 1897-1910 (that is, the period during which the short stories and the majority of the greater novels were written); but he himself believed firmly that his scientific training outweighed the aesthetic strain in his personality:

So far...I have tried to show the pull of two main groups of divergent personalities, and two main sets of tendency upon my character, during those still plastic days at Sandgate, and to indicate something of the quality of my response. ...The scientific pull was the earlier and the stronger. I moved more and more away from conscious artistry and its exaltations and chagrins; I was strengthened against self-dramatization and confirmed in my disposition to social purposiveness. This definition and confirmation of my mind was the principal thing that was happening to me in those early Sandgate years.<sup>31</sup>

<sup>30</sup> B. Bergonzi, *op. cit.*, Chap. 7, p. 166

<sup>31</sup> *Experiment in Autobiography*, Chap. 8, v, p. 624

How then are these opposing critical estimates to be resolved? The objections raised by Bergonzi are basically the outcome of his failure, characteristic of many of Wells's literary critics, to understand the true nature of the scientific method and in particular of twentieth-century physics, and hence to appreciate how completely Wells relied on such reasoning, not only in the scientific romances, but throughout all his work. Until the twentieth century, the prevailing attitude of scientists was one of obligatory detachment and rigorous objectivity derived from a mechanistic philosophy of the universe. But with Heisenberg's enunciation of the Uncertainty Principle (1927) this concept of science became untenable. The physicist, Sir James Jeans, has virtually paraphrased Wordsworth's dictum, 'we murder to dissect', in the following words:

Every observation destroys the bit of the universe observed, and so supplies knowledge only of a bit of the universe which has already become past history ...

and he goes on to elaborate:

The old science which pictured nature as a crowd of blindly wandering atoms, claimed that it was depicting a completely objective universe, entirely outside of, and detached from, the mind which perceived it. Modern science makes no such claim, frankly admitting that its subject of study is primarily our observation of nature and not nature itself. The new picture of nature must then inevitably involve mind as well as matter - the mind which perceives and the matter which is perceived - and so must be more mental in character than the fallacious one which preceded it.<sup>32</sup>

<sup>32</sup>J. Jeans, The New Background of Science, (Michigan, 1959) p.2

This volte-face is of course relevant chiefly to the field of submolecular physics but there is a wider sense in which popular opinion ascribes to science an objectivity which would, if it were adhered to, cripple essentially all scientific progress except that in pure mathematics. Scientific method is not, and never has been, the method of pure deduction, for clearly if it were no scientist would discover anything unless it rose up out of nature and forcibly smote him. On the contrary, all original and productive scientific thinking involves a very large element of induction, a 'wild surmise' which leaps beyond the known facts and suggests a further theory to be tested or a new synthesis of previously-known facts. Even though such an inductive process achieves scientific respectability only after rigorous experimentation has failed to disqualify the hypothesis, it is none the less basic to the progress of experimental science.

Now it is precisely for this latter procedure that Wells's scientific romances have sustained the most criticism. They were said to ignore all the apparent difficulties in the way of some novel postulate which outraged the current assumptions, and then to proceed blithely by unexceptionable deduction to elaborate the consequences and implications, so that, if we are once led to accept the initial supposition, we can scarcely dispute the conclusion. Wells used this method in nearly all the scientific romances. Once we grant the possibility of the existence of a substance such as cavorite, we can scarcely fault the descrip-

tion of the flight to the moon, once grant the possibility of an atmosphere on the moon and there is no clear point where we can logically deny the evolving story of Selenites and their civilization; so too with 'Boomfood' in The Food of the Gods and time-travel in 'The Time Machine'. Thus, in the best scientific tradition, Wells postulates a condition and then proceeds to deduce the consequences. If he adopted at times an extreme nominalist position and waived current theories concerning the nature of the physical universe, it was not in order to usher in a fantastic world where physical laws were inoperable, but rather in order to test and question our assumptions by considering the possible alternatives. In this he was acting strictly in accordance with Huxley's dictum that one should:

...sit down before the fact like a little child, be prepared to give up every preconceived notion, follow humbly wherever and into whatever abysses nature leads, or you shall learn nothing.<sup>33</sup>

It was this comparative freedom from the trammels of conventional thought that enabled Wells at times to consider apparent impossibilities which were later developed and shown to be feasible. A more closed mind, such as Verne's, made fewer blunders, but it also necessarily forfeited the possibility of more fundamental insights. Wells had an unparalleled talent for grasping quickly both the principles underlying the latest experiments and their potential for future developments. In 1893 Schiaparelli first propounded the theory of Martian canals; the following year Percival Lowell, from his observations in Arizona, surmised that the 'canals' might be the work of intelligent beings con-

33. L. Huxley (ed.) The Life and Letters of Thomas Henry Huxley (New York, 1901), I, p. 239

serving water. By 1896, Wells, in an article for the Saturday Review, 'Intelligence on Mars', was theorizing astutely about the probable nature of such hypothetical beings, and their evolution compared with that of Man. He also made the point (before Lowell put the same argument to British astronomers) that since Mars was an older planet than Earth, and thus closer to becoming a cold and dreary wasteland, any intelligent inhabitants would attempt to leave the dying planet and colonize their more habitable neighbour, Earth. Two years later, he used this supposition to remarkable effect in The War of the Worlds. Again, The War in the Air was written only three years after the Wright Brothers first flew a distance of thirty-~~six~~ miles, thereby making aeronautics a practical proposition.

So far Wells is in the most respectable company. Unfortunately, however, the consequences he deduced were not of such a kind as to admit of experimental testing in his own day, and were therefore decried as unscientific. At the turn of the century it was not possible to test experimentally whether there was life on the moon, but this was a temporary limitation of science and not an a priori impossibility (indeed since 1969 such testing has become a routine exercise for returning astronauts). At the time of Wells's writing, the concepts of cavorite, Boomfood and time-travel were all considered to be equally improbable since none were known experimentally. It is therefore interesting to consider the subsequent status of these three postulates in the light of more recent scientific developments.

Cavorite is the example most frequently taken to demonstrate Wells's lack of scientific method, for no such substance has yet been discovered, nor is there the slightest evidence so far to suggest it. But it must be stressed that this is not, strictly speaking, sufficient evidence for denying the possibility of its existence. Since The Food of the Gods was published, the role of hormones in metabolism has been clearly realized and the possibilities of regulating and changing growth rates are being rapidly explored by endocrinologists and dieticians. The concept of 'Boomfood' has been fully vindicated. ~~But~~ But the most interesting study of a Wellsian postulate is that relating to 'The Time Machine', for the thoroughness with which Wells visualised the implications of this assumption shows the amazing extent to which his understanding was abreast, if not ahead, of that of most of the physicists of his day.

The precursor of 'The Time Machine' was a serial, aborted after three parts, which Wells wrote for The Science Schools Journal in 1888, and called 'The Chronic Argonauts'. The grandiose title is symptomatic of the poor writing of this early draft, 'loaded', as Wells later realized, 'with irrelevant, sham significance'<sup>34</sup>, and with unnecessary and distracting incidents. Nevertheless, these stylistic imperfections should not lead us to forget that the idea of time-travelling had already taken shape in Wells's mind by this earlier date of 1888 when the concept of a fourth dimension was still only dimly imagined by scientists. He records that:

<sup>34</sup> Experiment in Autobiography, Chap. 6, ii, p. 309

In the universe in which my brain was living in 1879 there was no nonsense about time being space or anything of that sort. There were three dimensions....and I never heard of a fourth dimension until 1884 or thereabout. Then I thought it was a witticism.<sup>35</sup>

and he later reaffirms that his idea of a fourth dimension as time was an original impulse.<sup>36</sup>

It has been seen that the only literary precursors of the idea of a fourth dimension were Hinton's Scientific Romances, preoccupied with the idea of a fourth dimension of space, and Wilde's brief allusion in 'The Canterville Ghost', which, despite Raknem's assertion that it makes use of time-travel, does not in fact suggest this and speaks only of a fourth dimension of space in the most casual terms without any allusion to the idea of time at all. How, then, did Wells conceive of the idea of time as a dimension analogous to the Euclidean spatial dimensions, in particular, the idea of differential movement along such a dimension and, in the light of later physics, how successfully did he grapple with its implications?

The results of the celebrated Michelson-Morley experiment in 1887 struck the first definitive blow to the concept of light-propagation as energy in the form of waves traveling through an ether, and later became the starting-point for Einstein's work. However, by the close of the nineteenth century there was still no recognition by physicists of the basic relations between the systems of electromagnetic

<sup>35</sup> ibid., Chap. 3, ii, p. 96

<sup>36</sup> ibid., Chap. 9, i, pp. 644-5

and mechanical observations which necessitated corrections to the latter. Those who preferred to preserve the integrity of the whole corpus of Newtonian physics against the results of a single experiment, failed to see that the 'negative' result of the Michelson-Morley experiment clearly implies that the velocity of light is not affected by the motion of the earth, and hence that there is no absolute frame of reference for the earth's motion.

Undoubtedly, this experiment must have caused at least some physicists to question the traditional concepts of velocity and hence of time, but it is understandable that none of their inconclusive speculations would be published. Reputable journals of physics are restricted to publishing experimental results, or, at most, closely-knit mathematical formulations. It is therefore not unlikely that Wells's only source material for the ideas underlying 'The Time Machine' should have been, as he himself claimed, a paper read at the South Kensington Debating Society where, as he records:

I heard about and laid hold of the idea of a fourth dimensional frame for a fresh apprehension of physical phenomena, which afterwards led me to send a paper, 'The Universe Rigid', to the Fortnightly Review...and gave me the frame for my first scientific fantasia, 'The Time Machine'.<sup>37</sup>

Bergonzi has already deduced that this paper was, in all probability, that read on 14th January, 1887, by a fellow-student of Wells, E.A. Hamilton-Gordon, who, in his address 'The Fourth Dimension', discussed the probabilities of multi-

dimensional Euclidean geometry and suggested, apparently at random, time, life and heaven as three possible candidates for the fourth dimension.

Characteristically Wells chose the least obscure of these suggestions to develop, notwithstanding the current popularity of Hinton's Scientific Romances in which was elaborated the idea of a fourth dimension of space. Thus, without the benefit of scientific precursors, Wells launched into an imaginative exploration of what movement in time would mean.

The first scientific paper to consider time as the fourth dimension was that of Lorentz who, in 1895, published his Theory of Transformations. Although Lorentz's original application is now of little interest, his Transformations formed part of the mathematical framework of Relativity Theory, for he regarded the measurement of time as a variable quantity, analogous to spatial measurement. His only universal constant was the velocity of light, and hence all measurements of time and distance were, he said, to be modified according to each system of reference. Nevertheless it was another ten years before the full significance of this theory was recognized by Einstein who made it the basis of his generalization, the Theory of Special Relativity, in 1905.<sup>38</sup>

Einstein was the first scientist to realize the implications of the concept of time as a fourth dimension, and to see, for example, that a clock, attached to any

<sup>38</sup>A. Einstein, 'Zur Elektrodynamik bewegter Körper' Annalen der Physik. XVII (1905) 891-921

moving system, runs at a different rate from a stationary clock, slowing down as its velocity increases, not by virtue of any mechanical changes in the clock, (for an observer travelling with the clock would not notice the changes); only an observer stationary relative to the moving system would find that the moving clock had slowed down with respect to his stationary clock.<sup>39</sup>

Einstein's example of the clocks is particularly relevant to 'The Time Machine', and it is interesting to examine in some detail how successfully Wells's descriptions of the Time Traveller's experiences compare with what we might now predict, knowing the Lorentz Transformations and the Theory of Special Relativity.

The first page of 'The Time Machine' opens with a clear statement of the concept of a fourth dimension by analogy with the three spatial dimensions, (this much Hinton had already done, though in a less intelligible form) and then proceeds to clarify the basic assumptions involved in the idea of time as a dimension. Characteristically, Wells did not attempt to derive such a concept mathematically, but merely from common experience, and he then traced its implications. It is significant, however, that the Time Traveller states categorically (Wells's italics):

There is no difference between Time and any of the three dimensions of Space except that our consciousness moves along it.<sup>40</sup>

<sup>39</sup>In 1904 the French mathematician, Poincaré, had introduced a general physical law which he called The Principle of Relativity, according to which the laws of physics are the same for all observers, whether at rest or moving uniformly in straight lines. But Poincaré did not realize that his principle made the ether concept unnecessary.

<sup>40</sup>'The Time Machine', p. 5

This is also a direct implication of the Lorentz Transformations published the year following the serialization of 'The Time Machine' and seven years after its precursor, 'The Chronic Argonauts'. As if to emphasise the lack of essential difference between time and the three spatial dimensions, the Time Traveller has constructed his machine not merely to travel in time, but to 'travel indifferently in any direction of Space and Time as the driver determines.'<sup>41</sup> One of the guests, the Psychologist, raises what seems to commonsense experience an obvious point, namely that the model time machine, having disappeared, must have gone into the past, if it has indeed travelled in time, because, 'I presume that it has not moved in space, and if it travelled into the future, it would still be here all this time, since it must have travelled through this time'.<sup>42</sup> This is virtually the same objection which Pitkin raises when he charges that:

Future changes will take place in the spot his body occupies: and if his body is projected into the time of those changes, it will be affected by those changes profoundly.<sup>43</sup>

Wells explicitly deals with this supposed objection several times. When it is first raised by the Psychologist, the Time Traveller replies:

'It's presentation below the threshold, you know, diluted presentation.'  
'Of course,' said the psychologist, and reassured us. 'That's a simple point of psychology. I should have thought of it. ...We cannot see it, nor can we appreciate this machine, any more than we can the spoke of a wheel spinning, or a bullet flying through the air. If it is travelling through

<sup>41</sup> *ibid.*, p. 8

<sup>42</sup> *ibid.*, p. 13

<sup>43</sup> W.B. Pitkin, 'Time and Pure Activity', *Journal of Philosophy, Psychology and Scientific Method*. XI (1914) 524.

time fifty or a hundred times faster than we are, if it gets through a minute while we get through a second, the impression it creates will of course be only one-fiftieth or one-hundredth of what it would make if it were not travelling in time. That's plain enough!<sup>44</sup>

Similarly, when the Time-Traveller departs into the future, Mrs. Watchets, who enters the laboratory just after he has started the machine, does not see him, for he has already attained such a speed in time that she, walking at 'normal' speed, appears to rocket across the room according to his frame of reference. Later, the Time Traveller elaborates on the risk which he runs in coming to a stop in any future time:

The peculiar risk lay in the possibility of my finding some substance in the space which I or the machine occupied. So long as I travelled at a high velocity through time, this scarcely mattered. I was, so to speak, attenuated - was slipping like a vapour through the interstices of intervening substances! But to come to a stop involved the jamming of myself, molecule by molecule, into whatever lay in my way; it meant bringing my atoms into such intimate contact with those of the obstacle that a profound chemical reaction - possibly a far-reaching explosion - would result and blow myself and my apparatus out of all possible dimensions.<sup>45</sup>

Hence, when he does stop,

there was the sound of a clap of thunder in my ears ...but presently I remarked that the confusion in my ears was gone.<sup>46</sup>

and again, when the Time Traveller departs on his machine

<sup>44</sup> 'The Time Machine', p. 13-14. It is, of course, an intentional irony that it should be the psychologist who raises the very objection to which he should know the answer. It is another example of that inability to apply what one knows to another less familiar context - a state of mind which Wells repeatedly satirized.

<sup>45</sup> *ibid.*, p. 25-6

<sup>46</sup> *ibid.*, p. 26

for his second and last expedition, there is a corresponding implosion, as molecules of the surrounding medium rush to fill the vacuum suddenly formed. The narrator relates that he heard:

...a click and a thud. A gust of air whirled around me as I opened the door, and from within came the sound of broken glass falling on the floor. ...A pane of the skylight had, apparently, just been blown in.<sup>47</sup>

Wells is also careful to draw our attention to the fact that the time-machine has travelled under its own power only in one dimension. It reappears in the laboratory against the north-west wall although it had started from the south-east corner, the amount of displacement being the exact distance which the Morlocks had carried it from its position on the lawn to the pedestal of the White Sphinx.<sup>48</sup> All these points in the story are entirely consistent with Einstein's Theory.

A further point, with which Pitkin takes issue, is the idea of traversing a 'great deal of time' in a 'little time', for, he reasons:

To do this, time itself must have a time - velocity which the time machine can exceed. And this is a pure contradiction: for velocity is a ratio within the time continuum.<sup>49</sup>

Pitkin seems here not to understand the concept of velocity. In a co-ordinate system, velocity is defined as the distance moved along any axis per unit time. On the basis of Newtonian physics this is usually expressed as  $\frac{\delta x}{\delta T}$  where  $\delta x$  is an increment along a spatial axis and  $\delta T$  is a given basic

<sup>47</sup> *ibid.*, p. 116.

<sup>48</sup> *ibid.*, p. 111.

<sup>49</sup> W.B. Pitkin, *op. cit.*, p. 523.

unit of time. Once the concept of time as a dimension is understood, there is no difficulty in substituting an increment of time,  $\delta t$ , for  $\delta x$  above, whereupon the velocity along the time axis becomes  $\frac{\delta t}{\delta T}$  - namely movement in time with respect to the basic unit of time. This is precisely the concept used by Wells when the Time Traveller speeds up or slows down his machine. Pitkin's objection to the detail that when the Time Traveller arrives in the future he is no older and wears the same clothes merely shows that even in 1914, nine years after the publication of Einstein's work, Pitkin has not understood the implications of Relativity Theory. On the basis of Special Relativity Theory, the Time Traveller, while on the machine, exists in one frame of reference with it and, within that frame, time for him appears to pass 'normally'. Likewise, time for those outside this frame also appears to pass 'normally'. It is only in the interaction of the time machine frame with any other frame of reference that velocity along the time-axis occurs. Therefore there is no reason why the Time Traveller should age, since, as far as he is concerned, and as far as his 'biological clock' is concerned, the only time he has experienced is the period of 'normal' time spent in the seat of the time machine together with the time spent in the course of his three halts - a total of some eleven days in all. His clothes are dusty and torn and his shoes lost only because of his experiences during the time he was not in the time machine.

More serious than any of Pitkin's charges was that made by Israel Zangwill in the year of publication of 'The Time Machine'. At first reading, his article appears

to raise several issues but closer examination reveals that they are all aspects of one fundamental objection which springs from his belief in strict chronological determinism. From the point of view of physics Zangwill's objections create paradoxes as yet unresolvable when held in juxtaposition with the idea of time-travelling, although this latter concept is, by itself, mathematically valid. Zangwill makes the point that the Time Traveller is agitated at the thought of having to remain in the year 802701,

...into which he has recklessly travelled; nor does it ever occur to him that in the afore-said year he will have to repeat these painful experiences of his, else his vision of the future will have falsified itself - though how the long-dispersed dust is to be vivified again does not appear. Moreover, had he travelled backwards, he would have reproduced a Past which, insofar as his own appearance in it with his newly invented machine was concerned, would have been ex hypothesi unveracious.<sup>50</sup>

In physical terms, the objection which holds against the sudden appearance of the Time Traveller at some point in the time continuum is the necessary associated increase in the entropy of the system, and the corresponding sudden decrease in entropy at the point where he left it. Zangwill is mistaken, however, in thinking that such difficulties would have been overcome if the traveller had journeyed into the past

...stopping at the points where particular periods of the world's past history became visible: he would then have avoided the fallacy of mingling personally in the panorama.<sup>51</sup>

<sup>50</sup> I. Zangwill, 'Without Prejudice' Pall Mall Gazette, VII, (September, 1895), 153

<sup>51</sup> ibid. p. 154

The anomalies are equally apparent in this case, for even if the Time Traveller were to avoid actually 'mingling' in the panorama, his appearance there at all, the mere coming to rest in time of the molecules of his body, constitutes a physical event insofar as those molecules thereby prevent the free movement of others into that space.

Zangwill's alternative suggestion had in fact been exploited by the French writer, Flammarion, in his romance, Lumen, which has already been discussed in the Introduction. Zangwill maintains that:

There is a sense in which the continued and continuous existence of all past time at least can be grasped by the human intellect without the intervention of metaphysics. The star whose light reaches us tonight may have perished and become extinct a thousand years ago...could we perceive clearly the incidents on its surface we should be beholding the past in the present and we could travel to any given year by travelling actually through space to the point at which the rays of that year would first strike upon our consciousness. In like manner the whole past of the earth is still playing itself out to an eye conceived as stationed today in space.<sup>52</sup>

In fact, Zangwill does not fully understand this concept, for he blithely extrapolates from light rays, which travel through a vacuum, to sound waves, which do not, and suggests that his theoretical observer has merely to move forwards or backwards along a particular ray of light in order to observe and hear the nearer or more distant past. Such a concept involves travelling at a speed greater than that of light, and this, as Flammarion had realized, is impossible, even in theory, for a physical entity: Lumen is a spirit and travels in thought rather than in body.

<sup>52</sup>ibid., pp. 153-4

Zangwill assumes that his objections, which are partially valid in themselves, have invalidated the whole concept of motion in time, and concludes that 'There is no getting into the Future, except by waiting.'<sup>53</sup> In fact, both arguments, for and against time-travel, are theoretically valid, creating a paradox which has so far remained unresolved. Wells's error lies in avoiding the implications, both physical and logical, of the Time Traveller's sudden appearances and disappearances in time, but clearly this 'error' had to be made if there were to be a story at all. His achievement, which far outweighs this, and to my mind entirely justifies his 'error', lies not only in his literary power but also in his analysis of the mathematical concept of a fourth dimension of time and in his deduction in considerable detail of the side effects upon a body moving differentially along the time axis, effects which were not expounded by scientists until the publication of Einstein's Special Relativity Theory. On the other hand, those critics who claim to have refuted Wells's reasoning have, in general, not understood the concept of a fourth dimension. Bergonzi cites Zangwill and Pitkin as having authoritatively refuted the principles of 'The Time Machine':

Within a few months of the appearance of 'The Time Machine' in 1895, Israel Zangwill had discussed at some length in a review, the impossibility of the book's basic idea, and a more systematic refutation was given in philosophical language in 1914 by W.B. Pitkin.<sup>54</sup>

<sup>53</sup> *ibid.*, p. 155

<sup>54</sup> B. Bergonzi, *op. cit.*, Chap. 2, p. 33

Yet both these critics believe that Wells was considering time as 'being a Fourth Dimension of Space'<sup>55</sup>, an error into which he certainly did not fall. No attempt seems to have been made to re-examine the conflicting views or to decide, on the basis of modern physics, which concepts were the more accurate.

Ironically, in those cases where there has been a partial vindication of Wells's postulates, but where details differ from those of current scientific knowledge critics have tended to shift their ground of attack. Now Wells is frequently criticised for being 'wrong' rather than for postulating the impossible.<sup>56</sup> But to be wrong is not to be unscientific - rather the contrary in one vital sense, for, as Karl Popper and other philosophers of science have conclusively shown, it is characteristic of a scientifically-presented hypothesis that it should make predictions definite enough to admit of being clearly disproved, if wrong; on the other hand there are scarcely any circumstances which would finally disprove an unscientific theory, since it does not make sufficiently precise predictions.

The great faith which Wells habitually placed in scientific method as the only effective means of organizing society, of preventing waste, and of facilitating progress is further evident in his own sociological outlines, many of which read like brief scientific treatises. The Open Conspiracy and First and Last Things are set out as a coherent piece of that same scientific reasoning which they

<sup>55</sup>I. Zangwill, op. cit., p. 154

<sup>56</sup>See, e.g., W. Wagar, H.G. Wells; Journalism and Prophecy (London, 1964)

exhort others to use, and proceed through the use of scientific analogies and metaphors. In their format and style they are closest to Wells's early article 'The Things that Live on Mars', itself a conscious and highly successful attempt to derive a hypothetical picture of the surface and inhabitants of Mars from the few scattered facts then known from observation. Two of Wells's earliest essays 'Zoological Retrogression' and 'On Extinction', already demonstrate this procedure which was to form the basis of much of his most successful writing - broad generalization on a subject, followed by careful reference to facts which have been marshalled in support of the postulate and made palatable by imaginative presentation and a setting relevant to their age. In conclusion there is a prediction, derived from the foregoing. This is the closest literary equivalent of the procedure customarily employed in the presentation of a scientific paper.

Nevertheless there are areas in which Wells's scientific approach faltered. When making use of a scientific background for his stories, he did endeavour to construct this as accurately as possible - we have already noted his request to Simmons for material relevant to the physical background of Soddy's work on radioactivity before he wrote The World Set Free - but inevitably there were times when this background research proved inadequate. Ironically, Burke, in his article 'Mr. Wells and Modern Science' detects a weakness in the Wellsian armour at a point where it might have been thought least vulnerable -

biology. He claims that Wells seems not to have been aware, when writing his Short History of the World, of the later developments in biology:

Not a word about Neo-Darwinism. Neither Weissmann, nor Mendel, nor de Vries, nor Bateson on discontinuous variation and heredity, appears to have attracted his attention. The blood test method due to Professor H.F. Nuttall of Cambridge, affording as it does evidence of man's relationship to the apes, is passed over as though it were unknown. And the more recent work of Keith and others on hormones ... appears to have completely escaped his attention. In truth, Mr. Wells writes as if he were almost a contemporary of Huxley, Tyndall or Father Gerrard; of the science of the nineteenth century and the first few years of the twentieth.<sup>57</sup>

Again, the publication of Dr. Moreau elicited, apart from the wrath of literary critics on ethical grounds, a stern note in Natural Science pointing out the scientific inaccuracy involved in the description of Moreau's transplantation techniques:

From the scientific side, however, Mr. Wells seems to us to have allowed his imagination too free a run in his new story....Mr. Barfurth sums up recent work on transplantation and transfusion conclusively against the success of operations conducted upon animals of different species. Transplantations from one species to another almost invariably have proved unsuccessful.<sup>58</sup>

and an article by a celebrated spokesman for medical research, P. Chalmers Mitchell, also raised doubts about the validity of the central idea of the romance.<sup>59</sup> Wells had stated in a note appended to the novel that:

There can be no denying, whatever amount of scientific credibility attaches to the details of this story, that the manufacture of monsters - even of quasi-human monsters - is within the possibilities of vivisection.

<sup>57</sup> J.B. Burke, 'Mr. Wells and Modern Science' Dublin Review CLXIX (October, 1921), 233

<sup>58</sup> 'The Transplantation of Living Tissues' Natural Science VIII (May, 1896), 291.

<sup>59</sup> P. Chalmers Mitchell, 'Mr. Wells's Dr. Moreau' Saturday Review LXXXI (April 11, 1896), 368

Chalmers Mitchell replied that:

The most recent discussion of grafting and transfusion experiments is to be found in the treatise by Oscar Hertwig, the translation of which Mr. Heinemann announces. Later investigators have failed to repeat the grafting experiments of Hunter.<sup>60</sup>

The partial vindication of Moreau's transplantations since the writing of these criticisms is common knowledge, but the question remains whether this, like others of Wells's 'prophecies', was not a lucky guess rather than a carefully worked-out prediction founded on scientific data. Wells was certainly of the opinion that tissue-transplants, even between animals of different species had been proved possible. In an article published before Dr. Moreau, 'The Limits of Individual Plasticity', he affirmed that:

The medical man will at once recall Hunter's cock's spur flourishing on the bull's neck.... It is a possible thing to transplant tissues from one part of an animal to another, or from one animal to another, to alter its chemical reactions and methods of growth, to modify the articulation of its limbs, and indeed to change its most intimate structure.<sup>61</sup>

But Dr. Moreau went further in its scope than current research warranted, just as in the early articles Wells could not resist speculating about the future of surgery in terms which at times seem wantonly calculated to alienate scientists:

If we concede the justifications of vivisection, we may imagine as possible in the future, operators armed with antiseptic surgery...taking living creatures and moulding them into the most amazing forms; it may be even reviving

<sup>60</sup> ibid., p. 369

<sup>61</sup> 'The Limits of Individual Plasticity' Saturday Review LXXIX (19th January, 1895), 90.

the monsters of mythology, realizing the fantasies of the taxidermist, his mermaids and what-not in flesh and blood.<sup>62</sup>

Behind the highly-coloured and emotive journalism of these early articles and the blood-stained horrors of Moreau's laboratory, however, there is a serious moral question which Wells at once perceived, even from the preliminary transplant experiments of his day - and one which the perfecting of such surgery has only served to emphasize the more strongly - namely, the question of the sanctity of identity. What in fact constitutes the essence of being, of personal identity, when the possibilities of transplantation, not only within a species but even between species, become theoretically limitless? The title of Wells's early article, 'The Limits of Individual Plasticity' poses a question which has not been answered and can perhaps never admit of a definite conclusion. The related problem, more topical today, that of the sanctity of the donor and his rights - What constitutes a voluntary donation of vital organs? Must such a donation be always voluntary? - Wells apparently did not foresee, but his moral comment as a whole remains no less valid and may to a certain extent, although not entirely, be seen as partial justification for his use of exaggeration to force his point upon his readers' attention.

Apart from these criticisms of Wells's biological accuracy, there are some minor slips in his understanding of physics which cannot be entirely overlooked in a just assessment of his work. Even in The First Men in the Moon

<sup>62</sup> ibid., p. 90. Several contemporary reviewers saw Dr. Moreau as an attack on vivisection. See, e.g., The Critic XXVI (July 25, 1896) 55; Spectator LXXVI (April 11, 1896) 519

where he succeeded so much better than Verne in picturing what does actually happen during the ascent and landing of a space-craft, and in predicting the effects of weightlessness, there is one minor slip.<sup>63</sup>

These errors, however, are for the most part venial, excusable in the interests of the story and virtually negligible amongst the immense volume of Wells's work. Less negligible are his actual attitudes, which, despite his overall devotion to scientific principles, are not always strictly compatible with scientific method. Wells was not basically interested in the slow detailed accumulation of evidence or in the painstaking accuracy of experimental method, but rather with broad theories. He did not go on to test his hypotheses experimentally for his limited training in research, his personal inclinations and his literary intentions were all against it; and to this extent his scientific thinking was seriously flawed. Wells himself was not unaware of this. In his autobiography, while speaking of his 'relative readiness to grasp form and relation ... a brain good for outlines' he also admits:

It scarcely needs criticism to bring home to me that much of my work has been slovenly, haggard and irritated, most of it hurried and inadequately revised. ... I am tormented by a desire for achievement that overruns my capacity and by a practical incapacity to bring about for myself the conditions under which fine achievement is possible.<sup>64</sup>

<sup>63</sup>When, during the trip to the moon, a blind is opened on the side towards the moon, Wells describes everything as promptly gravitating towards this side of the vessel. Now, in the case of bodies moving freely in space, only the differential attraction would be felt and the force exerted by the moon from this distance would be negligible compared with the mutual attraction of the occupants of the sphere.

<sup>64</sup>Experiment in Autobiography, Chap. 1, ii, p. 20

Despite these defects, which are undeniable, it must also be remembered that with the obvious exceptions of his Honours Physiography, his Textbook of Biology and later The Science of Life, Wells's primary aim was never simply an explication of scientific data. His early years as a teacher had aroused his critical interest in the processes of education and with maturity he showed an increasing commitment to the task of educating a public hitherto largely ignorant of scientific principles and, in Wells's opinion, equally devoid of scientific reasoning. He records that, during his years as a coach at Briggs's Tutorial College, years when he was also reviewer for The Educational Times, his awareness of the aims of education began to crystallize:

The requirements for the diplomas of L.C.P. and F.C.P. were not very exacting, but they involved a certain amount of reading in educational theory and history....For The Educational Times I reviewed practically every work upon education that was being published at that time. Educational theory was forced upon me. This naturally set me asking over again what I had already asked myself rather ineffectively during my time at Henley House School: 'What on earth am I really up to here? Why am I giving these particular lessons in this particular way? If human society is anything more than a fit of collective insanity in the animal kingdom, what is teaching for?'

At intervals, but persistently, I have been working out the answer to that all my life.<sup>65</sup>

However, the means whereby Wells set about finding the answer were not, in general, those approved by scientific societies which saw their duty in terms of strict ad-

<sup>65</sup> ibid., Chapter 6, v, pp. 350-1

herence to the painstaking procedures of a lifetime of research. The results of such research were made available to other scholars but no attempt was made to woo an audience from among the wider public. Wells, on the other hand, having suffered, as he considered, from the uninspired teaching of two professors at South Kensington, held strongly to the view that the facts could and should be made interesting to the general public by the means outlined in his early article, 'The Popularizing of Science'. He believed that the increase in the reading public as a result of the 1871 Education Act gave an unprecedented educational opportunity to his generation of writers and educators and he therefore castigated those scientists who, in lectures and articles, talked down to their audience and substituted witticisms for facts:

It is a far more difficult thing than is usually imagined, but it is an imperative one, that scientific exponents who wish to be taken seriously should not only be precise and explicit, but also absolutely serious in their style. If it were not a point of discretion, it would still be a point of honour.

In another direction, those to whom the exposition of science falls, might reasonably consider their going more carefully, and that is in the way of construction. Very few books and scientific papers appear to be constructed at all. The author simply wanders about his subject ... This is not simply bad art; it is the trick of boredom. A scientific paper for popular reading may and should have an orderly progression in development. Intelligent common people come to scientific books neither for humour, subtlety of style, nor for vulgar words of the 'millions and millions and millions' type, but for problems to exercise their minds upon. The taste for good, inductive reading is very widely diffused; there is a keen pleasure in seeing a previously unexpected generalisation skilfully developed.<sup>66</sup>

<sup>66</sup> 'The Popularizing of Science' Nature, L., (July 26, 1894), 301

Wells's failure to pursue a life of concentrated scientific research was undoubtedly the reason for his failure to be elected a Fellow of the Royal Society, perhaps the recognition which he most desired. This disappointment may have contributed to his sometimes scathing attitude towards that body for its refusal to recognize what he considered the wider applications of science, in particular the social sciences and theories of education:

It is not always the professors, experts and researchers in a field of human interest, who are the best and most trustworthy teachers of that subject to the common man. This is a point excessively ignored by men of science. They do not realize their specialized limitations. They think that writing and teaching come by nature. They do not understand that science is something far greater than the community of scientific men. It is a culture and not a club. The Royal Society resists the admission that there is any science of public education or social psychology whatever.<sup>67</sup>

Edward Pondero, whose early life closely follows Wells's own, does attain to a Fellowship of the Royal Society, but, as a free-lance scientist, often dilettante, he remains critical of the traditional scientific training in research. Reviewing his achievements, he asks, (with Wells):

Could I have done as much if I had had a turn for obeying those rather mediocre professors at the College who proposed to train my mind? If I had been trained in research - that ridiculous contradiction in terms - should I have done more than produce additions to the existing store of little papers with blunted conclusions, of which there are already too many? ... Suppose I had stamped down on the head of my wandering curiosity, locked my imagination, in a box just when it wanted to grow out to things, worked by so-and-so's excellent method and so-and-so's indications, where should I be now?<sup>68</sup>

<sup>67</sup>Experiment in Autobiography, Chapter 6, v, p. 349

<sup>68</sup>Tono-Bungay, Bk. II, Chapter 1, vi, p. 165

Similarly, in The Food of the Gods, Bensington and Redwood, both Fellows of the Royal Society, are introduced as somewhat ridiculous in their cloistered devotion to irrelevant research, remote from the life outside their laboratory, while the short story, 'The Moth' is an overt recognition of the dangers which concentrated scientific research may wreak upon the personality and ultimately upon the mind of the researcher.

Yet, if Wells criticized the Royal Society for its stress on detailed research at the expense of fostering a viable and far-reaching educational system, the alternative which he envisaged was, in his view, not less but more valuable for the future of science. The kind of mind which makes scientific predictions from existing theories and data is characteristically one which thinks in a future frame of reference; its preoccupations tend to be general and statistical rather than individual or personal. It was this way of thinking which Wells believed education should encourage - hence the need for scientists to be involved in reforming the educational system to promote such an awareness. Not only the utopian novels but most of Wells's sociological writings also urge this revolution from past- to future-oriented thinking. In The Science of Life he writes about the influence which science has had in changing the emphasis of education from a tradition-centred approach to a forward-looking attitude:

In education the human young learnt the wisdom of its forefathers. Education was an entirely conservative force, it functioned to preserve the traditional state of affairs. So it is still over large parts of the world....But in

quite a little space of years, the conception of education in many progressive minds has undergone the most revolutionary developments. The introduction of scientific work has infected even the most dogmatic centres with a sense of intellectual incompleteness. Even the most traditional education glances now, ever and again, almost unwittingly towards the future.<sup>69</sup>

Judged by this criterion of a non-personal and forward-looking attitude, which, if it seems on occasions too all-inclusive a definition, is still no less appropriate than the too-narrow alternative adopted by most of the critics cited above, Wells's thinking was indeed scientific. His preoccupation was increasingly with society as a whole and less with the remarkable individuals within it. Similarly, his synthetic approach to data caused him to stress the inter-relationships of any one fact to the existing body of facts and the inter-relatedness is frequently extended to subjects previously considered to be somewhat disparate - science and social morality, science and economics, science and politics. This integration of science into the discussion of society remains, in many ways, Wells's most important contribution to both science and literature, although the increasing awareness in the later twentieth century of the responsibility of all members of society for the results and ramifications of scientific research has tended to obscure the fact that Wells was a pioneer of this way of thinking, that he coined such phrases as 'social biology' and 'human ecology' which are now part of our common vocabulary. Throughout his career, he came to treat science less as an end in itself, and increasingly

<sup>69</sup>The Science of Life Bk. IX, Part III, Chapter 59, iv, p. 1482

in relation to sociological development, particularly in relation to the moral issues raised at the social level. This change in perspective is already apparent between the wholly theoretical 'Chronic Argonauts' and 'The Time Machine', in which the sociological questions raised in the society of A.D. 802,701 have almost overshadowed the author's fascination with the physics underlying the concept of time-travel. Indeed Wells had already begun to take his prophetic and educational rôle very seriously in 1901, when he wrote to R.A. Gregory, 'I am going to write, talk and preach revolution for the next five years'.<sup>70</sup>

<sup>70</sup>Quoted by G. West, H.G. Wells - A Sketch for a Portrait  
(London, 1930) p.156

Section II. The Rôle of Science in SocietyChapter 3. Science and Technology

While the pursuit of science involves an advancement in one's understanding of the way in which the world functions, it does not necessarily make a society immediately richer or stronger, or give it any greater power over nature. Technology, on the other hand, does not significantly add to one's understanding of the laws of nature, but it does increase the possibility of control over the environment. Today it is often assumed that these are necessarily interacting processes; scientific discovery precedes technological invention, which, in turn, evokes further theorizing. This is true of modern, Western society, but the correlation is by no means inevitable. It is possible to have both technological societies devoid of science (as has been seen in the so-called hydraulic societies of Peru and Ceylon) and others, such as those of ancient Greece and India, which, while developing abstract scientific theory to a considerable degree, have regarded engineering, and applied or experimental science of any kind, as a pursuit unworthy of the educated mind. It is the peculiar characteristic of modern industrial society to have combined both procedures in a fruitful partnership, scientific theory providing the impetus for technological innovation which may, in turn, call for modifications to the theory. However, precisely because of the close integration of the two elements in modern Western society, the basic and important distinction between them is fre-

quently not realised. It has been seen that the attitudes expressed in nineteenth-century English literature showed, almost without exception, a tendency to confuse science with technology and, while welcoming the materialistic comforts made possible by the latter to fear and hence to hate the supposedly deterministic rationalism which underlay its conception.

Unlike most of his contemporaries, Wells seems to have been clearly aware from the first of the basic distinction between science and technology, and particularly of the responsibility for control which he believed scientists were morally bound to exercise over technological advance. However, the attitudes expressed in his later work show a marked development from those in the earlier writings which reflect clearly the Victorian resistance to, and fear of, the machine and technology. With time, Wells came to welcome this advance not merely as inevitable but as an almost wholly beneficial and liberating factor in the development of society, since it made possible a more creative and enriching life for the individual in that society. It is therefore interesting to trace this progressive acceptance through the sequence of his writings, and to attempt to account for the observable change in viewpoint.

It is important to note first that, even in the earlier romances where the resistance to technology is maximal in Wells's work, the actual principles of theoretical science are, for the most part, exempt from castigation. The criticism is levelled at technology or at those who attempt to prostitute scientific knowledge for other,

'non-scientific' motives, for self-aggrandisement, power or financial gain. Pure science, on the other hand, and those who pursue it faithfully, are in general applauded. However, in the early work, these 'noble' scientists are almost invariably depicted as being insufficiently powerful to curb the evil machinations of the 'false' scientists or to control the amoral progress of a rampant technology. This comparative impotence of scientists in the early work is not only reflected in their failure to dominate the technological scene, but is also implied in the recurrent theme of their inability to account for the unexpectedness of nature. Events, unpredicted and often inexplicable, even in retrospect, continue to baffle scientific theory, a point which is emphasized by the personal discomfiture, physical, intellectual, or sometimes both, of scientists in the face of surprising occurrences. 'Aepyornis Island', 'The Remarkable Case of Davidson's Eyes', 'The Plattner Story', 'In the Abyss', 'The Sea Raiders', 'In the Avu Observatory', 'The Crystal Egg' and 'The Stolen Body' all stress the inadequacy of scientists in the face of the apparent eccentricity of Nature. The able, dedicated and virtuous scientists are far outnumbered in this period of Wells's writing by the helpless, demented or immoral ones. There is thus in effect a repeated warning against the expectation that technology, divorced from the principles and philosophy of an essentially benevolent science, can effect any permanent good for society. Indications of the apparent benefits of technological progress are usually followed by images of concomitant degradation in the physical, intellectual or moral sphere, if not in all three.

In the earliest fictional example, 'The Time Machine', the Time-Traveller, insofar as he is characterised within the story, is essentially a sympathetic figure - the pure scientist steadfastly seeking knowledge at whatever personal risk, and despite the ridicule and lack of understanding of his friends. Moreover, he is not merely a cloistered, theoretical scientist, isolating himself in obscure research; his instinctive moral reactions of justice, benevolence and pity lead him to become involved in the affairs of the Eloi and to strive for the welfare of their community. Yet, in the same sequence, there is a description, rendered all the more vivid by its mythic overtones, of the evil and degrading effects of a technology devoid of morality, and in the context of the whole story this latter picture far outweighs the small human touches of the Time-Traveller's concern and Weena's pathetic gratitude. The picture of the Morlocks and their underworld is painted in colours that recall the tradition of Dante and Milton rather than the late nineteenth-century novel; their subterranean factories, their predatory, nocturnal raids, their distorted forms and the dark outlines of their machines are all reminiscent of the classical trappings of an infernal hell and its denizens. Nevertheless, it should be noted that, even at this early stage of his writing, when the bias against technology is greatest, Wells does not, on that account, blindly revere the earlier rural tradition as the Primitivists had done when they attacked an immoral, mechanized one. The Eloi represent all too obviously facets of the pastoral heaven of the Primitivists - their pliant

gentleness, their free-flowing dress, their dancing and harmless play, their diet of fruit and above all their child-like acceptance of events. The Time Traveller at first responds to the Eloi in the traditional manner, being enchanted, if perplexed, by their way of life, until it is forced upon his understanding that this Arcadian leisure is inextricably bound to, and dependent upon, the brutalizing mechanical labour of the machine-tenders. His disenchantment, however, leaves him with no positive view to uphold. If he can no longer respect the fatuous Eloi, neither can he endorse the brutality of the Morlocks. His predicament is, in fact, that of Wells himself, who, while renouncing the impractical dreams of Ruskin and the Primitivists, nevertheless saw only too clearly the potential dangers of a society in which a sense of the inevitability of technological advance has subtly infected the public consciousness with an amoral, machine-derived ethic.

It is scarcely possible to avoid the hypothesis that this dilemma, this fear of the emergence of a potentially amoral race, was closely linked in Wells's mind with the danger that a superficial knowledge of the theory of evolution and the process of natural selection, would lead men to imitate the cosmic process, to resort to the methods of 'the ape and the tiger'. Since the popularization of Darwin's theory, many had been eager to accept the first half of Huxley's postulate without following him to his conclusions:

For his successful progress throughout the savage state, man has been largely indebted to those qualities which he shares with the ape and the tiger; his exceptional physical organization; his cunning, his sociability, his curiosity and his imitativeness; his ruthless and ferocious destructiveness when his anger is roused by opposition. But in proportion as men have passed from anarchy to social organization, and in proportion as civilization has grown in worth, these deeply ingrained, serviceable qualities have become defects.<sup>1</sup>

Dr. Moreau dramatizes this warning of the tiger and the ape ancestry of man; indeed both Dr. Moreau and 'The Time Machine' illustrate parallel issues, having in common the overthrow of the pastoral ideal by the forces of a science and a technology divorced from traditional morality and hence actuated by an amoral and brutal methodology. In neither story has Wells any viable third alternative to suggest.

In 'Lord of the Dynamos' Wells attempted a less mythical but still allegorical rendering of a similar theme. The dynamo represents the power of modern technology, and as such it becomes both symbol and cause of the amorality of the technologist, Holroyd, who has adopted as his own moral guide the principle which activates his machine — power. He reveres his machine because it is more powerful than he and, in turn, attempts to exercise a crude physical power over his subordinate — to Holroyd 'bullying was a labour of love'.<sup>2</sup> Despite its realistic presentation, this short story, which I consider one of Wells's most successful, is also allegorical in both language and content. The shed housing the dynamos is a

<sup>1</sup>T.H. Huxley, 'Evolution and Ethics' in Evolution and Ethics, T.H. Huxley and J. Huxley, (London, 1947) pp 63-4.

<sup>2</sup>'Lord of the Dynamos' Short Stories, p. 352

model of technological society and to it come representatives of three modern attitudes towards the machine. Holroyd, the 'practical electrician', has substituted his machine for traditional gods and principles, and thus its 'morality' dictates his. It is not accidental that he is described as delivering 'a theological lecture on the text of his big machine'.<sup>3</sup> If Holroyd reveres the machine for its power - significantly he cites as chief evidence of this its power to kill and its power to make money - Azuma-zi also deifies it, although he represents a totally different background - namely, that of the 'natural man' who is suddenly confronted by the disrupting effects of technology upon a primitive life. He too comes to worship the machine for its power and to ascribe god-like qualities to it, though in his mind its power is associated with the 'natural' sense impressions of noise, rhythm, and the colour of the spitting blue flashes, rather than with those materialistic considerations which weigh so heavily with Holroyd. The third character, the scientific manager, represents the 'true scientist', the expert. He does not deify the machine; he simply uses it. He alone combines an objective, rationalist viewpoint with a humane morality. On the one hand his approach is all efficiency - after Holroyd's death 'the expert was chiefly anxious to get the machine at work again, for seven or eight trains had stopped'<sup>4</sup> - yet later, realising why and how Holroyd has died, he feels pity concomitantly with his sense of duty - '"Poor Holroyd! I see it now'.

<sup>3</sup> *ibid.*, p. 354

<sup>4</sup> *ibid.*, p. 360

Then almost mechanically he went towards the switch...'<sup>5</sup>

It is interesting that several critics have noted in 'The Lord of the Dynamos' a close resemblance to Kipling's style - 'A tale worthy of Kipling when he is very near his best',<sup>6</sup> commented The Critic, while Raknem remarks that Kipling and Wells 'stand apart from other short-story writers in their adoration of machinery'.<sup>7</sup> If Wells's style in this story is close to Kipling's (and there are suggestions of a similarity in the descriptions of Azuma-zi and in the ascribing of human qualities to the dynamo by Azuma-zi) then this is surely an additional level of irony rather than an indication of parallel attitudes. It should be clear that, so far from imitating Kipling's values, Wells is in fact satirizing the attitude of which Kipling was the leading spokesman - that of imputing human characteristics to machinery. Both Holroyd and Azuma-zi in their diverse ways do this and thereby perish; the 'hero' of the story is not the machine, as it is in Kipling's treatment of analogous material, but the scientific manager who neither worships nor hates the machine but both understands its value and purpose and controls it.

This view of the machine was to be elaborated and clarified throughout Wells's later work, but never revoked. If, during the years between 'The Lord of the Dynamos' (1894) and A Modern Utopia (1905), it lay in abeyance, and there appeared a vague inconclusiveness about Wells's treatment of the subject in the interval, this is because he was still endeavouring to determine how a scientific

<sup>5</sup>ibid., p. 363

<sup>6</sup>A Review of The Plattner Story and Others, The Critic XXVIII, (July 31, 1897) p. 59

<sup>7</sup>I. Raknem, op.cit. p. 361.

élite which was both fully in control of technology yet retained ennobling instincts and the morality of pre-industrial man might arise in the community. Until he could satisfactorily envisage the means whereby such a social revolution might be effected, Wells was unwilling to depict this result, however, desirable it might seem to him. Hence, in this decade, the pictures of an uncontrolled technology recurred with the increasingly strong suggestion that technological advance is inevitable and with the repeated warning that unless it were controlled it would surely destroy all the humane qualities of society for there was no possibility of returning to a pre-machine age.

Griffin of The Invisible Man (1897) does not deify scientific methods and inventions, but neither is he activated by humane instincts. He is not merely amoral, but wholly immoral. His virtuous counterpart in the same story is Kemp, the doctor, who is both scientifically competent and morally motivated in his judgments and actions. Despite Wells's fascination with the dramatic potential of Griffin's character, it is Kemp alone who carries his final endorsement. Nevertheless, although Wells was by now clear as to what was the 'proper' attitude towards science and technology, namely that embodied in the scientific manager and, more explicitly, in Kemp, his lack of certainty as to how such an attitude might come to be universally endorsed and acted upon is evident in the relatively small parts played by these two characters compared with the more dramatic careers of the 'villains', Holroyd and Griffin, and the blind reactionaries, Azuma-zi

and the villagers. Even Kemp's capture of Griffin is undermined by the regression of the villagers to primitive violence as they batter their victim mercilessly to death.

In The War of the Worlds, published a year later, there is still no visible alternative to amoral technical expertise. The Martians' fighting machines represent the same factors as the career of Griffin - the potential for cruelty and exploitation in the purely rationalistic mind. But while Griffin's immoral outlook immediately elicits the reader's abhorrence, it is stressed that the Martians are not 'evil', but only amoral and efficient. Their fighting machines are simply their means of trapping or over-running a more vulnerable species - a practice which Wells compares to the British colonization of Tasmania. The War of the Worlds provides no answer. Despite the final optimistic hope for a new world from the ruins, there is no effective counter impression to that of self-centred, confused and petty men fleeing in confusion before the advance of an efficient, amoral, technological power.

In The Sleeper Awakes<sup>8</sup> there is again no answer. Ostrog represents the amoral scientist manipulating the machinery of his world as a totalitarian technocracy, although here the opponents, Ostrog and Graham, are more evenly matched than the men and Martians, and Wells does not shrink from portraying the dichotomy as actually present in Western society. On the one hand is Graham, the 'natural man', awakening to find that technology has ad-

<sup>8</sup>The original version, <sup>when</sup> The Sleeper Wakes was published in 1899.

vanced beyond what he could have imagined possible, rendering him ignorant, redundant and impotent before it's all-pervading mechanical progress.<sup>9</sup> On the other hand stands Ostrog, the 'organizational man', alert to the opportunities, technologically competent and hence powerful, a Nietzschean Superman and presumably an evolutionary advance on nineteenth-century man, produced by the natural selection of the machine-age.<sup>10</sup> Yet, in his self-justifying speech to Graham, Ostrog unwittingly indicates that the machine is the cause as well as the symbol of his authoritarian technocracy, for he pleads expediency - no other attitude, he maintains, is possible. Thus, while seeming to control the mechanization of his world, he is in fact controlled by it, even in the very depths of his nature and personality.

Clearly there was much about Ostrog that Wells admired, for he continued to portray his qualities of efficient leadership and to embody them in his Utopian heroes, but Ostrog, despite his power which finally overcomes Graham,<sup>11</sup>

, The metaphor of sleeping and awakening to find a new world is a rich one in this context. It is no accident that it has provided the frame for several almost mythological stories in a similar vein, as discussed in the Introduction.

10. Wells may have derived the idea for Ostrog, as well as the name, from M.Y. Ostrogorsky's book, Democracy and Organization of Political Parties which he mentions in his Autobiography (Chap. 8, v, p. 599). The English translation of this work had appeared only in 1902, i.e., 3 years after the first edition of The Sleeper, but it seems probable that Wells had heard of Ostrogorsky in conversation before this, even if he had not read the earlier French edition, for Ostrogorsky had published an earlier work in English, a comparative study in history and legislation, in 1893.

11. The actual ending of the novel is ambiguous, but Wells, in the preface to the 1910 edition elucidated it: 'My Graham dies, as all his kind must die, with no certainty of either victory or defeat'. (The Sleeper Awakes, (1910), p. ii)

is ultimately condemned on moral grounds for he fails to unite with his technological acumen, the humane qualities which Graham embodies. It is no accident that Graham, once aware of his need for technical knowledge, sets out to remedy his deficiency, thus displaying in embryo the dual virtues of humanity and scientific ability which characterize the later 'men like gods'. Nevertheless, Wells did not permit Graham to overcome Ostrog in the final battle of the novel. Critics have suggested that the reason for this was Wells's intrinsic sympathy with Ostrog and his contempt for the workers who are characterized by their ignorance and inefficiency. However, this argument can scarcely be considered adequate, for Graham is shown as being at great pains to overcome his ignorance of technology, and the techniques of social organization, and he does in fact succeed in organizing the workers to the point of considerable purposefulness, efficiency and resourcefulness, so that ultimately they embody almost all Ostrog's 'good' qualities while retaining their humane virtues. I believe that the major reason for Wells's insistence on Graham's ultimate defeat was that at this stage he was still not clear in his own mind how the qualities of sympathy, justice and a belief in equality could triumph over ruthless power and dehumanizing efficiency within the framework of a technological society, and he did not wish his novel to be unrealistic at this deepest level of meaning.<sup>12</sup> Bergonzi and Parrinder have suggested that Wells, at least subconsciously and perhaps even con-

<sup>12</sup> His explanation that 'Graham dies, as all his kind must die' may be read as further support for this view, for it implies that in different circumstances Graham need not have died.

sciously, approved of Ostrog and all that he stands for; that he welcomed the huge bee-hive cities described in The Sleeper (where London has a population of more than three hundred million) and in 'A Story of the Days to Come', and approved of the mass eating-houses with their much-processed food of esoteric origin. However, a comparison with Anticipations and the Utopian writings must suggest the contrary view. In these later works, Wells clearly disapproves of over-population and of its local manifestation, huge cities. A Modern Utopia and Men Like Gods favour rigid birth-control to obtain an optimum population and describe at some length the importance of individual houses with surrounding gardens for the well-being of the inhabitants.

Indeed, A Modern Utopia pictures the idealized form of those innovations which in The Sleeper and 'A Story of the Days to Come' occur only in a perverted and degraded form and indicates that the earlier accounts are to be read as satire. Moreover, within The Sleeper itself, two highly sympathetic characters stand as implacable critics of the system - Helen Wotton, the intelligent girl who first denounces Ostrog's system to Graham, and Graham himself, who is, in many ways, a Christ-figure suggestive of both resurrection and parousia.

The First Men in the Moon (1901) is yet more outspoken about the potential emotional cost of scientific rationalism. Cavor is not portrayed as being overtly evil - he would never actively or deliberately harm anyone - yet he epitomises the amoral Wellsian scientist. Relatively early in the novel he is explicitly compared to a machine:

When he said it was 'the most important' research the world had ever seen, he simply meant it squared up so many theories, settled so much that was in doubt; he had troubled no more about the application of the stuff he was going to turn out than if he had been a machine that makes guns.<sup>13</sup>

and his psychic and emotional poverty suggest that he is approaching the state of the Grand Lunar. He speaks with great admiration of the Selenites - 'Each is a perfect unit in a world machine'<sup>14</sup> - and when he does on one occasion react instinctively against the Selenite practice of conditioning, he apologises profusely for his lapse and hopes to overcome it in the future:

In the earlier stages, these queer little creatures are apt to display signs of suffering in their various cramped situations, but they easily become indurated to their lot;...It is quite unreasonable, I know, but such glimpses of the educational methods of these beings affect me disagreeably. I hope, however, that may pass off and I may be able to see more of this aspect of their wonderful social order. That wretched-looking hand-tentacle sticking out of its jar ... haunts me still, although, of course, it is really in the end a far more human proceeding.<sup>15</sup>

Anticipations, which appeared in the same year as The First Men in the Moon, marks a turning point in Wells's thought for although its ostensible method is one of induction from existing trends (and it is this illusion which accounts for much of its plausibility), Wells introduces a new factor - namely a proposal of possible means whereby a scientific élite which understood the dangers of technology but was capable of mastering them, might attain to a position of benevolent control over society. The means he envisages are crude by his later standards - there is resort to overt

<sup>13</sup>The First Men in the Moon, Chapter 1, p. 21

<sup>14</sup>ibid., Chapter 24, p. 258

<sup>15</sup>ibid., Chapter 23, p. 241

warfare - but they nevertheless indicate his hope that such an outcome might be feasible.

In his Experiment in Autobiography Wells later explained one difference between Anticipations and the earlier 'prophecies':

The future in When the Sleeper Awakes was essentially an exaggeration of contemporary tendencies - higher buildings, bigger towns, wickeder capitalists, and labour more downtrodden than ever and more desperate....It was our contemporary world in a state of highly inflamed distension. Very much the same picture is given in 'A Story of the Days to Come' (1899) and 'A Dream of Armageddon' (1903). I suppose that is the natural line for an imaginative writer to take in an age of material progression and political sterility....But in 1899 I was already beginning to realise that there might be better guessing about the trend of things.<sup>16</sup>

Again, in 'The Land Ironclads' (1903), those who act by scientific understanding and acumen without sacrificing their humane qualities, are permitted to be victorious against the reactionary non-scientific forces, because Wells is now envisaging the means whereby they may feasibly come to power in the modern state. He is, as it were, forging a new image of the scientist - one who, in the name of efficiency and a consequent better life for all, will not scruple to exert force upon, even to kill, those reactionaries who, motivated by sheer animal instincts, stand in the way of the new order. The war correspondent is unable to understand his depression when, in the first stages of the combat, the troops of his own side, the product of a non-intellectual nineteenth-century life-style,

...in the open air, hunting perpetually, losing touch with books and art and all the things that intensify life<sup>17</sup>.

<sup>16</sup> Experiment in Autobiography Chapter 9, i, p. 645

<sup>17</sup> 'The Land Ironclads' Short Stories, p. 388

appear to be the inevitable victors over the enemy who represent a disciplined, intelligent approach to life; but he is moved to unqualified approval when the enemy are eventually victorious. The soldiers who emerge from the land ironclads are seen to be the antithesis of the panic-stricken, disorderly rabble which turns to flee before them, for these victorious individuals who embody a rational approach to life are described with undiluted approbation as being endowed also with all the personal and moral qualities which Wells most admired:

He was a young man, healthy enough, but by no means suntanned, and of a type of feature and expression that prevails in His Majesty's Navy: alert, intelligent, quiet. He and his engineers and riflemen all went about their work, calm and reasonable men. They had none of that flapping strenuousness of the half-wit in a hurry, that excessive strain upon the bloodvessels, that hysteria of effort, which is so frequently regarded as the proper state of mind for heroic deeds.

For the enemy these young engineers were defeating they felt a certain qualified pity and a quite unqualified contempt. They regarded these big, healthy men they were shooting down precisely as these same big, healthy men might regard some inferior kind of nigger. They despised them for making war; despised their bawling patriotisms and their emotionality profoundly; despised them, above all, for the petty cunning and almost brutish want of imagination their method of fighting displayed.... They resented being forced to the trouble of making man-killing machinery, resented the alternative of having to massacre these people or endure their truculent yappings; resented the whole unfathomable imbecility of war.<sup>18</sup>

These 'young engineers' are among the first fictional examples of Wells's fully-endorsed scientific men and are, in fact, of the same breed as the scientific soldiers of

<sup>18</sup> ibid, pp. 408-9

Anticipations. Rational and efficient, they exploit all the possibilities of the machine, as the Martians and Ostrog had done, yet Wells is now prepared to admire them and even to prefer them to the traditional image of the non-intellectual, out-door soldier. His change of allegiance is dramatized within the story by the emotional wavering of the war-correspondent, 'one of those inconsistent people who always want the beaten side to win'.<sup>19</sup> For Wells himself, however, the preference is not merely 'inconsistent', but based on a rational decision. When ordered efficiency and rational behaviour are embodied not in alien forms like those of the Martians and Selenites, or in obviously immoral figures like those of Ostrog and Griffin, Wells admires them whole-heartedly, and he is fully aware, even if the war-correspondent is unwilling to recognize it, that, in the 'enemy' lines:

The half-dozen comparatively slender young men...who were standing about their victorious land-ironclad ...had also in their eyes and carriage something not altogether degraded below the level of a man.<sup>20</sup>

In 'The Land Ironclads', as in Anticipations, technological progress is shown as being inevitable, and Wells's contemporaries were therefore counselled to accept it out of expediency, whether they approved of it or not; but two years later, in The Food of the Gods, any reservations about technology and scientific rationalism have completely evaporated. Technological advance is shown as being not merely inevitable, but wholly desirable. This changed attitude on Wells's part seems to me to spring from the

<sup>19</sup> ibid., p. 413

<sup>20</sup> ibid., pp. 414-5

fact that he had now evolved what he believed to be an almost infallible plan for controlling technology, and preventing it from falling into the hands of unscrupulous, power-seeking men. The plan involved the emergence of a socially and morally responsible élite which, having gained power, would work and rule, not for its own advancement, but for the good of the whole society. It is especially interesting that in his attempt to describe such an élite, Wells pictures its members as children and youths rather than as a parent generation of fully-fledged scientists. Sussman has objected to this on the grounds that it involves an assumption by Wells of a change in human nature by the 'boom food', whereas the giant rats, produced under the action of the same chemical, suffer no such personality change for the better.<sup>21</sup> This interpretation, however, misses an important part of the moral of the story. The good nature of the giant children is intended to be seen not as something extraordinary or alien to the race, but rather as an intensification of the intrinsic good will of all children. The difference lies merely in the fact that because these particular children are left largely to their own devices or are educated in an enlightened progressive manner, their natural instincts have not been corrupted or distorted by the prejudices of the adult world. The giant children embody the best characteristics of both worlds - the inherent good nature and extrovert personality which develops into a sense of social and moral responsibility, and the education

<sup>21</sup>H.L. Sussman, Victorians and the Machine (Cambridge, Mass., 1968) Chapter 6.

which delights in proficiency and a rational approach to problems - and they therefore aspire to the intelligent use of technology for the social good.

Having evolved to his own satisfaction, at least in broad outline, the concept of a scientific élite comprising individuals who were also morally upright and virtually incapable of using power for their own personal ends, Wells proceeded to elaborate in a series of propagandist novels, a detailed picture of the utopian society which such an élite would institute. A Modern Utopia (1905), the paradigm of the utopian novels following it, will be discussed in some detail in the next chapter, but it must be noted here that the ruling class of this utopia, the Samurai, are also the prototypes of the Wellsian 'noble' scientists and proceed to build a technologically advanced society in which individuals, freed from dull, laborious and unrewarding tasks, have leisure for creative and educational activities. The 'natural man' whom the visitors to Utopia encounter, and who inveighs against all mechanization and progress is clearly intended as a parody of the views of Morris, Ruskin and the other Primitivists, but the parallel is scarcely justified, for the evils decried by Ruskin no longer exist in the humanised technocracy of Utopia, so that the protests necessarily seem petty and irrelevant.<sup>22</sup> Even ugliness, to the Primitivist the cardinal offence of technology, has allegedly been overcome - machinery, too, has become aesthetically pleasing. This is perhaps the ultimate vindication of technology, for Wells is effectively asserting that it has succeeded not only according to the criteria of efficiency and speed for which it was designed,

<sup>22</sup> A Modern Utopia, Chapter 4

but also according to quite different criteria, embodying the highest aspirations of pre-technological societies:

There is nothing in machinery, there is nothing in embankments and railways, and iron bridges and engineering devices, to oblige them to be ugly. Ugliness is the measure of imperfection; a thing of human making is, for the most part, ugly in proportion to the poverty of its constructive thought, to the failure of its producer fully to grasp the purpose of its being....This is the misfortune of the machine and not its fault.<sup>23</sup>

Here at least, Wells is claiming that the apparently inevitable flood of Victorian technology has been dammed and rechannelled to serve mankind rather than sweep him along, helpless in its tide.

In the later Men Like Gods, which describes a more advanced society than that of A Modern Utopia, there is no longer any need for a governing élite; all citizens have been suitably educated so that they intuitively wish to further the aims of the society. Here the link with science is correspondingly more pronounced for, as Aldous Huxley was later to remark:

One of the great achievements of science is to have developed a method which works almost independently of the people by whom it is operated.<sup>24</sup>

Almost all the inhabitants of this other world appear to be highly trained scientifically, and to be fully engaged in the excitement and adventure characteristic of research.<sup>25</sup>

<sup>23</sup> ibid., Chapter 3, viii, pp 99-100

<sup>24</sup> A. Huxley, Literature and Science, (London, 1963) xxiv, p. 64

<sup>25</sup> This exhilarating effect of living in a mechanised world which does not swamp individual initiative, but encourages it with greater opportunities for self-fulfilment is glimpsed also in several of the short stories - in 'The Argonauts of the Air', 'The New Accelerator', and perhaps especially in 'Filmer', which dramatizes the apotheosis of the small man through his participation in the progress of science.

Having thus envisaged his scientifically-based utopias, Wells wrote a series of books suggesting various ways whereby such scientifically-governed societies might be instituted but again, in all these, there is a concomitant warning against any expectation that technology, divorced from the benevolence and broadly-based philosophy of science, can achieve any permanent good. In The World Set Free (1914) Wells wrote scathingly and, in the event, prophetically, that:

What chiefly impressed the journalists of 1933 was the production of gold from bismuth and the realisation, albeit upon unprofitable lines, of the alchemist's dreams.<sup>26</sup>

for this society is basically an unhealthy one:

Beneath that brightness was a glittering darkness, a deepening dismay. If there was a vast development of production, there was also a huge destruction of values.... There was an enormous increase in violent crime throughout the world. The thing had come upon an unprepared humanity; it seemed as though human society was to be smashed by its own magnificent gains.<sup>27</sup>

I.F. Clarke has remarked that Wells had 'an unusual awareness of the destructive potential of technology when used for military purposes' growing out of his keen 'sense of groups divided and in conflict' and the levels of violence to which warfare would inevitably escalate if the resourcefulness of technology were turned to the task of producing the most efficient weapons possible without heed to the morality of their use.<sup>28</sup> The ultimate example of this

<sup>26</sup> The World Set Free, Chapter I, iii, p. 37

<sup>27</sup> ibid., Chapter I, iii, p. 40

<sup>28</sup> I.F. Clarke, Voices Prophesying War (Oxford, 1966) pp. 91, 93

amorality is seen in The War of the Worlds but it is found also in The War in the Air and in The World Set Free. In The War in the Air Wells makes explicit the connection between scientific industrialism and the catastrophic war to which it leads in the hands of those not morally equipped to deal with it:

[New York] was the first of the great cities of the Scientific Age to suffer by the enormous powers and grotesque limitations of aerial warfare. ...Given the circumstances the thing had to be done....The catastrophe was the logical outcome of the situation created by the application of science to warfare. It was unavoidable that great cities should be destroyed. ...

One sees these things in glimpses...going on all over the world. It was the dissolution of an age; it was the collapse of the civilisation that had trusted to machinery, and the instruments of its destruction were machines.<sup>29</sup>

There is a more subtle but no less insidious example of the perversion of scientific knowledge for destructive purposes when the mind in control has no guiding principles in Tono-Bungay. At the conclusion of the novel, George Ponderevo, the coldly rational scientist who has observed, without any attempt at moral intervention, the vast 'spectacle of forces running to waste', climaxes his career by using his scientific training and skill to build 'destroyers'. Mark Schorer believes that Wells did not intend this final image of the destroyer as ironic,

As far as one can tell, Wells intends no irony, although he may here have come upon the major irony in modern history. The novel ends in a kind of meditative rhapsody which denies every value that the book has been aiming

<sup>29</sup>The War in the Air, Chapter 6, vi, p. 200 and Chapter 8, i, p. 243

towards. For, of all kinds of social waste which Wells has been describing, this is the most inclusive, the final waste.<sup>30</sup>

But Wells is surely conscious of the irony. George's comment, 'And now I build destroyers!' is emphasized as an exclamation and stands as the culmination of a paragraph enumerating the manifold forms of waste which have been described in the novel. Moreover, the destroyer is named, significantly, 'X<sub>2</sub>', that is, a double unknown, representing the double-edged and unknown quantity of science which has potential for either good or evil in the community.

Whether the immense power of science would in fact be used for good or evil remained, as we shall see, an open question in Wells's mind to the end of his life, for, perhaps more clearly than anyone else of his period, he saw that the danger of confusing science with technology was that technology came to be revered as science. The fictional holocaust of The World Set Free proved to be uncomfortably close to the reality of the decades which followed its publication. Nevertheless, in The World Set Free, Wells was still confident that there was an answer. Late in the novel, Karenin reflects upon the changed attitude to science, contrasting the appreciation of its true value by the citizens of the new World Republic, with the estimate of it held in the nineteenth century by those who confused it with technology:

It is wonderful how our fathers bore themselves towards science. They hated it. They feared it. They permitted a few scientific men to exist and work - a pitiful handful. ... 'Don't find out anything about us', they said to them;

<sup>30</sup>M. Schorer, 'Technique as Discovery', in Critiques and Essays on Modern Fiction, ed. J.W. Aldridge (New York,

'don't inflict vision upon us, spare our little ways of life from the fearful shaft of understanding. But do tricks for us, little limited tricks. Give us cheap lighting. And cure us of certain disagreeable things, cure us of cancer, cure us of consumption, cure our colds and relieve us after repletion...'  
We have changed all that, Gardener. Science is no longer our servant. We know it for something greater than our little individual selves. It is the awakening mind of the race.<sup>31</sup>

<sup>31</sup>The World Set Free, Chapter 5, iv, p. 225.

Chapter 4. Science and Government: the Wellsian Utopia

The development of Wells's attitude towards the machine and technology, from the traditional view that it was a dangerous and perhaps evil power but nevertheless inevitable, to the view that it could be entirely beneficial if controlled and directed towards the welfare of society, was dependent on the further question whether, given the immense potential of modern technology for destruction, it could be controlled in time to save mankind from self-inflicted disaster, perhaps even the total annihilation of the human race.

A parallel succession of attitudes is observable in Wells's views about government, for he was vividly aware of the 'incompatibility of the great world order foreshadowed by scientific and industrial progress with the existing political and social structures'.<sup>1</sup> While the various suggestions which Wells made in the realm of sociology and government appear at first glance disparate, even at times self-contradictory, they may nevertheless all be seen as emanating from the desire for order and efficiency with which Wells had been imbued as a science student. His ideas about the optimal means of implementing these principles in the realm of government varied with the fluctuations of the world political situation, with his own moods and with his developing understanding of people, but his allegiance to these ideals rarely wavered, however optimistic or pessimistic he might feel about the general human response to them.

<sup>1</sup> Experiment in Autobiography, Chapter 9, i, p. 651

It is pertinent to ask briefly here why Wells, without benefit of any political training or experience, should have considered himself equipped to deal at length with such questions. He himself apparently felt that in this sphere non-involvement and inexperience were themselves credentials, an attitude which he would certainly have condemned in any scientific field:

The fact that I regarded myself as a complete outsider in public affairs...probably helped importantly in the liberation of my mind to these realizations, and supplied the disinterested vigour with which I worked them out. I could attack electoral and parliamentary methods, the prestige of the universities, and the ruling class, the monarchy and patriotism, because I had not the slightest hope or intention of ever using any of these established systems for my own advancement or protection. For a scientific treatment of the theory of government, my political handicap was a release.<sup>2</sup>

Although the major part of Wells's political thought is contained in the utopian novels, and in the more didactic works of the same period, it is important to realise that these form part of a continuing development of thought, which began as early as 'The Time Machine' with its description of a bifurcate society ruled by ruthless technocrats. Here is already the germ of an idea which was to be developed more fully in the major scientific romances, and in the novels of the period 1896 to 1901 - the idea of a natural aristocracy of talent and intellect which rules by right of its innate superiority. In 'The Time Machine' which may be seen, sociologically, as an extrapolation from Disraeli's contention that England had become a

<sup>2</sup> ibid. Chapter 9, pp. 651-2

country of two distinct nations, Wells is still ambiguous in his attitudes towards a 'superior' race. The Morlocks are certainly intended to be regarded with disgust, but the ineffectual Eloi are scarcely to be wholeheartedly approved. They are pitied in a rather superficial way, but never fully endorsed.

By the time of writing Dr. Moreau and The Invisible Man however, Wells seems already to have associated the idea of a ruling class with the related question of the rights of scientists and technologists to assume command, in the name of order, over their less intelligent and less efficient fellows: Should a scientist's intellect and scientific capability sufficiently entitle him to perform his research at the expense of consequent pain to animals or to other members of society? Prendick, who, if anyone in the novel, represents Wells, never entirely supports Moreau's experiments, but neither does he altogether condemn them. The cries of the tortured puma pierce his senses and shake his self-control but there is also the explicit suggestion that had the cries been less penetrating and hence less emotionally disturbing he would not have been moved to the same sense of pity for it.<sup>3</sup> Later, when Moreau begins to explain the rationale behind his experiments, Prendick appears to be ashamed of his previous reservations and tends thereafter to support Moreau, chiefly because he sees no possibility of a stable system based

<sup>3</sup> The Island of Dr. Moreau, Chapter 8, p. 45

on the primitive instincts of the Beast People.<sup>4</sup> Certainly Moreau foreshadows the ruthless ruler of the modern scientific state in much of the later science fiction, a ruler devoid of ethical considerations, but armed instead with all the knowledge of biological, chemical and psychological conditioning necessary to give him complete control over his subjects.

Griffin, the invisible man, has, like Moreau, gained knowledge and lost all sense of ethical and human sympathy. Hillegas has aptly remarked 'How perfect a symbol of a science without humanity is an invisible man without scruples.'<sup>5</sup> Yet, despite his ultimate downfall, and Wells's censure of him on moral grounds, it is clear that this figure of a brilliant scientist who considers that his gifts endow him with the right to govern - ruthlessly if necessary - held a certain fascination for the young Wells, already obsessed with the urge to impose order and efficiency upon the disorganized multitude. Our final condemnation is intended to fall not merely on Griffin and his proposed reign of terror, but equally on the sadistic reprisals of the ignorant mob.

The same ambiguity recurs in The War of the Worlds, where the blindly ignorant and egotistical crowds, caught up in their petty concerns, fully deserve their defeat by the efficient and orderly procedures of the Martians. Indeed, the only real pathos in the novel centres around the defeat of the Martians by a cause beyond their control.

<sup>4</sup>Ibid., Chap. 14, p. 101

<sup>5</sup>M.R. Hillegas, The Future as Nightmare, (New York, 1967)

In this novel Wells is unable to identify fully with either group of participants. As far as is intellectually possible he supports the cause of the Martians, while emotionally his sympathies must lie with the helpless men whom he despises. It is this ambiguity of allegiance which underlies the peculiarly disturbing effect of the novel.

In The Sleeper Awakes, the dark figure of Ostrog although he is not a scientist, is the counterpart of Griffin and Moreau in his exploitation of resources, his belief in the stupidity of the average man whom he considers unfit to make decisions, and in his assumption of his own right to rule by reason of his superior intellect and organizational power. It would seem that at the time of writing The Sleeper Wells did not wholly disapprove of all Ostrog's views; his speech justifying his autocratic rule draws heavily on many of Wells's own cherished beliefs about the inefficacious masses and the impracticability of democracy:

'The day of democracy is past,' he said, 'Past for ever. That day ended when marching infantry, when common men in masses ceased to win the battles of the world....The common man now is a helpless unit. In these days we have this great machine of a city and an organisation complex beyond his understanding.'<sup>6</sup>

Indeed, the New Republicans of Anticipations, whom Wells clearly applauded two years after the writing of The Sleeper, are close to Ostrog in their conception. Later, however, perhaps under pressure from the Fabians, perhaps for other reasons, Wells became more democratic, even socialistic, and in the preface to the 1910 edition of The Sleeper he

<sup>6</sup>The Sleeper Awakes, Chapter 19, p. 393

disavowed Ostrog in terms which are inconsistent with the original text. There are many other examples of a similar frame of mind in his work at this time. In Chapter 23 of Love and Mr. Lewisham, the rogue Chaffery, (who strongly recalls Browning's Mr. Sludge) carries considerable authorial approval in his monologue on the natural rights of the talented man. Again, the 'inhumanity' of the Selenites of The First Men in the Moon, is regarded not entirely without approbation, as being the ultimate advance in 'specialisation', meant here in its biological sense of the complete adaptation of a species to its environment and of an individual organism to its society. Wells is fully sensitive to the horror of the means employed in such an adaptation programme but he nevertheless approves, at least in principle, the end attained. Cavor's interview with the Grand Lunar, like Gulliver's with the King of Brobdignag, is used to implicate and condemn contemporary English society equally as much as to satirize the conditioned community in which each Selenite is perfectly adapted to his own niche in the social hierarchy, and kept under sedation if he becomes temporarily redundant. Cavor's admiration for the Selenite society is partly, as we have seen, a judgment on his own character, but there are sufficient indications that it is also intended as a judgment on a smug, emotion-centred, inefficient English society where laissez-faire policies ensured that workers were 'free' to starve, to be unemployed, to be untrained for any useful work.

Compared with these authoritarian predecessors the New Republicans of Anticipations appear to represent

a morality closer to the democratic ideal approved, at least in theory, by Wells's contemporaries, in that they serve a purpose not their own - described rather vaguely as 'the purpose that presents [God] without presumption, and without fear'.<sup>7</sup> Moreover, the 'cause' of the New Republic is described as emerging for the most part without the need for violence or revolution, but rather

with all the inevitableness and all the patience of a natural force, whereby the great swollen, shapeless, hypertrophied social mass of today must give birth at last to a naturally and informally-organized, educated class. ...A New Republic dominating the world....It will appear at first, I believe, as a conscious organization of the intelligent and quite possibly in some cases, wealthy men....It will be very loosely organized in its earlier stages, a mere movement of a number of people in a certain direction, who will presently discover with a sort of surprise the common object towards which they are all moving.<sup>8</sup>

However, a closer examination reveals that they are almost as ruthlessly intent as their predecessors on purging society of misfits and socially unattractive personalities, and here the similarity of their programme to Ostrog's can scarcely be ignored,

It has become apparent that whole masses of human population are, as a whole, inferior in their claim upon the future, to other masses, that they cannot be given opportunities, or trusted with powers as the superior people are trusted, that their characteristic weaknesses are contagious and detrimental in the civilising fabric, and that their range of incapacity tempts and demoralizes the strong. To give them equality is to sink to their level.<sup>9</sup>

<sup>7</sup>Anticipations, Chapter 9, p. 245

<sup>8</sup>ibid., Chapter 8, p. 227

<sup>9</sup>ibid., Chapter 9, p. 250

and again:

The men of the New Republic will not be squeamish either in facing or inflicting death. ...They will have an ideal that will make killing worth the while; like Abraham, they will have the faith to kill, and they will have no superstitions about death.<sup>10</sup>

Even in retrospect Wells continued to approve of his new Republicans and considered his chapter on Democracy, 'The Greater Synthesis', the most interesting part of Anticipations. Apparently so far from regretting his uncompromising autocracy he criticised chiefly what seemed to him the benign nineteenth-century liberalism of the book, its pious hopefulness that the New Republic would emerge of its own accord without any need for force, and appears to have forgotten that he had made full provision for the use of violence should it prove necessary for the overthrow of Democracy.<sup>11</sup>

Characteristically, the New Republican spearhead is the body of scientists who will constitute a guild of social engineers from the middle classes:

This class will become, I believe, at last consciously the State, controlling and restricting very greatly the three non-functional masses with which it is as yet almost indistinguishably mingled.<sup>12</sup>

These New Republicans are the forerunners, the first draft, as it were, of the later Samurai, who appear less ruthless only because, owing to an improved education system,

<sup>10</sup> ibid., Chapter 9, p. 258

<sup>11</sup> Experiment in Autobiography, Chapter 9, i, pp. 652-3  
c.f. Anticipations, Chap. 5, p. 155

<sup>12</sup> Anticipations, Chapter 5, p. 136

their society is apparently prepared to accept without question their superiority and their right to govern. Wells must certainly have been aware that the very term he used was that of a military caste in traditional Japanese society, and as such had closer connections with the Guardians, the military caste of The Republic, than with Plato's teaching or ruling class, of whom the Samurai are presumably intended to be the counter-part.<sup>13</sup>

By the time he was writing A Modern Utopia, Wells had mellowed considerably in the extent to which he was prepared to recommend force in the reform of society, for he now believed that a revolution was less likely to succeed than a gradual evolution in education and social awareness, such as that outlined in Mankind in the Making. Although he despised what he considered the timidity of the Fabians, their methods appear to have tempered his zeal for precipitating the class war which, in Anticipations, he had believed inevitable. Henceforth, the new society is to be ushered in by peaceful means - education, discussion, and the gradual diffusion of a spirit of goodwill - although Wells still has no patience with the concept of democracy. The organization of the Samurai is seen as a 'quite deliberate invention' urged by the enthusiasm of self-sacrificing men to save the world from democratic chaos.<sup>14</sup> Thus the Samurai do still represent an autocratic contempt for the ordinary man,

<sup>13</sup> Wells explicitly compares the Samurai to Plato's Guardians in A Modern Utopia, Chapter 9, i, p. 230, but the social role he assigns to the Samurai is much closer to that of Plato's rulers and teachers.

<sup>14</sup> A Modern Utopia, Chapter 9, i, pp. 231-2.

the dull, the stupid, and the average. It must therefore be asked whether rule by such an élite would not lead to ruthless discrimination against, and even extermination of, the ungifted citizen. Certainly Wells entertained no hope for the reformation of the majority of mankind and never came to terms with democracy. First and Last Things contains a further anti-democratic discussion<sup>15</sup> and such outbursts show no sign of abating in the novels of his middle and later years. Remington, from the time of his unfortunate schoolboy encounter with a gang of lower class youths who rob him of his penknife, conceives a deep dislike and mistrust of the working class and continually refuses to place any trust in its ability, actual or potential.<sup>16</sup>

In 1902, in a letter to Arnold Bennett, Wells cited The Invisible Man, The First Men in the Moon, Anticipations, Chapter 9, 'The discovery of the Future' and Love and Mr. Lewisham as the emerging thread of 'a new system of ideas'<sup>17</sup> and in retrospect it becomes clear that after 1900 Wells had turned his attention from the ideal ruling figure and from questions of the relation between a talented individual and his inferiors to the broader concept of the ideal society - what constitutes a utopian society? and how may it best be instigated? Thereafter government and governors feature in his work only in relation to the ordering of the whole society. Wells had found no solution to the problem posed by Dr. Moreau and Griffin, and

<sup>15</sup> First and Last Things, Bk. III, xii, pp. 311-4

<sup>16</sup> The New Machiavelli, Bk. I, Chapter 3, iii, pp. 66-9

<sup>17</sup> Letter of 8th February, 1902, Arnold Bennett and H.G. Wells, ed. Harris Wilson (London. 1960) p. 74

Ostrog, but after Anticipations he apparently ceased to toy with it, for his talented individuals no longer attempt to seize power for themselves and to function alone; rather, they have formed a group, eventually an entire social class, which toils responsibly and untiringly for the public good. Wells believed, with Comte, that spiritual reform must precede political reconstruction, and hence the Samurai represent our 'best selves'. Their moral awareness is also highly developed and they can apparently be trusted not to resort to the crude discriminatory methods of nineteenth- and twentieth-century autocrats. Moreover, by virtue of the proposed eugenics programme and an enlightened education system, it is assumed that after some few generations no inferior individuals will have survived; rather the Samurai class will have come to embrace virtually all members of the world state, as it does in Men Like Gods. This is Wells's final, and perhaps ultimately the only answer to the otherwise insuperable problems posed by the two-class systems of 'The Time Machine' and The Sleeper.

After The Sleeper, the 'Overman' philosophy carries sinister connotations in Wells's work. In Kipps, the young Walshingham, who has been reading Nietzsche, comes to believe that in all probability he is the 'Non-Moral Overman' referred to<sup>18</sup> and this identification with an essentially amoral figure is shown as subsequently tainting his legal practice until he ends by embezzling from his clients. Chester Coote has already described him,

<sup>18</sup>Kipps, Bk. II, Chapter 3, i, p. 209

earlier in the novel, as:

'Gifted. And yet, you know - utterly sceptical. Practically altogether a Sceptic....full of this dreadful Modern Spirit - Cynical! All this Overman stuff. ~~Netzsche~~ and all that...' <sup>19</sup>

and Kipps himself, with full authorial approval, pronounces upon Walshingham's overbearing demeanour:

'He's getting too big for 'is britches....  
'E's seemed to think I've got no right to spend my own money...'  
'Overmantel indeed!' he added. 'Overmantel! ...  
'E tries that on with me - I'll tell 'im something 'e won't like.' <sup>20</sup>

Again, in The War in the Air, Bert Smallways on returning from his experiences in the war, is forced to fight the formidable Bill Gore for the love of his faithful Edna. Bill is described in antipathetic terms which include, as final condemnation, the fact that:

There had been a strain of advanced philosophy about the local nobleman, and his mind ran to 'improving the race' and producing the Over-Man, which in practice took the form of himself especially, and his little band in moderation, marrying with some frequency. <sup>21</sup>

Throughout the later work also there are spasmodic outbursts against the Caesars and Napoleons who have sought glory and power as individuals, regardless of the suffering caused to their fellows.

In considering now the development of Wells's utopian ideals for society as a whole it seems most helpful to trace first its progressive emergence through both the novels and the more doctrinaire works, Anticipations,

<sup>19</sup> ibid., Bk. II, Chapter 1, ii, pp. 169-170

<sup>20</sup> ibid., Bk. III, Chapter 2, i, p. 401-2

<sup>21</sup> The War in the Air, Chapter II, v., p. 356-7

New Worlds for Old, and The Open Conspiracy, with which he interspersed them, before examining in detail the characteristics of his more mature conception of Utopia.

Anticipations (1901) was the first of Wells's prophetic tracts, endeavouring to predict the future by the scientific and non-emotional procedure of induction from current and potential sociological trends. Wells professed to present a vivid and rationalistic picture of the future, as though it were based on the authority of competent scientific principles, and as though the full text, authenticated with formulae and the fullest citation of proofs, had been thoughtfully abridged purely to spare the non-specialist reader. This was a technique employed in many of the scientific romances, and it proved equally popular and convincing to the readers of Anticipations. The work is in fact an almost wholly imaginative effort, but Wells's guesses were for the most part accepted by his contemporaries as potential facts, and his broad generalizations as natural laws. The government which he envisages in his future world state is characteristically a technocracy, socialist in economy and politically authoritarian, ruled by an élite of 'functional men' mostly scientists, who would seize power during a crisis and retain it through their efficiency and general ability. This first book outlining a future state is the least didactic of Wells's sociological works. It does not argue for any principles or even, overtly, press for any reforms; it simply outlines, albeit dogmatically, a picture of the future, with the assurance of presenting not merely speculations, but facts.

Soon after the publication of Anticipations, Wells became a member of the Fabian Society and thereafter the tone of his writing changed markedly. He himself acknowledged the Fabians'

...pervading sense of the importance of social service as the frame of life, and the way in which Jane and I were probably influenced by them....They may have done much to deflect me from the drift towards a successful, merely literary career, into which I was manifestly falling in those early Sandgate days. I might have become entirely an artist and a literary careerist, and possibly a distinguished one, and then my old friend, Osborn of the National Observer, The Morning Post and 'Boon', would never have had occasion to call my books 'sociological cocktails'.<sup>22</sup>

Thereafter his sociological-prophetic books and pamphlets became as propagandist as they were prolific, as he acknowledged without regrets, and correspondingly poorer in literary merit.

The first fictional work of the series, A Modern Utopia (1905), makes only a token gesture towards a story, since by far the greater part of the book is a description of the way of life to be observed in this utopia of the year 2100, and a justificatory explanation of the form of government behind it. Utopia is governed by a ruling class, the Samurai, a rank to which anyone may aspire at any time, whatever his birth, provided only that he is prepared to follow the 'Rule', a code of behaviour embracing physical, intellectual and moral aspects of life. Wells lays considerable stress on the parallels between his utopian system and the world-wide House of Salomon

<sup>22</sup>Experiment in Autobiography, Chapter 8, v, p. 601

envisaged in Bacon's New Atlantis<sup>23</sup>, so that in this fundamental respect it is alleged to be firmly based on scientific principles. Wells never explicitly states that the Samurai are to be identified with scientifically-trained men, as the New Republicans had been in Anticipations, but clearly their mode of thinking is patterned on scientific procedures.

In Men Like Gods, where the Utopia is represented as being three thousand years ahead of the last 'Age of Confusion' (the latter being, presumably, equivalent to nineteenth-century England), all formal government has become redundant.

Utopia had no parliament, no politics, no private wealth, no business competition, no policemen, no prisoners, no lunatics, no defectives, no cripples, and it has none of those things because it has schools and teachers who are all that schools and teachers can be. Politics, trade and competition are the methods of adjustment of a crude society. Such methods of adjustment have been laid aside in Utopia for more than a thousand years. There is no rule nor government needed by adult Utopians because all the rule and government they need they have had in childhood and youth. Said Lion, 'Our education is our government'.<sup>24</sup>

This education for government apparently involves a knowledge and understanding of the Five Principles of Liberty 'without which civilisation is impossible': the Principle of Privacy, the Principle of Free Movement, the Principle of Unlimited Knowledge, the Principle that Lying is the Blackest Crime and Free Discussion and Criticism.<sup>25</sup> The

<sup>23</sup> A Modern Utopia, Chapter 9, iii, p. 245

<sup>24</sup> Men Like Gods, Bk. I, Chapter 5, vi, p. 80

<sup>25</sup> ibid., Bk. III, Chapter 2

last four of these are based heavily upon the principles most conducive to research, and it is therefore not surprising that science has flourished so prolifically in this Utopia.

Written much later and subtitled 'Blueprints for a World Revolution', The Open Conspiracy was a flagrant attempt to justify the ideas proposed in A Modern Utopia and Men Like Gods by outlining how such a change in society might be effected and how, basically, a conversion from self-seeking to altruism might be induced amongst a significant proportion of the population. Typically the people to whom Wells looks as leaders in exemplifying and popularising his programme for reform are the scientists and other specialists who, in the Wellsian canon, are presumed to be, merely by reason of their training, men of good will.

For each class it [the open conspiracy] has a conception of modification and development, and each class it approaches therefore at a distinctive angle. Some classes no doubt it would supersede altogether; others - the scientific investigator for example - it must regard as almost wholly good, and seek only to expand and empower.<sup>26</sup>

In New Worlds for Old Wells explicitly identified his programme with the Socialist platform, and both with the principles of scientific research, indicating that the aims of all three are closely parallel if not identical:

The fundamental idea upon which Socialism rests is the same fundamental idea as that upon which all real scientific work is carried on. It is the denial that chance impulse and individual will and happening constitute the only possible methods by which things may be done in the world. It is an assertion

<sup>26</sup> The Open Conspiracy, p. 55

that things are, in their nature, orderly, that things may be computed, may be calculated upon and foreseen. In the spirit of this belief, Science aims at a systematic knowledge of material things ... the Socialist has just that same faith in the order, the knowableness of things, and the power of men in co-operation to overcome chance; but to him, dealing as he does with the social affairs of men, it takes the form not of schemes for collective research, but for collective action and the creation of a comprehensive design for all the social activities of man.

While Science gathers knowledge, Socialism, in an entirely harmonious spirit, criticizes and develops a general plan of social life, Each seeks to replace disorder by order ... but these two great processes of human thought are further in sympathy... [Socialism] applies to social and economic relationships the same high rule of frankness and veracity, the same subordination of purely personal considerations, to a common end, that Science demands in the field of thought and knowledge. Just as Science aims at a common, organized body of knowledge, to which all its servants contribute, and in which they share, so Socialism insists upon its ideal of an organized social order which every man serves and by which every man benefits.<sup>27</sup>

The World Set Free contains both a description of the world holocaust which, it is claimed, would inevitably result from the current trends of individual egotism and its social correlative, jingoism, and, less important in literary merit and imaginative impact, an outline of the new world state which is to replace the previous system of mutually antagonistic regimes. The novel's major theme is a warning against the consequences of ignoring the cry for moral and sociological reform, for failure to effect world peace and international co-operation leads to an atomic world war which destroys all existing civilizations. Once the conflict has exhausted itself, the leaders of the nations convene at Brissage to draft a new

<sup>27</sup>New Worlds for Old, Chapter 2, pp. 23-5

pattern of world government. There the axiomatic truth of the principles of science, as being, by definition and necessity, acceptable to all nations is explicitly affirmed. These principles alone are seen as a viable starting point for discussion, and the only infallible guide in framing a constitution.

Anthony West comments that the central government set up after the catastrophe, like that similarly instituted in In the Days of the Comet, is modelled on the 'Common Power' described in Hobbes's Leviathan.<sup>28</sup> West is undoubtedly correct in marking a similarity between several of Wells's basic assumptions and those of Hobbes - namely that man has at least elements of pure selfishness and self-seeking in his nature competing against others in 'contention, enmity and war', for the state of nature is, in the opinion of both writers, a state of general war such that 'the notions of right and wrong, justice and injustice, have there no place'. In Hobbes's Commonwealth these factors are rigorously controlled by 'Laws of Nature' to which all men must agree and which are enforced by a chosen representative whose power is absolute as long as he furthers the Commonwealth and does not himself infringe the Laws. However, there are important differences between Hobbes's and Wells's treatments, for the chosen 'representative' is not, in Wells's system, an individual whose probity might well be undermined, but, characteristically, the spirit of science itself. King Egbert discusses with the American President during the Brissage peace talks, the

<sup>28</sup>

A. West, 'H.G. Wells', Encounter VIII, No. 2 (Feb., 1957) 52-9.

proposed government of the nascent world state:

'Science', the King cried presently, 'is the new king of the world.'

'Our view' said the President, 'is that sovereignty resides with the people.'

'No,' said the King, 'the sovereign is a being more subtle than [the masses]. And less arithmetical. Neither my family nor your emancipated people. It is something that floats about us and through us. It is that common impersonal will and sense of necessity of which Science is the best understood and most typical aspect. It is the mind of the race.'<sup>29</sup>

This is virtually the climax in the evolution of Wells's Utopian thought; it is the ideal which he believed must inform any government which would provide maximum scope for the expression of individual initiative commensurate with the growth and development of the whole society. After A Modern Utopia he did not significantly alter his ideals but only refined them and speculated on various methods for setting up a world state. It is thus possible to consider the Wellsian Utopia as a single entity and to examine here its underlying assumptions and characteristics, before discussing the various criticisms which have been levelled against the concept.

Wells's first assumption, derived directly from Huxley's philosophy, was that the cosmic process of evolution was basically amoral, and could not be expected in itself either to produce a more moral species than Homo sapiens, or to provide the principles for an ethically conscious society.<sup>30</sup> Thus, there being no inherent virtue

<sup>29</sup> The World Set Free, Chapter 3, iii, pp. 141-2

<sup>30</sup> T.H. Huxley, 'Evolution and Ethics' in J.S. Huxley and T.H. Huxley, Evolution and Ethics (London, 1947).

in nature, man must strive to direct and control his own evolution, including the evolution of society, and not merely accept or blindly follow the Darwinian process. The Primitivists before Wells, and many writers since, have held the contrary view - namely that to tamper with Nature, to go against natural processes, can bring only harm, but this contention arises chiefly because they have been considering only unintelligent interference in the natural balance. The two views are debated in Men Like Gods between the politician Rupert Catskill and the Utopian, Urthred, authorial approval clearly resting with the latter.<sup>31</sup>

The second assumption, also strongly criticized by later anti-utopians, is the belief that science and technology are in themselves fundamentally good and can greatly benefit mankind if properly controlled and understood. This has already been dealt with at some length in Chapter 3. In Wells's view the virtues of technology were two-fold, firstly the power it offered for effecting a change in evolution, a possibility which would be unthinkable without modern scientific knowledge and technological efficiency, and secondly the opportunity provided thereby for increased leisure and cultivation of the individual personality in a society where manual labour has been rendered obsolete by machinery. A Modern Utopia contains Wells's manifesto on this subject, an expansion of Bacon's similar statement in The New Atlantis:

<sup>31</sup> See Chapter 1, pp. 108-9 above.

The plain message physical science has for the world at large is this, that, were our political and social and moral devices only as well contrived to their ends as a linotype machine, an antiseptic operating plant or an electric tram-car, there need now at the present moment be no appreciable toil in the world and only the smallest fraction of the pain, the fear and the anxiety that now make human life so doubtful in its value. There is more than enough for everyone alive. Science stands, a too-competent servant, behind her wrangling under-bred masters, holding out resources, devices and remedies they are too stupid to use. And on its material side, a modern utopia must needs present these gifts as taken, and show a world that is really abolishing the need of labour, abolishing the last base reason for anyone's servitude or inferiority.<sup>32</sup>

Of the Utopian characteristics which Wells advocated, perhaps the most important contribution to the history of Utopian thought was his stress on internationalism. This is virtually a necessary consequence of the second assumption outlined above, for where technology has inevitably shrunk distances by improved communications and transport, no non-military utopia could hope to survive in isolation from neighbours who might not be similarly motivated. Enclosure having thus been rendered impossible, the only alternative was to envisage utopia as a world-state from the outset. In The War in the Air, Wells analyses explicitly the way in which the growth of science has rendered both isolationist and aggressive policies untenable:

The essential fact of the politics of the age in which Bert Smallways lived - the age that blundered at last into the catastrophe of the War in the Air - was a very simple one if only people had had the intelligence to be simple about it. The development of Science had altered the scale of human affairs. By means of rapid mechanical traction, it had brought men nearer together, so much nearer socially, economically, physically, that the

<sup>32</sup> A Modern Utopia Chapter 3, vi, p. 92

old separations into nations and kingdoms were no longer possible. A newer, wider synthesis was not only needed, but imperatively demanded...<sup>93</sup>

Thus Wells frequently describes his utopias as being instituted after the collapse of some previous separatist system in the holocaust of war. The War of the Worlds, The World Set Free and The Shape of Things to Come all follow this pattern.<sup>94</sup> The benefits of a world-state in the efficient organization and development of society are obviously enormous — the saving in money, time, men and resources by the non-existence of defence systems and warfare; the automatic sharing of all scientific and cultural advances made by any one group to enrich the whole species; the stimulating effect of free travel to any part of the globe without fear of restriction or hostility; the added efficiency of specialization in research, when workers are no longer competing against each other and thereby duplicating time, effort and resources, but are working on varied aspects of the same research topic. These are but some of the manifest advantages of a world-state; yet earlier literature had concentrated almost exclusively on personal relations, on questions of

<sup>93</sup>The War in the Air, Chapter 4, i, p. 96

<sup>94</sup>It is not true, however, to assert, as West does, that Wells was forced to introduce his new worlds catastrophically. After Anticipations Wells saw war as being always abortive and alien to the spirit of the new order. Almost invariably it is a moral influence which finally institutes the world state — as in In The Days of the Comet, The World Set Free, The Star Begotten. The war or other catastrophe merely demonstrates conclusively the inadequacy of the preceding system of government.

duty between individuals, and between individuals and God, or had been extended at times to include national duty. Wells was perhaps the first writer to consider in depth a world-centred morality which looked beyond both individualism and patriotism to a community of mankind.

Another unique feature of Wells's utopias was their essentially kinetic quality. Perfection was, for Wells, no static concept, but, like the evolutionary panorama, continually changing and developing. In A Modern Utopia this conceptual debt to Darwin was explicitly acknowledged<sup>35</sup> and Wells would certainly have been familiar with Huxley's stress on ceaseless change as the primary characteristic of nature:

The more we learn of the nature of things, the more evident is it that what we call rest is only unperceived activity; that seeming peace is silent but strenuous battle.... Thus the most obvious attribute of the cosmos is its impermanence. It assumes the aspect not so much of a permanent entity as of a changeful process, in which naught endures save the flow of energy and the rational order which pervades it.<sup>36</sup>

Thus, in Wells's utopian thought, any goal achieved is regarded merely as the vantage point for envisaging the next goal; it is:

...a hopeful stage leading to a long ascent of stages. Nowadays we do not resist and overcome the great stream of things, but rather float upon it. We build now not citadels but ships of state. For one ordered arrangement of citizens rejoicing in an equality of happiness, safe and assured for them and their children for ever, we have to plan a flexible common compromise, in which a perpetually novel succession of individualities may converge most effectively upon a comprehensive onward development.<sup>37</sup>

<sup>35</sup> A Modern Utopia, Chapter 1, p. 7

<sup>36</sup> T.H. Huxley, 'Evolution and Ethics' in J.S. Huxley and T.H. Huxley, Evolution and Ethics, p. 62

<sup>37</sup> A Modern Utopia, Chapter 1, p. 7

From this dynamic view of a cosmos in which no final goal can be envisaged, Wells derived his utopians' awareness of the adventure and excitement of life, a spirit which is baffling, even depressing, to an outsider. Mr. Barnstaple, on his first encounter with it, muses:

Knowledge swept forward here and darkness passed as the shadow of a cloud passes on a windy day. ...Life marched here; it was terrifying to think with what strides. Terrifying - because at the back of Mr. Barnstaple's mind, as at the back of so many intelligent minds in our world still, had been the persuasion that presently everything would be known and the scientific process come to an end. And then we should be happy for ever after.

He was not really acclimatised to progress. He had always thought of Utopia as a tranquillity with everything settled for good. Even today it seemed tranquil under that level haze, but he knew that this calm was the steadiness of a mill-race which seems almost motionless in its quiet onrush until a bubble or a fleck of foam or some stick or leaf shoots along it and reveals its velocity.<sup>38</sup>

A further characteristic of the utopia presented in A Modern Utopia which has been too frequently overlooked by the critics of Wells's utopias, is the stress on individuality and non-uniformity. In A Modern Utopia the individuals have far greater freedom than has ever been seen in past or present societies. Wells repeatedly affirmed the value of individuality, not only as a passport to intellectual and moral growth, but as an end in itself, and he continued to maintain that such freedom would be fostered, rather than subdued, by a co-operative and well-organized state.<sup>39</sup> It is true that for the 'natural man' in A

<sup>38</sup> Men Like Gods, Bk. II, Chap. 1, ii, p. 171

<sup>39</sup> See, e.g. The Outlook for Homo Sapiens p. 166

Modern Utopia, as for Lychnis and the Earthlings in Men Like Gods, Utopia is a relatively cold and unsympathetic environment; but this is because, in a real sense, they have never been part of it. The first two represent anachronisms in the ethos of Utopia while the Earthlings are but new arrivals. It should be noted, however, that they are not, on that account, crushed or condemned; they are at worst ignored by the busy and forward-looking individuals who are the real children of Utopia.

A Modern Utopia is explicit on this question of the rights and freedom of the individual in many respects not previously considered, for example, the freedom to travel:

I submit that to modern-minded man it can be no sort of Utopia worth desiring that does not give the utmost freedom of going to and fro.<sup>40</sup>

Wells repeatedly affirms the value of individuality, not only for the personal satisfaction and fulfilment of the individual himself but for the enrichment of the society of which he is a part.

So long as we ignore difference, so long as we ignore individuality, and that I hold has been the common sin of all Utopias hitherto, we can make absolute statements, prescribe communisms or individualisms and all sorts of theoretical arrangements. But in the world of reality,...which is nothing more nor less than the world of individuality, there are no absolute rights and wrongs, there are no qualitative questions at all, but only quantitative adjustments.<sup>41</sup>

and again:

The factor which leads the world-state on from one phase of development to the next is the interplay of individualities; to speak teleologically, the world exists for the sake of, and through initiative, and individuality is the method of initiative.<sup>42</sup>

<sup>40</sup> A Modern Utopia, Chapter 2, ii, p. 34

<sup>41</sup> Ibid., p. 35

<sup>42</sup> Ibid., Chap. 3, iv, p. 80

For similar reasons, Wells preserves the family unit which many previous utopians, concerned to eliminate competitive allegiances which might stand in the way of the individual's duty to the state, had proscribed. Wells saw the family as the nursery of individuality, and hence of initiative:

Children are the results of a choice between individuals. They grow well, as a rule, only in relation to sympathetic and kindred individualities and no wholesale, character-ignoring method of dealing with them has ever had a shadow of the success of the individualised home. Neither Plato nor Socrates who repudiated the home, seems ever to have had to do with anything younger than a young man.<sup>43</sup>

One of the scandals of the world of The Sleeper is the system of Child Education Refineries, where:

the wet nurses [are] a vista of mechanical figures with arms, shoulders and breasts of astonishingly realistic modelling, articulation and texture, but mere brass tripods below, and having in place of features, a flat disc bearing advertisements likely to be of interest to the mothers.<sup>44</sup>

Characteristically, Wells's stress on individualism in the utopias is, for him, scientifically founded. The relation between the individual and the utopian world-state is virtually that between the individual and the biological species:

As against the individual, the state represents the species; in the case of the Utopian world-state, it absolutely represents the species. The individual emerges from the species, makes his experiment and either fails, dies and comes to an end, or succeeds and impresses himself in offspring, in consequences and results, intellectual, material and moral, upon the world.<sup>45</sup>

<sup>43</sup> ibid., Chapter 6, v, p. 178

<sup>44</sup> The Sleeper Awakes, Ch. 20, p. 414, This idea may well have been inspired by Verne's description of similar mother-substitute devices in Amiens in the Year 2000.

<sup>45</sup> A Modern Utopia, Chapter 3, iv, p. 80

An essential part of Wells's Utopian scheme was the rôle of the Samurai. We have seen that Wells's New Republicans of Anticipations developed into the apparently more humane 'voluntary nobility' of A Modern Utopia and of several later didactic works. All political power is in their hands, for they are the sole administrators, lawyers, practising doctors and public officials, and also the only voters. Yet, if these privileges seem somewhat extreme, it must be remembered that no one is excluded from the Samurai class except by his own choice in refusing to follow the 'Rule'.<sup>46</sup> Hence, the Samurai represent a system founded on scientific rather than authoritarian values, for this aristocracy is designed to be one which will automatically increase in numbers as more individuals are educated to appreciate its aims and responsibilities:

Their children [the Samurai's] as a rule become Samurai. But it is not an exclusive caste; subject to the most reasonable qualifications, any one who sees fit can enter it at any time, and so, unlike all other privileged castes the world has seen, it increases relatively to the total population and may indeed at last assimilate almost the whole population of the earth.<sup>47</sup>

Thus although Wells had continued to despise democracy because he believed that the masses had by their stupidity, their lack of concern and their crowd-mentality, abdicated from any right to a voice in their government, he made full reparation, at least in theory, in his utopias. When the citizens of the world-state shall have proved their intelligence and initiative, all who wish to do so may share equally in the government.

<sup>46</sup> 'The Rule' is also derived in large measure from -- Plato's Republic.

<sup>47</sup> A Modern Utopia, Chapter 9, vi, p. 265

It has been seen that both the New Republicans and the Samurai are closely modelled on Wells's emerging conception of the 'new scientist' who supposedly combines knowledge and efficiency with a high moral code and sense of social responsibility. However, since, with the exception of Bacon, earlier Utopian writers had conceived of their ideal states as being ruled by military power, hereditary dynasties, or philosopher-kings, and since at the time of Wells's writing there was little to suggest the emergence of a technocracy, it is worth considering why he should, at this stage, have stressed so firmly and repeatedly the necessity for a scientific élite - or at least an élite which exemplified the characteristics which he regarded as peculiar to scientists - to rescue the world from its governmental and sociological confusion.

Wells's choice depends basically on the personal qualities he ascribed to scientists. By both training and ~~instinct~~, scientists strive to impose order upon the universe and to work and think efficiently; thus it might reasonably be assumed that they would introduce an orderly and efficient administration - not as an end in itself, but as the sine qua non of more important and more creative activities in the community. The integral relation of this desire for order to the details of Wells's sociological thought will be considered in Chapter 5, but there are several other important factors contributing to his faith in scientists.

Wells firmly believed that internationalism was the only possible creed for a sane and educated man, and

we have seen that no governmental or sociological reform seemed to him even potentially viable unless it were a world-wide one. Clearly scientists were the only major group in the community with a real tradition of non-nationalistic thinking and a world-centred morality. Wells assumed that this internationalism, together with their scientific expectation of open communication between researchers in the same field, would circumvent the political intrigue and secret treaties which bedevilled politics and hampered the efforts of men of good will to effect a world peace. Ironically, since Wells began to urge upon the whole community the traditional freedom of the scientists to surmount political barriers, the scientists themselves have become progressively less free. Einstein's proposal in 1940 that he, Nils Bohr, Lord Cherwell and Peter Kapitsa should jointly publish the details of the atomic bomb to the world to prevent its becoming the monopoly of any one power, was never seriously considered by the governments concerned, and the extent to which scientists were made the virtual prisoners of their governments during the second World War has been revealed only too clearly.<sup>48</sup> More recently, Rose and Rose, in their sociological survey of science report that:

Research linked closely with industry, or, more significantly, with defence, and supported by 'tied money' with restraints on freedom to publish - and on those selected to carry out the research - exemplify these trends. The existence of large areas of 'secret research' in many U.S. universities financed by the U.S. Department of Defence exemplifies this. In Britain in 1967, there were 786 research contracts, worth some £1.4 million, placed

<sup>48</sup>

See, e.g. Robert Jungk, Brighter than a Thousand Suns trans. J. Cleugh, (London, 1958)

in the universities by the Ministry of Defence and of Technology with restrictions on publishing buried in the small print.<sup>49</sup>

These statistical objections in no way undermine Wells's belief that universalism is an essential postulate of the scientific tradition; they merely show the power of governments to threaten such a tradition, thereby weakening it and restricting its progress. Yet from their statistical considerations the above authors conclude that:

To argue that science is, by its very nature universalistic, increasingly falls into the fallacy of confusing an is with an ought. What remains true is that the explicit credo of many - perhaps most - of the outstanding basic scientists has such an universalism about it. There are two consequences of such a universalism. One is an elitist belief that scientists, qua scientists, are capable of rescuing the world from the worst abuses of its nationalist divisions. This belief has long historical antecedents, stretching back to the days of the scientific religion founded by Saint-Simon in the early nineteenth century and runs through H.G. Wells's Open Conspiracy of intellectualists and scientists who would manage the world in its own best interests....A contemporary descendant of this type of internationalism is the scientists' Pugwash Association.<sup>50</sup>

The reasons these authors advance as evidence for the limitations of Wells's view reside less in the character of the scientists themselves than in the power of governments which hold the purse-strings of research finance and thereby force scientists to become aligned with nationalist organisations in order to carry out research at all. Clearly, Wells was not unaware of this political danger, for his utopias describe a simple - perhaps, as we

<sup>49</sup>H. Rose and S. Rose, Science and Society, (Harmondsworth, 1970) Chapter 9, p. 181

<sup>50</sup>ibid, Chapter 9, pp. 181-2

shall consider in the next section, too simple - expedient whereby the potential 'taming' of scientists and the tailoring of their ideals to governmental policy might be averted - namely the identification of the government with the scientists, rather than of the scientists with their governments.

A further reason for Wells's faith in the integrity of scientists and in their mission to govern the world, seems to have been derived from a not irrational supposition that those whose primary commitments and interests lie elsewhere than in the political arena are perhaps the only ones fit to be entrusted with political power. Like Plato's philosopher-kings, they will doubtless be unwilling rulers, but they will therefore be the more ready to relinquish the mantle of power after their term of office. Wells believed that the scientists ignored this responsibility at their peril and the peril of all freedom-loving people.<sup>51</sup>

Related in Wells's thought to the virtue of disinterestedness was that of practised self-control which he also ascribed particularly to scientists. This quality, which is seen as the cardinal virtue of the Samurai, links them most directly with their predecessors, the New Republicans, for Wells regarded self-control as arising essentially from pride:

Pride may not be the noblest thing in the soul, but it is the best king there for all that.<sup>52</sup>

51

Hedon, of 'A Dream of Armageddon' chooses to ignore his vocation when the power-seeking Evesham musters the forces of the future technological society against those who prefer a pleasurable private life; the result is the destruction of all that civilization has built.

<sup>52</sup>A Modern Utopia, Chapter 9, v, p. 260

Such pride, is, in fact, merely the other side of the coin from the arrogance of Moreau, Griffin, and Ostrog and the complacency of the Grand Lunar, but here Wells seems to consider it as almost wholly virtuous.

In Wells's later novels the scientists have become wise and powerful figures of universal importance, capable of invoking forces, educating humanity, or even, if it seems more prudent, of withholding information which might produce evil effects among people not yet ready to deal responsibly with it. Holsten, in The World Set Free prefigures this attitude, becoming anxious about the publication of his discoveries in atomic physics:

He had a vague idea that night that he ought not to publish his results, that they were premature, that some secret association of wise men should take care of his work and hand it on from generation to generation until the world was riper for its practical application. He felt that nobody in all the thousands of people he passed had really awakened to the fact of change. They trusted the world for what it was, not to alter too rapidly, to respect their trusts, their assurances, their little accustomed traffics and hard-won positions.<sup>53</sup>

and although he does finally divulge his discovery to an irresponsible world and attempts to justify the decision—

It is not for me to reach out to consequences I cannot foresee. I am a part, not a whole; I am a little instrument in the armoury of change. If I were to burn all these papers before a score of years had passed some other man would be doing this.<sup>54</sup>

—the indication is clear that he has thereby failed in his duty as a scientist.

<sup>53</sup> The World Set Free, Chapter 1, ii, p. 33

<sup>54</sup> ibid., p. 36

It is important to stress here that Wells's scientists are considered best fitted to govern not primarily because of any intrinsic moral superiority, but chiefly because they are the custodians and spokesmen for the principles of science and, having devoted their lives to research, might therefore be expected to see more clearly the social implications to be derived from scientific values. Wells was never beguiled, as some of the early utopians had been, into imagining that men of the future state would be automatically kind, gentle and good. In A Modern Utopia, he explicitly disclaims the idea of 'dolls in the likeness of angels - imaginary laws to fit incredible people'.<sup>55</sup>

Were we free to have our untrammelled desire, I suppose we should follow Morris to his Nowhere, we should change the nature of man and the nature of things together; we should make the whole race wise, tolerant, noble, perfect - wave our hands to a splendid anarchy, every man doing as it pleases him, and none pleased to do evil, in a world as good in its essential nature, as ripe and sunny as the world before the Fall.<sup>56</sup>

Wells concedes that perhaps only the environment may be changed and not man's essential nature, but that in itself is a considerable advance, for it involves:

...a free hand with all the apparatus of existence that man has, so to speak, made for himself, with houses, roads, clothing, canals, machinery, with laws, boundaries, conventions and traditions, with schools, with literature, and religious organizations, with creeds and customs, with everything, in fact, that it lies within man's power to alter.<sup>57</sup>

<sup>55</sup> A Modern Utopia, Chapter 1, vi, p. 24

<sup>56</sup> ibid., Chapter 1, i, p. 9

<sup>57</sup> ibid., p. 10

It is noteworthy that the principles of science do not appear in this list. This is because to Wells they existed outside and beyond the little achievements of man; they were axiomatic truths, independent of such accidents of birth as colour, creed or nationality, and therefore they alone could be accepted by all men as an impartial social code and the basis for setting up the world state.

Clearly, then, a major part of Wells's sociological writings is concerned with ethical questions raised within the scientific community, questions of leadership, of the use of power to enforce what seems good for the majority, of the system of priorities to be observed if the will of the individual should conflict with that of the state. Wells was thereby attempting to force upon scientists a sense of moral responsibility for the by-products of their research and upon laymen, the question whether they were ready to receive and cope with the new knowledge becoming available.

Nevertheless, despite approbation from at least two authoritative critics - Connes, who maintained that the Utopias were Wells's greatest imaginative achievement:

C'est dans l'élaboration et la présentation des Utopies que Wells a trouvé les plus belles jouissances de sa vie et la couronnement de son oeuvre; son rêve final est, en somme, une Utopie.<sup>58</sup>

and Lewis Mumford, who describes Wells's work as 'the quintessential Utopia'<sup>59</sup> - Wells's utopian works have elicited a considerable volume of adverse criticism from

<sup>58</sup>G. Connes, Etude sur la Pensée de Wells, (Paris, 1926) p.441

<sup>59</sup>L. Mumford, The Story of Utopias, (London, 1923 ) p. 184

the time of their first publication. The criticism, which is basically of four distinct kinds, has been directed towards the feasibility of the proposed government and social reform, the literary appropriateness of Wells's didactic method, the originality of his proposals, and the morality of his utopian schemes.

The first of these criticisms was occasioned by Anticipations and concerned chiefly the rôle of the scientist élite to which Wells was exalting the scientifically-educated, middle-class man. Beatrice Webb read the book in December, 1901, and the subsequent entry in her diary shows that she levelled this criticism almost immediately.

The most remarkable book of the year: a powerful imagination furnished with the data and methods of physical science, working on social problems. The weak part of Wells's outfit is his lack of any detailed knowledge of social organizations - and this, I think, vitiates his capacity for foreseeing the future machinery of government and the relation of classes.<sup>60</sup>

Later, after she had come to know Wells himself better, she declared that he had:

... an immense respect for science and its methods. But he is totally ignorant of the manual worker on the one hand, and of the big administrator and aristocrat on the other. This ignorance is betrayed in certain crudities of criticism in his Anticipations: he ignores the necessity for maintaining the standard of life of the manual working population; he does not appreciate the need for a wide experience of men and affairs in administration. A world run by the physical scientist straight from his laboratory is his ideal: he does not see that specialized faculty and knowledge are needed for administration exactly as they are needed for the manipulation of machinery or forces...Democracy as a method

<sup>60</sup> B. Webb, Our Partnership, (London, 1948) p. 226

of dealing with men in a wholesale way - every man treated in the bulk and not in detail, the probability that we shall become more detailed and less wholesale in our provision for men's needs - that again is a clever illumination.... He has no great faith in government by the 'man in the street' and, I think, has hardly realised the function of the representative as a 'foolometer' for the expert.<sup>61</sup>

Beatrice Webb's charge that Wells 'does not see that specialised faculty and knowledge are needed for administration' indicates that she failed to grasp the point of his emphasis on a scientific élite. Professional administrators were precisely the men whom Wells most mistrusted because their training was in diplomacy, in secrecy, in 'giving nothing away', in delaying tactics, indeed, in all the characteristic subterfuges which Wells abhorred, believing, as he did, that the chief requisites for practical and peaceful government were openness and efficient organization.

Nevertheless the criticisms of his system continued rather than abated after the publication of A Modern Utopia. Shaw had parodied Wells's 'functional men' in the figure of 'Enry Straker, the Cockney engineer of Man and Superman (1903) and later spoke vehemently against the whole concept of an élite at the First Public Conference on Mr. Wells's 'Samurai'.<sup>62</sup> Shaw's attack was bifurcate - charging firstly that:

the discipline described by Mr. Wells falls ridiculously short of the discipline I have put upon myself...the error is the outcome of supposing that character and morals are simple things; but they are outrageously difficult things.

and secondly that the very existence of an élite was the

<sup>61</sup> ibid., pp. 230-1

<sup>62</sup> Held under the auspices of the Fabian Arts Group, 1907.

essence of Toryism and therefore suspect, if not disastrous:

The present state of our civilisation has been brought about precisely as the result of a Samurai idea. Why, every Tory would cordially agree with Mr. Wells; only he would say that in the English gentleman we have already got our Samurai. He is sent to Oxford where he undergoes most of Mr. Wells's discipline, including the cold bath and daily shave. He is duly turned out with a degree certifying his proficiency as a gentleman. ...This is just the very thing that every superior mind does his very best to avoid.<sup>63</sup>

Crozier, a sociologist whose criticism of Wells's work seems to have been motivated, at least in part, by his resentment at Wells's cavalier disregard of current sociological theory, was nevertheless essentially correct when he charged that:

This Utopia of Mr. Wells is a purely personal imagination of its author, founded like any other millennial dream on what he personally would like to see realised.<sup>64</sup>

and this claim was later repeated by Belgion, who maintained that all Wells's plans for reform sprang from an emotional desire to change whatever he, personally, did not find agreeable in society:

We shall look through Wells's writings in vain for any evidence that he believed polygamy and promiscuity would be of either social or individual benefit to other people. The only motive he had for condemning monogamy was that he felt it irksome.<sup>65</sup>

More frequent were the criticisms from those who realised that all Wells's sociological reforms did in fact, whatever his claims to the contrary, presuppose a change in human

<sup>63</sup>G.B. Shaw, in 'The First Public Conference on Mr. H.G. Wells's "Samurai"' The New Age (n.s.) I (May 2nd, 1907) p.10

<sup>64</sup>J.B. Crozier, "Mr. Wells as a Sociologist", Fortnightly Review LXXVIII (Sept. 1905), 424

<sup>65</sup>H. Belgion, H.G. Wells (London, 1953) p. 21

nature, and doubted whether this were possible. Conrad, who admired and sympathised with Wells on many counts, wrote to him:

The difference between us, Wells, is fundamental. You don't care for humanity, but think they are to be improved. I love humanity, but know they are not.<sup>66</sup>

Again, G.K. Chesterton, in his allegedly complimentary chapter on Wells in Heretics, also criticises the feasibility of Wells's Utopia:

The weakness of all Utopias is this, that they take the greatest difficulty of man and assume it to be overcome, and then give an elaborate account of the overcoming of the smaller one. They first assume that no man will want more than his share, and then are very ingenious in explaining whether his share will be delivered by motor car or balloon.<sup>67</sup>

Anthony West makes a similar but more thorough-going attack in his article in Encounter, maintaining that the idea of a change in human nature is the sine qua non of all Wells's utopias and that in the end Wells conceded such a change to be impossible. West claims that Men Like Gods is the point of concession, for here the Utopians are special creations designed, like the giant children of The Food of the Gods, to evade the truth about human nature. Therefore their universe is outside the earth's spatial scheme altogether and the novel is thus not even a debate between man-as-he-might-be and man-as-he-is (as was A Modern Utopia) but an essentially sterile confrontation between reality and an unattainable ideal.

Now in theory neither Chesterton's nor West's criticism is justified, for Wells himself explicitly denied that his

<sup>66</sup>Quoted by J. Baines in Joseph Conrad (London, 1959) p. 232

<sup>67</sup>G.K. Chesterton, "Mr. H.G.W. and the Giants" in Heretics (London, 1905) Chapter 5, p. 79

Utopians were beyond normal human limitations, maintaining, on the contrary, that:

We are to restrict ourselves first to the limitations of human possibilities as we know them...and then to all the inhumanity, all the insubordinations of nature. We are to shape our state in a world of uncertain seasons, men and women with like passions, like uncertainties of mood and desire to our own.<sup>68</sup>

Moreover, in both A Modern Utopia and Men Like Gods it is stressed that utopian societies have developed from a precedent resembling Wells's contemporary world - an 'Age of Confusion' - which has been gradually overcome by a reformed education system and a humane programme of negative eugenics. Wells may not have succeeded in convincing his readers that such deep-seated and thorough-going reforms were possible, but this arises chiefly from a failure to make vivid his impressions of the intervening reform period, rather than from a failure to recognise the difficulties involved in instituting such reform. In fact Wells himself later admitted that in A Modern Utopia 'I presented not so much my expectations for mankind as my desires',<sup>69</sup> and in the later novels his ideas oscillated between optimism and pessimism. The picture of man in The Croquet Player (1937) is darker than any Wells had hitherto drawn. Norbert, the psychiatrist, asserts that man is still as he was 100,000 years ago, and that civilisation and progress are a delusion.<sup>70</sup> A similarly pessimistic outlook underlies The Brothers (1938) where the irrational elements of life become predominant, yet the enlightened forces striving to introduce 'The New Soc-

<sup>68</sup> A Modern Utopia, Chapter II, pp. 9

<sup>69</sup> Experiment in Autobiography, Chapter 9, p. 649

<sup>70</sup> The Croquet Player, Chapter 4, pp. 72-3

ity' are pictured as successful in The Holy Terror, published the following year. However, since Wells's hopes for the inception of Utopia depended so strongly on the formation of the élitist ruling class, - scientists, Samurai - the most serious criticism may well be seen in his own admission in the allegory, All Aboard for Ararat (1940):

Our élite is our necessity and our menace. The primary danger, I take it, is that the élite will become a self-conscious, self-protective organisation within the State. It will taste the joys of authority and aristocracy, and instead of quickening and keeping alive the general sense of freedom, it will adopt the far easier line of humbugging the common man, and fighting down any competing system of humbug....such has been the fate of all élites in the past.<sup>71</sup>

Moreover, a closer examination of the central argument implicit in the genesis of the new society described in A Modern Utopia shows that it is in fact circular in its essentials, for it fails to explain convincingly how such a utopia is to be instigated without the use of force, at least in the first stages of reform, and concentrates instead on the details of its functioning and development once its principles have been accepted by a significant majority of the population. The Samurai, and indeed all the orders with the exception of the Base, are willing to support the system, presumably because it provides them with all the essentials of life as well as the stimulus and opportunity for further development. Yet these benefits are possible only because of the efficient social system which prevails and which is shown as being conceiv-

71 All Aboard for Ararat, Chapter 2, pp. 75-6

able only under Samurai rule. The methods of procedure outlined in The Open Conspiracy are clearly intended to suggest a way whereby the general populace might become converted to utopian principles but Wells himself was, for the most part, confessedly sceptical of such pious Liberal hopes. To this extent the objections of Chesterton and West do hold in practice, although in theory Wells apparently believed that he had dealt with them.

A further variation of this criticism has been advanced by Orwell who disputes the possibility of combining technological progress with the development of those qualities of personality and physique which are generally admired and which Wells had also professed to admire:

All mechanical progress is towards greater and greater efficiency; ultimately therefore towards a world in which nothing ever goes wrong. But in a world in which nothing ever goes wrong many of the qualities which Mr. Wells regards as godlike would be no more valuable than the animal faculty of moving the ears....The tendency of mechanical progress is to make your environment safe and soft; and yet you are striving to keep yourself brave and hard. You are, at the same moment furiously pressing forward and desperately holding back...So, in the last analysis the champion of progress is also the champion of an anachronism...The truth is that many of the qualities that we admire in human beings can only function in opposition to some kind of disaster, pain or difficulty; but the tendency of mechanical progress is to eliminate disaster, pain and difficulty.<sup>72</sup>

Whether or not Wells was successful in countering Orwell's criticisms must remain a matter for subjective assessment, but certainly he attempted to forestall them. The Samurai 'Rule' insisted upon physical fitness and enforced this rigorously by stipulating that every member of the

<sup>72</sup>George Orwell, The Road to Wigan Pier, (London, 1959)  
Chapter 12, pp 192-3 and 225-6

Samurai class should spend annually a period of seven consecutive days alone in a wild and physically testing situation for private meditation and for physical and moral strengthening.<sup>73</sup> There is apparently ample scope for the expression of those qualities which Orwell is concerned to uphold - bravery, generosity and physical strength - in the Utopia of Men Like Gods since the physique of the Utopians is demonstrably superior to that of the Earthling visitors, and mechanical progress seems to complement rather than render redundant feats of physical strength and bravery.

Wells's hopes of eliciting a spirit of 'good will' in men, and of directing their energies towards the community rather than for their individual profit, came to rest in education and in the institution of the socialist state. He wrote later in retrospect that he returned from America in 1906:

...to begin a confused, tedious, ill-conceived and ineffectual campaign to turn the little Fabian Society, wizened already though not old, into the beginning of an order akin to those Samurai in A Modern Utopia, which should embody for mankind a sense of the State. ...We would attack the coming generation at the high school, technical college and university stage, and our organisation would quicken into a constructive social stratum.<sup>74</sup>

and for three vigorous years, 1906-1908, this liaison with the Fabian Society markedly coloured Wells's sociological thinking, as the following manifesto indicates:

<sup>73</sup> Similarly, in Marriage, Trafford and Marjorie, stifled by the superficialities and ease of Edwardian London, embark for the wilds of Labrador to reassess their life and work in enforced solitude. Trafford, in particular, is seen as a forerunner of the Samurai.

<sup>74</sup> Experiment in Autobiography, Chapter 9, ii, p. 660

I perceived that the social process has an air of being aimless, wasteful ... and that there was a crying need to have some sort of plan to which individual aims could be subordinated....That ordering of the social process seemed to me to be socialism....Is it possible to educate the community so that Socialism becomes the form of the thought of that community? ...The question is first to work out the Socialist State and then to make a propaganda of that ideal citizen so that the number of these self-trained and self-disciplined Socialist citizens may increase and at last become the administrative forces of the reconstructed State. Therefore the literature of the propagandist, as it becomes enlarged, must become the literature of the future; must become the leading thought of the emancipated mind.<sup>75</sup>

It was this confessed and implemented aim of writing propagandist literature which alienated many of Wells's literary critics to such an extent that some have tended to doubt whether even the sociological novels may be regarded as literature.<sup>76</sup> When Wells first promulgated his prophecies of the future for a new world-state and its Samurai élite, his ideas were still so novel and his imagination so fertile and vivid that he scarcely needed to write well in order to attract readers. Later, when his books became repetitive he still did not realise, despite remonstrances from Bennett and James, that it was then necessary to concentrate more carefully on style and expression. The vivid descriptions strung together with poorly integrated propagandist speeches, such as Urthred's in Men Like Gods, continued and gradually their impact not only as literature but as popular sociology decreased. Shanks commented that:

Most of his novels since about 1906 have been clearly didactic, propagandist and controversial in nature. They are written 'about'

<sup>75</sup> 'The First Public Conference of Mr. H.G. Wells's "Samurai"', The New Age, n.s. (May 2nd, 1907), p. 9

<sup>76</sup> e.g. B. Berqonzi, op. cit., Chap. 7; V. Brome, op. cit.

contemporary topics: the characters are invented to discuss and illustrate contemporary problems. Mr. Wells has shifted his focus from the human spirit to the difficulties which the human spirit finds itself in at the moment...I think the books of which I am speaking are made up of a jumble of general opinions of conduct and of special cases. The general opinions would have been clearer if they had been stated by themselves....and the special cases are only intermittently pictures of living human beings, since they are always at the mercy of the arguments they illustrate. Mr. Wells never plays quite fair with his characters here; no artist who turns to propaganda can ever do so.<sup>77</sup>

The third charge, lack of originality, or, in its extreme form, plagiarism, was less common. It came from one or two critics, for the most part not literary men. Crozier, ignoring the fact that Wells had never claimed complete originality for his utopian ideas and had repeatedly throughout A Modern Utopia acknowledged his indebtedness to earlier writers, became almost vituperative in his denunciation of the book:

Barring the drapery that is proper to the novelist, let him put his finger on any single sociological idea or principle of the first rank in its range and scope in his book, or synthesis of ideas or principles, whether in reference to the Samurai, to the economy of Utopia, the relation of the sexes in Utopia, the treatment of the vicious and of the failures, the restraint on population, or indeed on any other division of the great sociological problem (with the exception, perhaps, of the mixture of race in unfettered marriage, promiscuity) that is not to be found in the works of one or other of the acknowledged Sociologists and Economists, and published years in advance of his own book.<sup>78</sup>

<sup>77</sup>E. Shanks, 'The Work of Mr. H.G. Wells' in First Essays in Literature (London, 1923) pp. 162-3

<sup>78</sup>J.B. Crozier, op. cit., p. 426. In fact Wells acknowledges Heraclitus, Empedocles, Plato, More, Bacon, Campanella, Wordsworth, Spencer, Morris and Bellamy as sources for his Utopian ideas.

Most critics, however, have been content to remind readers that the idea of a world-state, which Wells regarded as a basic feature of his Utopia was not, in essence, original. It was first mooted by Adam Müller (1816) and then by Carlyle (1832), Emerson (1856) and J.A. Froude (1870). The idea had also recurred in Lord Erskine's Armanta and in Havelock Ellis's The Nineteenth Century: A Dialogue in Utopia (1900) which condemns militaristic nationalism, imperialism and any exploitation of subject races, and sees a world-state as the only viable alternative. It was probably this latter source which influenced Wells most directly, although, despite his friendship with Havelock Ellis, he does not record having read this particular work.

Crozier also disputed whether Wells's utopia was, as he claimed, kinetic and evolving.

As for his Utopia being one with a principle of evolution in it and not rigid and fixed like those of his predecessors - had he embodied his ideas in an abstract discourse they would have been seen to be as immovable and fixed as the statues of the gods around the walls of a pantheon, but by draping his figures, after the manner of a the novelist, in the appropriate costume, he would lead us to believe ...that his Utopia is really alive and moving with all the possibilities of evolution and progress in it.<sup>79</sup>

Crozier cites no other basis for this criticism which, as it stands is exaggerated. In one sense it was impossible for Wells, or indeed anyone, to predict accurately the lines along which a society would evolve, any more than it is impossible to predict in precise detail the probable evolutionary development of any single organism.

<sup>79</sup>J.B. Crozier, op. cit., pp. 424-5

One can only, as Wells did, speculate upon various avenues of possibility. Wells's Martians, Selenites, Sea Raiders and giant ants are mere guesses - educated guesses but guesses, nevertheless, not scientifically respectable predictions. Yet natural selection operating upon a society, and especially on a world-society, is far more diverse and subtle than the elements of selection which individual species undergo, so that any detailed picture of that evolution in progress is, ipso facto, impossible. It should however be possible to describe an environment which would offer maximum possibilities for the individual variations upon which selection might act and this I believe Wells to have done with considerable success. His peculiarly futuristic outlook on life allowed him to participate in, and to describe vividly, the dynamic character and movement of modern life, and the forward-looking attitude of his Utopians is a dramatic extension of this.

These three prongs of critical attack have appeared infrequently and are, on the whole, of minor importance. The more sustained attack on the utopias has been the moral one, first voiced in detail by Chesterton who claimed that Wells's utopia was too mechanized, too scientific and materialistic, and made no allowance for any spiritual qualities of man, for his emotional and religious life.<sup>80</sup> However, apart from his stress on rationalism as opposed to emotional guides to action, the moral feature which most distressed Wells's contemporaries was his attitude to eugenics. He had first broached the topic in Anticipations where he stressed the importance of

<sup>80</sup> G.K. Chesterton, op. cit., Chapter 5

Malthusian doctrine for any practical utopia, and derided any reform movement which chose to ignore the issue:

Probably no more shattering book than the Essay on Population has ever been, or ever will be written....it made as clear as daylight that all forms of social reconstruction, all dreams of earthly golden ages, must be either futile or insincere or both, until the problems of human increase were manfully faced....It has become apparent that whole masses of human population are, as a whole, inferior in their claim upon the future to other masses,...To give them equality is to sink to their level, to protect and cherish them is to be swamped in their fecundity. The confident and optimistic Radicalism of the earlier nineteenth century and the humanitarian philanthropic type of Liberalism, have bogged themselves beyond hope in these realizations. The Socialist has shirked them as he has shirked the older crux of Malthus.<sup>81</sup>

By 1903 Wells's views were less extremist; the chief importance of Mankind in the Making, published in that year, was its rejection of the whole idea of positive eugenics. But Wells was never to repudiate the necessity for negative eugenics. It is present, though not unduly stressed, in A Modern Utopia and Men Like Gods, and Wells's last word on the subject, in The Science of Life, (1931), is the claim that, although perhaps not practical in our present age, eugenics must nevertheless eventually become so. Clearly he regrets only the delay in implementing a eugenics programme:

At present eugenics is merely the word for what still remains an impracticable idea. But it is clear that what men can do with wheat and maize may be done with every living species in the world - including his own. It is not ultimately necessary that a multitude of dull and timid people should be born. That is how things have to be today, but it is an unnecessary state of affairs....There may come a time when the species will have a definite reproductive

<sup>81</sup>Anticipations, Chapter 9, pp. 249-51

policy and will be directly responsible for the emergence and selection of certain recessives, and the elimination of this or that dominant....Once the eugenic phase is reached, humanity may increase very rapidly in skill, mental power, will and general vigour.<sup>82</sup>

Wells's continued support for a eugenics programme, in some form at least, undoubtedly arose from his desire for order and for control over nature, for the elimination of inefficiency from every sphere of individual life and from society as a whole. Hence his continued and characteristic intolerance of the average, dull, inefficient citizen whose pattern of living was based on uncontrolled instincts, egotistic social conventions and fossilized codes of behaviour rather than on rationalism, social-minded aspirations, and initiative. His impatience for the possibilities of the future caused him to undervalue the heritage of the past, whether in social traditions, in art or in philosophy, and he did not scruple to destroy the faith of others in these, usually by the cheap method of ridiculing them. In Wells's view these obstacles to progress had somehow to be overcome.<sup>83</sup>

<sup>82</sup> The Science of Life, Bk. IX, Part 3, Chapter 59, vi, p. 1494

<sup>83</sup> It should be noted that, cavalier as Wells's reforms may seem, he never expressed the intolerance native to Gissing's heroes. Godwin Peak's hatred of the lower classes issues in such irrational and purely personal diatribes as the following: 'I hate low, uneducated people! I hate them worse than the filthiest vermin!...They ought to be swept off the face of the earth!...All the grown-up creatures who can't speak proper English and don't know how to behave themselves, I'd transport them to the Falkland Islands...and let them die off as soon as possible. The children should be sent to school and purified, if possible; if not, they too should be got rid of....There's nothing I hate like vulgarity.' - Born in Exile (London, 1970) Pt. II, Chapter 2, p. 47. By comparison Wells's suggestions for eugenic reform appear almost moderate.

The eugenic method was the most ruthless and probably the quickest; education was another, slower but perhaps no less sure in the long run. Wells never ceased to stress the importance of both methods in the struggle to eliminate the 'natural man' for whom his scorn, with the two notable exceptions of Kipps and Mr. Polly, was unlimited. The hero of Romanticism and Rousseauism, 'unimproved man', represented by the anachronistic individual whom the travellers first encounter in A Modern Utopia, is described as 'a most consummate ass' and subsequently as an 'incredibly egotistical dissentient... with a manifest incapacity for comprehensive co-operation.'<sup>84</sup> Wells believed firmly with Huxley that Man must become the antithesis of 'natural man', the arbiter of evolution and not its passive product. In such a scheme, the 'acceptance' of nature, or indeed of the status quo in anything, appeared to Wells both cowardly and ridiculous.

This contempt for the popular concept of the 'natural man' is expressed uncompromisingly in The World Set Free, when Karenin remarks:

There is no natural life of man. He is and always has been a sheath of varied and even incompatible possibilities, a palimpsest of inherited dispositions. It was the habit of many writers in the early twentieth century to speak of competition and the narrow private life of trade and saving and suspicious isolation as though such things were in some exceptional way proper to the human constitution, as though openness of mind and a preference for achievement over possession were abnormal and rather insubstantial qualities. How wrong that was, the history of the decades immediately following the establishment of the world republic witnesses.<sup>85</sup>

<sup>84</sup> A Modern Utopia, Chap. 4, ii, p. 116; Chap. 4, iii, p. 125.

<sup>85</sup> The World Set Free, Chapter 4, x, p. 200

Huxley had delivered a similar, detailed warning to those who attempted to derive a 'gladiatorial' social ethic from evolutionary studies:

There is another fallacy which appears to me to pervade the so-called 'ethics of evolution'. It is the notion that because, on the whole, animals and plants have advanced in perfection of organisation by means of the struggle for existence, and the consequent survival of the fittest, therefore men in society, men as ethical beings must look to the same process to help them towards perfection. I suspect that this fallacy has arisen out of the unfortunate ambiguity of the phrase 'survival of the fittest'. 'Fittest' has a connotation of 'best'; and about 'best' there hangs a moral flavour. In cosmic nature, however, what is 'fittest' depends upon the conditions.... Men in society are undoubtedly subject to the cosmic process.... But the influence of the cosmic process on the evolution of society is the greater the more rudimentary its civilisation. Social progress means a checking of the cosmic process at every step, and the substitution for it of another, which may be called the ethical process, the end of which is not the survival of those who happen to be the fittest, in respect of the whole of the conditions which obtain, but of those who are ethically the best.<sup>86</sup>

However, despite Wells's Huxleyan stress on the importance of the moral factor in the evolution of society, he continued to alienate his readers by suggesting the need for any kind of selection at all - moral or otherwise - in a utopian society. His emphasis on the need for efficiency elicited the frequent charge of arrogance. A critic writing in T.P.'s Weekly claimed that to Wells!

... other people were 'silly' - his favourite epithet. A whole class he would sum up with the aid of that pet word of his.<sup>87</sup>

and Wells himself later admitted, in a slightly different

<sup>86</sup>T.H. Huxley, op. cit., p. 81

<sup>87</sup>J. Harris, "H.G. Wells", T.P.'s Weekly, X (July 12th, 1907), 53

context, 'For most things and people I don't care a damn'.<sup>88</sup> Indeed, the very names by which he designates the inferior classes of his utopia, the 'Dull' and the 'Base', betray this characteristic impatience and intolerance. Dullness in the Wellsian canon is a crime quite as heinous and infectious as moral turpitude. It is interesting that in The Star Begotten, the intelligent and highly developed future race is described as having a 'hard, clear mind'. Wells instantly qualifies this, to avert the unsympathetic reaction which such a phrase would normally evoke from his readers, and characteristically his defence involves an appeal to intelligence as a self-evident virtue:

A hard clear mind does not mean what we call a hard individual. What we call a hard man is a stupid man, who specialises in inflexibility to escape perplexity.<sup>89</sup>

Edward Shanks attempted to explain this characteristic impatience of Wells as a result of his birth and education:

Some curious accident has done for him what the Atlantic has done for American statesmen. It has severed an umbilical cord. ...One of the most remarkable things about him ... is that the past has no native roots in his mind; and it might be said that the future has taken its place. It is natural for a man so constituted to be impatient. He can foresee in an hour more than can happen in a century; and he demands that the procession shall be accelerated.<sup>90</sup>

It is indicative of this native impatience that, whatever his hopes for the future development of Homo Sapiens, Wells never, at any time of his writing, showed any faith in the average man and least of all in the Crowd which, he believed, was by nature, reactionary.

<sup>88</sup> Experiment in Autobiography, Chap. I, iii, p. 37

<sup>89</sup> The Star Begotten, p. 160

<sup>90</sup> E. Shanks, op. cit., pp. 150, 167-8

Democracy he had explicitly denigrated in Anticipations for the same reasons:

I know of no case for the elective Democratic government of modern States that cannot be knocked to pieces in five minutes. It is manifest that upon countless important public issues there is no Collective will, and nothing in the mind of the average man except blank indifference....the case against all prolusions of ostensible Democracy is indeed so strong that it is impossible to consider the present wide establishment of Democratic institutions as being the outcome of any process of intellectual conviction.<sup>91</sup>

and he apparently saw no reason to reverse this judgment. In Men Like Gods, the authorial Mr. Barnstaple reflects upon a unique feature of the new Utopia into which he has come:

There is no Crowd. The Old World, the world to which I belong was, and in my universe alas still is, the world of the Crowd, the world of that detestable crawling mass of unfeatured, infected human beings.<sup>92</sup>

In one of Wells's last attempts to picture a utopian society, The Star Begotten, a sudden accretion of cosmic rays produces an increased mutation rate in human genes, and ultimately a race of beings who are wiser, and more developed morally than ourselves. It is emphasized that these beings, who are highly individualized, resist utterly any shadow of a crowd mentality or mass prejudices. Thus only in the intermediate stages does Wells see the need for the strict regulation of the crowd, for in the future and more perfect society the crowd has dispersed, it has become individuals again, each unique and vital in personality, accomplishments and will. It is ironical

<sup>91</sup>Anticipations, Chapter 5, p. 130-1

<sup>92</sup>Men Like Gods, Bk. III, Chapter 2, vi, p. 286

that later writers and critics should have derived from Wells's work the opinion that he aimed to subdue all individualism and to crush initiative. Anthony West quotes with approval J. Brownowski as saying:

H.G. Wells used to write stories in which tall, elegant engineers administered with perfect justice a society in which other people had nothing to do but be happy: the Houyhnhnms administering the Yahoos. Wells used to think this a very fine world; but it was only 1984.<sup>93</sup>

and several critics have claimed Wells as the predecessor, albeit unwittingly, of Brave New World and the later twentieth-century anti-utopias. Wells himself explicitly dealt with this objection insofar as it was raised by Brave New World, the whole conception of which he vigorously repudiated. In both Guide to the New World and The Fate of Homo Sapiens he criticised the utter lack of imagination of those who assume that a utopia must, by definition, be regimented and boring:

Many unimaginative people who can still think only in terms of getting a living, believe that this release of energy [from the business of wage earning] means only an increase in that terrible, boring vacuity of time called Leisure. ...One finds this sort of thing in Aldous Huxley ....His mind is evidently enormously obsessed by thoughts of sex and bodily vigour, and in his Brave New World he makes sexual and athletic elaboration the chief employment of human leisure. To that he thinks our reason leads us. He subjects this misconception of human responses to the languid, aesthetic criticism of a hero... who ultimately, and quite logically, hangs himself in hopeless disgust at the disgusting world his author has evoked.

But healthy, educated children, and men and women with a lively interest in life, do not succumb to these fundamental urgencies. They will be untroubled by either morbid excesses or morbid abstinence or jealousies. In this world of realized possibilities, the concept of life after

<sup>93</sup>A. West, op. cit., p. 57

the Aldous Huxley pattern, is, to say the last [sic] of it, improbable.<sup>94</sup>

Yet, although Wells continued to believe in the possibilities of utopias, if only man or his improved descendants could muster sufficient will and expertise to reform society, he did come to abrogate his earlier conception of a scientific élite which would instigate the sociological changes and preside over the new world-state until education had rendered government redundant. In 1936, in an address to the Royal Institution, he stated:

There can be no doubt of the reality of this awakening of the scientific worker to the necessity of his becoming a definitely organised factor in the sociological scheme of the years before us....Some favour the idea of a gradual supersession of the political firms and methods of mass democracy by government through some sort of élite in which the man of science and the technician will play a dominating part ....The general projection is in the form of a sort of modern priesthood, an oligarchy of professors and exceptionally competent people....<sup>95</sup>

Clearly this had been Wells's own conception for many years, but he then proceeded to discard the idea of a scientific élite - not directly for any of the reasons advanced above, but because he no longer believed that the scientists could fulfil the particular function assigned to them in his utopian system - namely the instigation of an orderly and efficient society. This is further support for the contention that it was not the scientists themselves whom Wells believed important, but rather the principles which he had supposed them to embody. When he came to believe them incapable of performing their rôle adequately,

<sup>94</sup> Guide to the New World, Chapter 41, pp. 146-7. c.f. also The Fate of Homo Sapiens, XXV, pp. 294-5

<sup>95</sup> 'World Encyclopaedia', in World Brain (London, 1938) pp.

he did not scruple to demote them to a different and less prominent rôle. Characteristically, his objections are couched in terms of efficiency:

We have to face the fact that from the point of view of general living, men of science, artists, philosophers, specialized intelligences of any sort, do not constitute an élite that can be mobilized for collective action. They are an extraordinarily miscellaneous assembly, and their most remarkable common quality is the quality of concentration in comparative retirement - each along his own lines. They have none of the solidarity...that lawyers, doctors or any of the really socially-organized professions, for instance, display. A professor-ridden world might prove as unsatisfactory under the stress of modern life and fluctuating conditions as a theologian-ridden world.<sup>96</sup>

Instead, the scientists, the technicians and artists, the specialists in all fields, are to be employed in the compilation of a vast, and continually updated world encyclopaedia which will embody the collective wisdom of the world's best brains on every conceivable issue, and thus furnish a vast and immediate reference, not only for the more efficient working of other research specialists, but for the consultation of governments which will thereby act with increased understanding and wisdom.

Thus it may be seen that, despite Wells's changing views on government and the optimal organization of society, the principles underlying his ideas at any one time did not vary. They were consistently the two closely interrelated principles which had impressed him most strongly during his years as a science student. Whether they were embodied in a ruthless technocracy, such as that of Ostrog, or in a benevolent and numerically increasing

<sup>96</sup>ibid., p. 10

élite, the Samurai, which should eventually embrace the whole population, as in Men Like Gods, whether they were to be implemented through the Socialist programme or by the setting up of a world-encyclopaedia from which all governments might derive information, the basis of each suggestion was Wells's over-riding desire for order and efficiency. He would certainly not have considered his later views any less scientific merely because they were no longer dependent on a scientific élite for their implementation. It was the principle which was all-important. Scientists had been considered as a possible tool in effecting a desirable end, but if there were a better tool, or a more efficient method of deploying these scientists, then this alternative would be adopted without regret.

## Chapter 5. Waste and Disorder: Order and Uniformity

We have seen in Chapter 1 that the study of science and in particular of evolutionary theory which drew together so many strands of thought from diverse disciplines instilled in Wells a desire for order amounting almost to an obsession. His family background of a disordered and incompetently run home, an unprofitable and ill-managed shop and an apparently ineffectual mother, came to symbolise for him all the disorder and concomitant waste which undermined the social structure at every level.<sup>1</sup> Even the easier circumstances of his later life failed to erase this scar, for waste, the natural and inevitable result of disorder continued to disturb and distress him - the waste and inefficiency in contemporary arrangements, the waste of natural resources, the wasted potential of men and women unable to make their fullest contribution to society (Beatrice, Remington, Isabel or those who, like Griffin, pervert their talents to ill effect), waste in personal relationships and in international relations, culminating in the immense waste of every kind involved in a world war.

Spasmodic outbursts against one or several of these aspects of waste occur in most of the early works but Tono-Bungay describes virtually the whole spectrum of waste in society tracing the causal relations between its various manifestations. One of the most striking features of this novel is the related imagery of disease and decay which predominates throughout. At the end

<sup>1</sup> c.f. Experiment in Autobiography, Chap. 2 with The New Machiavelli, Bk. I, Chap. 2, vi.

George reflects:

Again and again in this book I have written of England as a feudal scheme overtaken by fatty degeneration and stupendous accidents of hypertrophy.<sup>2</sup>

and in Tono-Bungay the sense of decay pervades every sphere of life. Socio-economic decay is apparent in the successful sales of Tono-Bungay, a patent medicine which purports to be a panacea for all the individual's ailments, and it is equally apparent in the final failure of the enterprise, for the evaporation of the Ponderevo fortune is not the result of a sudden, nation-wide enlightenment as to the real nature of the spurious product; it is simply another sordid example of financial greed and speculation which fails to net the anticipated dishonest profits. The senility of the Bladesover estate, and, by explicit analogy, of the whole English tradition, is stressed repeatedly - a senility and unhealthiness which is reflected both in whole classes and in individuals. George himself, who observes and diagnoses all these instances of illness does not remain uncontaminated; symbolically he suffers intermittently from a similar 'fatty degeneration'. When he throws in his lot with his uncle and Tono-Bungay begins to produce rich profits George grows flabby and dull:

With the coming of plenty, I ate abundantly and foolishly, drank freely and followed my impulses more and more carelessly. I felt no reason why I should do anything else. Never at any point did I use myself to the edge of my capacity...I became an inordinate

<sup>2</sup> Tono-Bungay, Bk. IV, Chapter 3,ii, p. 525-6

smoker; it gave me moods of profound depression, but I treated these usually by the homeopathic method - by lighting another cigar. I didn't realise at all how loose my moral and nervous fibre had become.<sup>3</sup>

Even the temporary gratification of George's passion for Beatrice is futile and without future:

For nearly a fortnight we two met and made love together. Once more this mighty passion, that our aimless civilisation has fettered and maimed and sterilized and debased, gripped me and filled me with passionate delights and solemn joys - that were all, you know, futile and purposeless.<sup>4</sup>

The whole 'quap' episode, which several critics have found so irrelevant and discursive, is in fact a further elaborate allegory of the social disintegration of England, permitting the introduction of symbolic comments which could not have been made in the main sequence of scenes without destroying the illusion of George, the semi-flippant social observer, as narrator. George is serious only about science, and thus, in the midst of a would-be scientific discourse on radio-activity in elements he can legitimately digress and compare it with social decay, while all the time the comparison is equally effective for the reader, in the converse direction:

Those are just little molecular centres of disintegration, of that mysterious decay and rotting of those elements, elements once regarded as the most stable things in Nature. But there is something - the only word that comes near it is Cancerous - and that is not

<sup>3</sup> Tono-Bungay, Bk. III, Chapter 3,i, pp. 374-5

<sup>4</sup> ibid., Bk. IV, Chapter 2,ii, p. 507

very near, about the whole of quap, something that creeps and lives as a disease lives, by destroying; an elemental stirring and disarrangement, incalculably maleficent and strange. ...This is no imaginative comparison of mine. To my mind, radio-activity is a real disease of matter. Moreover it is a contagious disease. It spreads....It is in the matter exactly what the decay of our old culture is in society, a loss of traditions and distinctions and assured reactions. When I think of these inexplicable dissolvent centres ...I am haunted by a grotesque fancy of the ultimate eating away and dry-rotting and dispersal of all our world.<sup>5</sup>

Nearly all these aspects of waste and confusion are represented and discussed in Tono-Bungay and Wells is moved to a more explicit outburst which clearly places the major characters as representatives of a similarly decadent society:

As I turn over the big pile of manuscript before me certain things become clear to me, and particularly the immense inconsequence of my experiences. It is, I see now that I have it all before me, a story of activity and urgency and sterility. I have called it Tono-Bungay but I had far better have called it Waste. I have told of childless Marion, of my childless aunt, of Beatrice wasted and wasteful and futile. What hope is there for a people whose women become fruitless? I think of all the energy I have given to vain things, I think of my industrious scheming with my uncle, of Crest Hill's vast cessation, of his resonant strenuous career ... It is all one spectacle of forces running to waste, of people who use and do not replace, the story of a country hectic with a wasting, aimless fever of trade and money-making.<sup>6</sup>

The cancer image of waste and decay in society recurs in 'A Story of the Days to Come' where Denton rages against civilisation as a 'vast lunatic growth', while in In The Days of the Comet:

<sup>5</sup> ibid., Bk. III, Chapter 4, v. pp. 446-7

<sup>6</sup> Id., Bk. IV, Chapter 3, i, p. 519

numbers of men stood around in the streets, in knots and groups, as corpuscles gather in blood vessels in the opening stages of inflammation.<sup>7</sup>

In The New Machiavelli, the disorder of society is described in another image, that of a careless, unplanned experiment, the mark of an incompetent scientist:

The Victorian epoch was not the dawn of a new era; it was a hasty trial experiment, a gigantic experiment of the most slovenly kind. I suppose it was necessary; ...I suppose that before men will discipline themselves to learn and plan, they must first see in a hundred convincing forms the folly and muddle that come from headlong, aimless and haphazard methods.<sup>8</sup>

Later Remington discourses on the subject of 'muddle' to his fellow students at Cambridge, setting forth what is to be a major theme of the novel:

'Muddle', said I, 'is the enemy', That remains my belief to this day. Clearness and order, light and foresight, these things I know for Good. It was muddle had just given us all the still freshly painful disasters and humiliations of the war, muddle that gives us the visibly sprawling disorder of our cities and the industrial countryside, muddle that gives us the waste of life, the limitations, wretchedness and unemployment of the poor.<sup>9</sup>

The theme of waste has various ramifications throughout The New Machiavelli, its central example being the alleged waste of Remington's potential as a political leader, rejected by a society which cannot reconcile his personal and moral life with the image to which it requires that a statesman conform. Ironically, Remington himself, before he is attracted to Isabel, acknowledges the waste of individual energy involved in an early illicit relationship:

<sup>7</sup> In the Days of the Comet, Chapter 3, ii, p. 79

<sup>8</sup> The New Machiavelli, Bk. I, Chapter 2, v, pp. 47-8

<sup>9</sup> ibid., Bk. I, Chapter 4, ix, p. 151

I was also involved at that time...in an intrigue, a clumsy, sensuous, pretentious, artificially-stimulated intrigue with a Mrs. Larrimer, a woman living separated from her husband. I will not go into the particulars of that episode, nor how we quarrelled and chafed one another....except for some growing moments of gratification, except for the recurrent and essentially vicious desire that drew us back to each other again, we both fretted at a vexatious and unexpectedly binding intimacy. The interim was full of the quality of work delayed, of time and energy wasted.... These furtive scuffles, this sneaking into shabby houses of assignation, was what we had made of the suggestion of pagan beauty....We had laid hands upon the wonder and glory of bodily love and wasted them....It was the sense of waste, of finely beautiful possibilities getting entangled and marred for ever that oppressed me. I had missed, I had lost.<sup>10</sup>

In The Passionate Friends, Stephen Stratton and Lady Mary Justin discover a similar limitation in their relationship, together with a consequent draining of their intellectual and spiritual potential, through the channels of an illicit physical passion:

...from the day that passion carried us and we became, in the narrower sense of the word, lovers, all the wider interests we had in common, our political intentions, our impersonal schemes, began to pass out of our intercourse. Our situation closed upon us like a trap and hid the sky. Something more intense had our attention by the feet and we used our wings no more.<sup>11</sup>

The particular irony and the double waste involved here is that Stephen himself had previously returned to England from the Boer War afire with a political mission to re-order society; as he had explained to his father:

<sup>10</sup> ibid., Bk. II, Chap. 2, viii, pp. 250-1

<sup>11</sup> The Passionate Friends, Chapter 6, ix, p. 168

'I've come back in search of efficiency....  
We're trying to run this big empire ...  
with under-trained, under-educated, poor-  
spirited stuff, and we shall come a cropper  
unless we raise our quality.'<sup>12</sup>

Marriage also is concerned largely with aspects of waste in personal relationships and in society. Marjorie confesses to having squandered Trafford's money and wasted his career:

'I've begun to understand. I've begun to see what life has been for you, and how I've wasted - wasted.'<sup>13</sup>

In Marriage as a whole, as in Tono-Bungay, waste is the great crime of society, because it is fundamentally a crime against nature. Again, childlessness - that of Aunt and Uncle Plessington, of Daffy and Magnet - is symbolic of a barren social round, while the squandering of money, and the frittering away of potentially useful lives are the recurrent themes of the novel. Indeed, despite the suggestion of optimism about the 'solution' to which Trafford and Marjorie talk their way in Labrador, the closing paragraphs reaffirm the condemnation of a wasteful society, with little hope that the Traffords will significantly alter it. The ship on which they return to London 'came in through the fog, very slowly, from that great wasteful world of men and women beyond the seaward grey.'<sup>14</sup> Wells, himself, in the preface to the Atlantic edition of Marriage described the central problem of the novel as the inevitable waste involved in the marriage of two such differently motivated people, and denied that any lasting solution

<sup>12</sup> Ibid., Chapter 5, vi, p. 136

<sup>13</sup> Marriage, Bk. III, Chapter 4, xii, p. 539

<sup>14</sup> Ibid., Bk. III, Chapter 5, vii, p. 584

was possible within the existing framework of society:

Trafford has eaten of the Food of the Gods, and Marjorie is immune to that stimulant and plays, in holy wedlock, the role of the Sea Lady. She comes back from Labrador very much the woman who went there, and indeed what else could happen? No problem is solved in this book, but only a profound perplexity is stated....This is how things are, and only the most sweeping social and educational reorganization offers any conceivable remedy for this clash in the disposition of the sexes.<sup>15</sup>

In their several ways, The War of the Worlds, Love and Mr. Lewisham, In the Days of the Comet and The World Set Free all reinforce this impression of the inevitable disorder and waste which society will suffer until a new era of order shall have been instigated. Significantly, even in these cases where a new society does emerge triumphant, the reform process is described as being triggered by a stimulus external to the system since, within a disordered society, it is virtually impossible for any individual or group of individuals to summon up sufficient spirit for the overthrow of the diseased system. In a real sense, therefore, this may be read as a tacit, perhaps an unconscious confession of failure by Wells to conceive of any widespread moral reform arising spontaneously among his contemporaries. Thus in The War of the Worlds a population is decimated and a civilization destroyed by alien beings before petty self-seeking can be exorcised. In In the Days of the Comet the benign moral influence has to be diffused, unrequested, from an

<sup>15</sup> Marriage, Preface to the Atlantic Edition, p. i

extra-terrestrial source, while in The World Set Free a world holocaust is unleashed by the confused and conflicting aims of power-crazed individuals before mankind realizes that such a war leaves no victors, and that peace and co-operation offer the only sane and viable course of action.

It is significant in this respect that there are almost no individual villains in Wells's books, no Uriah Heeps, no Merdles or Murdstones even in the otherwise Dickensian Kipps and Mr. Polly. Wells's villain is the disorganization of society which prevents the 'little man' from finding self-fulfilment and, more insidious than a single opponent, cannot be overcome merely by the individual's own efforts, however vigorous.

In First and Last Things Wells's nightmare vision of misrule spreads to cover the whole earth:

I see humanity scattered over the world,  
dispersed, conflicting, unawakened...  
I see human life as avoidable waste and  
curable confusion...I see gamblers, fools,  
brutes, toilers, martyrs. Their disorder of effort, the spectacle of futility, fills me with a passionate desire to end waste, to create order, to develop understanding....All these people reflect and are part of the waste and discontent of my life.<sup>16</sup>

Yet, however acutely Wells was conscious of the immense spectacle of waste and disorder, inefficiency and misrule at every level of social and individual life, he was not, for most of his career, without a remedy to suggest. Even in Tono-Bungay, that litany upon the theme of waste, there is at least the suggestion of an answer to the problem:

<sup>16</sup>First and Last Things, Bk. III, iii, p. 277

Through the confusion something drives,  
 something that is at once human achievement  
 and the most inhuman of all existing  
 things. Something comes out of it....  
 Sometimes I call this reality Science,  
 sometimes I call it Truth.<sup>17</sup>

Insofar as the remedy for disorder was a matter of government policy, we have already discussed the development of Wells's ideal from Anticipations through the Utopian novels and the socialist propagandist works, to the 'world brain' concept, but it is worth considering also how Wells envisaged this order and efficiency as transforming the life and outlook of the average citizen. Again Anticipations sets the pattern for the books which followed, although the tone gradually changes from the earlier authoritarian demands for a social élite which would impose order, forcibly, upon the state.

In designing his Utopian world-state, Wells was clearly torn between two divergent ideals - the desire for order and efficiency on the one hand and the desire to foster individual initiative on the other. These two diverse ideals issue in subsidiary conflicts between freedom of movement and desire for privacy, between socialism and individualism, between devotion to the state and personal incentive, between state education and the encouragement of a variety of motivating forces. We shall examine first therefore the methods by which Wells hoped to increase the order and efficiency of society and then consider the means whereby he attempted to mitigate

<sup>17</sup>Tono-Bungay, Bk. IV, Chap. 3, iii, pp 528-9

the authoritarian element involved in such reforms to avoid the jack-booted, totalitarian conformity which has been the major subject of anti-utopian literature and satires since his time.

In Anticipations Wells takes as his primary reform that of increased facility of transport and communication networks, acknowledging later that he had adopted this idea from Gt Allen.<sup>18</sup> He then proceeds to show how this improved communication will affect land-usage, a re-distribution of population being consequent upon the possibility of swift, cheap and flexible transport services. News of the latest researches and ideas is transmitted quickly and cheaply throughout the community, becoming readily available to all members, while telegraphic communication provides free information for anyone who cares to make use of the nearest 'listening-point', as Crystal demonstrates in A Modern Utopia. Even this, however, falls far short of the ultimate stage in communication -- that of thought-transfer as practised by the citizens of Men Like Gods, for this latter obviates inefficiency and the risk of misunderstanding at two levels - in the formulation of a thought by one party and in the comprehension of that expression by the recipient. In the world of Men Like Gods an individual simply receives as much as he is capable of understanding of the mental processes of another who wishes to communicate with him.

<sup>18</sup>c.f. Experiment in Autobiography, Chapter 9,i, p. 650

In the interests of the best and most economic use of the natural resources, and in the avoidance of pollution of the environment, such as that suffered by the Ravensbrook,<sup>19</sup> Wells presents his world-state as being the sole land-owner of the earth, with local governments holding it in trust, like feudal landlords, responsible for its prosperity and development. The state thus commands all the sources of food and power, such as coal, water and atomic power, which are utilized by tenants, farmers and agents to make available the energy requisite for the work and life of the whole community.

Wells saw that, given an improved transport network, families would almost certainly become more flexible in their domestic arrangements, in their place of work and of residence. Working loyalties would break down, as would parish affiliations for, severed from the old ties, men would drift to areas where their work potential had currently the greatest value. The resulting state of social flux might easily become one of social chaos unless some check were kept on people's whereabouts. This problem led Wells to consider various methods of social organization, including an international filing bank, located in Paris<sup>20</sup> but with arterial branches throughout the world, recording the changing distribution and particulars of this widely dispersed mobile population. All citizens would present their cards at these branches when they moved from one district to another. The

<sup>19</sup>The New Machiavelli, Bk. I, Chap. 2, v

<sup>20</sup>Possibly on analogy with the National Standards Laboratory of metric measures in Paris.

central filing office would also function as a world-wide labour exchange, indicating the current concentration of maximum employment opportunities and channelling population-flow towards these areas.

War, in a world state is, of course, an anachronism, but if it should prove necessary during the period of the state's inception, then at least it should be conducted with maximum efficiency and minimum brutality and bloodshed. Despite his pacifist theories, the idea of war elicited Wells's characteristic fascination with machinery and the wars described in The War in the Air, Anticipations and 'The Land Ironclads' betray his genuine delight in technical efficiency and ingenuity. He foresaw the use of armoured tanks and put great faith in improved dirigible balloons and airships, although he failed to realize the full potential of aeroplanes and submarines.<sup>21</sup>

Even the human race itself was to be rendered more efficient by a dual programme of education and eugenics to select the qualities considered most desirable for proliferation in the community. Anticipations outlines a rigorous and far-reaching programme of eugenic control, but Wells later conceded that aspects of 'positive eugenics' involved placing a potentially dangerous power in the hands of its directors, and Mankind in the Making

<sup>21</sup>During the First World War he devised a simple but effective method of carrying supplies to troops - a telpherage system; but according to Wells it did not appeal to the 'tin hats' although 'it would have saved multitudes of casualties and greatly facilitated the opening phases of the Allied offensive in 1918'. - Experiment in Autobiography, Chapter 9, v, pp. 684-5

marks a recantation from positive eugenics making instead a plea for a more effective education system as an alternative, and perhaps ultimately more effective, method of improving the human race. The principle of 'negative eugenics', however, he continued to press throughout his career. Related to this, and perhaps the remnant of his positive eugenics programme, was his stress on the promulgation of reforms for the endowment of women, who were to be subsidized by the state for their work in bearing healthy children. They were thus able to become financially independent of the child's father and free to give the maximum care to bringing up their children, thereby performing a service to the whole community. On the other hand, a certain minimum level of competence was to be demanded of prospective parents; they must have proved their responsibility by holding a position of independence and solvency within the state, by being free from transmittable diseases and from a criminal record, and by having attained a certain minimum level of physical and mental development.

For the task of bringing about these sociological reforms, Wells, in Anticipations, dismissed democracy as being totally incapable of coping with the ordering of society on the scale which would be necessary in the future. His preference at this time for an authoritarian government led him to extend the principle to the local and even the individual level under certain conditions of emergency. Thus he held that if the state became involved in war, it should immediately commandeer all

necessary resources:

The state that has not incorporated with its fighting organisation all its able-bodied manhood, and all its material substance, its roads, vehicles, engines, foundries and all its resources of food and clothing; the State which at the outbreak of the war has to bargain with railway and shipping companies, replace experienced station-masters by inexperienced officers and haggle against alien interests for every sort of supply, will be at an overwhelming disadvantage against a state which has emerged from the social confusion of the present time, got rid of every vestige of our present distinction between official and governed, and organized every element of its being.<sup>22</sup>

It is clear, therefore, that at this stage of his thinking Wells was still ruthless in his ideas concerning the duty owed by the individual to the state - at least in time of war, and hence, presumably, in any period of declared emergency. In these chapters Wells gives ample scope to those critics who saw him as supplying the prototype for Brave New World and 1984 although he himself, as we have seen, later denied the charges. Even in the sphere of religious belief there is an element of somewhat forced ecumenism in the Wellsian scheme, presumably to ensure the most smooth-running system by eliminating sectarian antagonisms. In the chapter dealing with 'Faith, Morals and Public Policy in the Twentieth Century' he forecasts the emergence of a vaguely pan-theistic humanism as the religion of all sane and educated men, who:

...will have no positive definition of God at all...  
They will content themselves with denying the  
self-contradictory absurdities of an obstinately

<sup>22</sup>Anticipations, Chapter 6, pp. 163-4

anthropomorphic theology, ... <sup>23</sup>

Their God bears a close resemblance to that of the nineteenth century liberal tradition; He:

...is no moralist, God is no partisan; He comprehends and cannot be comprehended, and our business is only with so much of His purpose as centres on our individual wills.<sup>24</sup>

It cannot be accidental that these negative attributes are the ones least likely to arouse passions and partisan antagonisms which might undermine the efficient running of the society.

Wells envisaged his new order not merely as being imposed from above on a submissive people, but as arising equally from the voluntary desire of each individual:

I have sought to show that in peace and war alike a process has been and is at work, a process with all the inevitableness and all the patience of a natural force, whereby the great, swollen, shapeless, hypertrophied social mass of today must give birth at last to a naturally and informally organized educated class.<sup>25</sup>

But it was inevitable that such a scheme should raise the question of how much freedom remained to the individual. In his desire for order and efficiency Wells represents the people of his utopia as being governed by reason to a greater extent than is usual, or perhaps even possible. Even when, like nearly all utopian writers, he represents his ideal citizens as pursuing apparently irrational rit-

<sup>23</sup> Anticipations, Chapter 9, p. 243-4

<sup>24</sup> ibid., Chap. 9, p. 245

<sup>25</sup> ibid., Chapter 8, p. 227

uals expressive of wholly instinctive urges (this is particularly so in the case of their religious observances) he justifies these habits intellectually, explaining that by these means the participants can accept and sublimate their basic drives and motivations in a manner which preserves rather than disrupts the ordered fabric of society.

Although at the time of writing Anticipations Wells clearly believed that the will of the individual should be subordinated to that of the society, nevertheless, in the later Utopias, he was at pains to stress the fact that the individual in Utopia was not limited unduly but rather had more freedom to develop than his counterpart in Wells's own society since he did not waste time and energy contending at every turn with the frustrations of a disorderly system. Moreover Wells did in several crucial respects mitigate the tenets of strict efficiency and order to promote greater individualism.

If he endowed the World-state with power over all natural resources, he did not follow socialist dictates in the sphere of private property, but regarded certain possessions as a necessary part of the individual's freedom and as the basis of a sense of identity. Thus legitimate property may comprise, in his scheme, all that a man's toil, foresight or skill have honestly acquired, except insofar as these curtail the freedom of any other individuals. Clothes, jewels, tools, books, private household possessions, the privacy of his own home, as well as adequate means to ensure the upbringing of his

children, are considered the inalienable rights of any individual who has had the initiative and ability to earn them.

Again, unlike many of the earlier Utopians, Wells retained the usage of money, as well as of private property. Understanding how deeply-rooted in man's evolutionary history are the basic motivations of self-interest, and the desire for private property as an inducement to individual effort and achievement, Wells endeavoured to make these instincts function in the service of the social order. Money was seen as both good and necessary in civilized life if used correctly, for it:

'...is the water of the body social; it distributes and receives and renders growth and assimilation and movement and recovery possible. It is the reconciliation of human independence with liberty. What other device will give a man so great a freedom with so strong an inducement to effort?'<sup>26</sup>

However, the standard currency is not an arbitrary one, such as gold, but the basic one of saleable productive energy, expressed in units of physical work. Such a standard appealed particularly to Wells because under his system it virtually eliminated the wastefulness of human potential by unemployment and unequal distribution of human labour with respect to resources.

Moreover, in Wells's Utopia, there are aspects of individual freedom not previously experienced on such a scale - freedom to travel widely, with a consequent broad-

<sup>26</sup>A Modern Utopia, Chapter 3,i, pp. 66-7

ening of outlook and increased flexibility; freedom from material want for all citizens, since in this welfare state an efficient economic system ensures a sufficiency for all, while improved sanitation and medical research make good health the norm; freedom for cultivation of interests because the machinery of an advanced technology has made long working hours obsolete, leaving leisure for education and the pursuit of interests.

Certainly Wells never resorted to some of the more authoritarian designs for uniformity favoured by other utopians both before and after his time - the state marriages of Plato have no part in his scheme where individuality is the significant fact of life, for he believed that the supreme and significant expression of individuality lies in the choice of a marriage partner. Nor do the immense, conglomerate cities regarded by some utopians as desirable or inevitable or both, have any place in Wells's vision, except as material for satire - in The Sleeper Awakes and 'A Story of the Days to Come' - where they are shown to foster moral turpitude and an inability to cope with any but the most stereotyped situations. Northrop Frye remarks of Utopias in general that the symbol of conscious design in society is the city with its abstract pattern of streets and buildings, Utopia being 'primarily a vision of the orderly city and of a city-dominated society'.<sup>27</sup> In Wells's Utopia, however, the converse trend obtains. He looks forward to the day when increased efficiency, occasioned by cheap, rapid transport, will permit a

<sup>27</sup> N. Frye, 'Literary Utopias', Daedalus XCIV (Spring, 1965)

decentralization of the population to less crowded, more sanitary living conditions, with consequent opportunity for greater individuality in the choice of a home site, and the type of building erected.<sup>28</sup>

This attempted reconciliation between individual independence and liberty on the one hand, and an efficiently run social organization on the other, finds symbolic expression in A Modern Utopia in the question of personal appearance and dress, which Wells treats not as a trivial matter but as a significant demonstration of personal identity. Thus, besides exemplifying his theory of aesthetics, it stands also as a symbol of the relationship between the individual and society. We have seen that Wells believed machinery could and should be beautiful, and that it would in fact be most aesthetically pleasing when it was most simple and most functional in design. Similarly, in the realm of dress, the narrator expatiates at some length upon the simplicity of the clothing worn by the Utopians, concluding that its beauty and grace reside in its simplicity which permits the most complete manifestation of the individual's personality without competing ostentatiously for attention. Thus in expressing individuality it also forms part of an harmonious whole with the dress of others:

<sup>28</sup>Wells abhorred the poorly-designed, 'typical' Victorian semi-detached house with its dark, insanitary scullery and kitchen below stairs, and its treacherous, narrow staircase - see e.g. The New Machiavelli, and the Leadford home in In the Days of the Comet. His ideal Utopian buildings seem to have been inspired by the Crystal Palace which he would have seen in its new form and location at Sydenham.

Dress will have scarcely any of that effect of disorderly conflict, of self-assertion qualified by the fear of ridicule, that it has in the crudely competitive civilizations of earth.<sup>29</sup>

This enlightened attitude to dress is, as is emphasised by the terms used - 'disorderly conflict', 'self-assertion' - clearly also standing as a symbol for an underlying moral attitude. It thus becomes clear that throughout Wells's sociological treatises science provided him not only with his yardstick of social organization but also, by extension, with a guide for a personal ethic which would be in harmony with the aims of the whole society.

Nevertheless, in his more fictional writings there are some awkward anomalies. In his sociological theory Wells could categorically assert that the scope of the individual for self-fulfilment, as well as the improvement of society as a whole, depended on the rigorous ordering of that society, but in nearly all the novels, as in Wells's own life, such an ethic is seen to chafe upon individuals, even enlightened, Wellsian individuals. Those who have, themselves, been most critical of Victorian society for its waste and disorder are still able to find a certain charm in the sprawling chaos of London and even to regard human planners as petty, insignificant, meddlers endeavouring, ludicrously, to divert the course of Nature.

Wells himself had finally rejected the methods of the Fabians despite their detailed plans for administration, for he came to believe that such an emphasis on administration would succeed only in setting up the machinery of socialism without first creating socialists, and would therefore

<sup>29</sup> A Modern Utopia, Chapter 7,iii, p. 203

become a bureaucracy, an undemocratic socialism, forcing its dictates upon unconverted and resistant individuals.<sup>30</sup> Similarly, despite his reiterated pleas for order, Remington undergoes a revulsion against the methods of the Baileys, transparent characterizations of Sidney and Beatrice Webb, the two most organization-conscious Fabians. He describes an evening at the Baileys' house in Chambers Street - its intense atmosphere of political power, as though the Baileys and those whom they co-opted into their service had their 'hands on the very strings that guided the world' - and then contrasts his feelings on emerging into the London night. Clearly, there is a fascination in the scene for Remington, as for Wells:

And then with all this administrative fizzle, this pseudo-scientific administrative chatter, dying away in your head, out you went into the limitless grimy chaos of London streets and squares, roads and avenues lined with teeming houses, each larger than the Chambers Street house and at least equally alive; you saw the chaotic glamour of hoardings, the jumble of traffic, the coming and going of mysterious myriads, you heard the rumble of traffic like the noise of a torrent; a vague incessant murmur of cries and voices, wanton crimes and accidents bawled at you from the placards; imperative, unaccountable fashions swaggered triumphant in the dazzling windows of the shops; and you found yourself swaying back to the opposite conviction that the huge formless spirit of the world it was that held the strings and danced the puppets on the Bailey stage.... You realized that quite a lot of types were under-represented in Chambers Street, that feral and obscure and altogether monstrous forces must be at work, as yet altogether unassimilated by those neat administrative re-organizations.<sup>31</sup>

<sup>30</sup> It was, ironically, their planned approach to socialism which had first attracted him to their ranks because it appeared to him more constructive than either the resentment-based anarchism of the Marxists or the haphazard approach of the Liberals.

<sup>31</sup> The New Machiavelli, Bk. II, Chapter 2, iv, pp. 232-3

The order which the Baileys try to impose on the disorder of society is seen by Remington as being not merely ineffective, but also false, perhaps dishonest and certainly undesired, not only in the political arena but, more dangerously, in the sphere of personal relationships. The Baileys' attempt to arrange the marriage of Remington and Margaret is based solely on expediency - on what they see as being the most efficient and effective combination of her wealth and his political potential for their cause - rather than on a true estimate of the characters involved. Despite their marriage and their fundamental goodwill towards each other, Margaret and Remington prove in several vital respects to be incompatible personalities, and it is significant that in the account of their tacit confrontation Margaret is, like the Baileys, identified with the forces of order, coolness and light, while Remington is associated with the contrary elements of untamed passions:

The chaotic and adventurous element in life was spreading upward and getting the better of me, over-mastering me and all my will to rule and make....And the strength, the drugging urgency of the passion!...

Margaret shone at times in my imagination like a radiant angel in a world of mire and disorder, in a world of cravings, hot and dull red like scars inflamed....<sup>32</sup>

Clearly, whatever Remington's rational mind may assert, these latter forces have for him an attraction beyond that of peace and order.

<sup>32</sup>ibid., Bk. II, Chapter 2, viii, p. 251

A similar inconsistency of attitudes is to be found in The Dream, in which Sarnac, a citizen of a world 2000 years after the Age of Confusion (nineteenth-century England), dreams the experiences of a twentieth-century individual, Harry Mortimer Smith, passing in sequence from Harry's boyhood in an impoverished shop at Cherry Gardens to his rise to comparative wealth in a London publishing firm. Of Cherry Gardens, Sarnac speaks with unmitigated horror, employing the characteristic Wellsian image of a cancer to describe the evils of its society:

'Living the queer lives they did, with abnormal and ill-prepared food in a world of unchecked infections, they found the very tissues of the bodies going wrong and breaking out into the queerest growths. Parts of these bodies would cease to do anything but change into a sort of fungoid proliferation.'

'Their bodies were like their communities!' said Radiant.

'The same sort of thing. They had tumours and cancers and such-like things in their bodies and Cherry-Garden urban-districts on their countrysides....They didn't positively like these tumours and cancers, but the community was too under-vitalised to put up a real fight against these miseries.'<sup>33</sup>

Yet although, when the Smith family moves to London, its financial situation and consequent domestic arrangements are scarcely much improved, Sarnac claims that the disorder and chaos of London has a real and valid charm of its own:

'...the vast traffic of clumsy automobiles, and distressed horses in narrow unsuitable streets; I suppose your general impression is a nightmare of multitudes and a suffocating realization of jostling discomfort and uncleanness and of an unendurable strain on eye

<sup>33</sup>The Dream, Pt. I, Chapter 3, i, pp. 72-3

and ear and attention. The history we learn in our childhood enforces that lesson.

'But though the facts are just as we were taught they were, I do not recall anything like the distress at London you would suppose me to have felt, and I do remember vividly the sense of adventure, the intellectual excitement and the discovery of beauty I experienced in going there....The aspects of this city's greatness, the wonder of this limitless place and a certain changing and evanescent beauty rise out of the swamp that bears it.'<sup>34</sup>

The parallel between Harry's attitudes and Remington's, and the similarity of both to Wells's own experiences, suggest a possible autobiographical explanation of the apparent anomaly between the censure of disorder in the counties, and the subsequent celebration of disorder in London. Wells himself had hated and despised the confusion and slovenly muddle of his mother's disorganized household and came to associate this with all aspects of lower middle-class, provincial life. When his scholarship to study science at South Kensington 'rescued' him from this background and transported him to London, the vast size and confusion of the city offered the necessary anonymity, the adventure and the potential opportunities for self-fulfilment at a strategic point in his development. Its diversity and disorder appeared as the antithesis of the chafing restrictions on movement and thought imposed by the Establishment (as represented by his mother's world) which Wells, like Remington and Harry Smith, had repudiated. Therefore those forces which try to impose regulations and organization upon the rich diversity of London are tacitly regarded as allied, in this respect, with the

<sup>34</sup> ibid., Pt. I, Chapter 4,iii, p. 114

Establishment, however radical their policies in other spheres. It would seem, then, that in the novels, and particularly those containing autobiographical elements drawn from his own boyhood and adolescence, Wells's personal experiences and the bias he had derived, albeit unconsciously, from them, were strong enough to overcome his allegiance to theoretical principles and even to elicit a partial derision of them.

In the more theoretical utopias, however, the conflict between an individual's aims and the rules of the organization is solved, apparently to Wells's satisfaction, by recourse to biology, for his theory of personal morality involves, as its major premise, the value of the submission of the individual to the good of the species, and in a world-state the state is, quite literally, equivalent to, and co-extensive with, the species. In the last analysis, despite his liberal emphasis on the rights and freedom of the individual, there is always, in Wells's mind, a prior allegiance to the rights of the race, and man the individual is partly, at least, obscured by the shadow of Homo Sapiens.

Wells seems to have rationalized his rejection of the liberal tradition of individualism partly on the grounds of its inefficiency and partly for biological reasons. This prior allegiance to the species over and above the individual had appeared in Wells's thought before the Utopias. Its first expression was in a review article, 'The Novels of Mr. George Gissing', in which Wells wrote of:

a change that is sweeping over the minds of thousands of educated men. It is the discovery of the insufficiency of the cultivated life and its necessary insincerities; it is a return to the essential, to honourable struggle as the epic factor in life, to children as the matter of morality and the sanction of the securities of civilization.<sup>35</sup>

and three years later it formed a central strand in the argument of Love and Mr. Lewisham where, after battling ineffectively against the evolutionary stream in his efforts to assert his individuality, Lewisham is represented as coming to his biological senses with the realization that his wife is about to bear his child:

'...it is almost as if Life had played me a trick - promised so much - given so little! No! One must not look at it in that way ...Career! In itself it is a career - the most important career in the world. Father! Why should I want more?.... Yes, this is life. This alone is life. For this we were made and born. All these other things - all other things - they are only a sort of play.'<sup>36</sup>

Similarly, Trafford, whose intellectual ability makes him a more likely candidate than the mediocre student, Lewisham, for personal ambitions in research, sounds the same note after the birth of his first child and does not afterwards revoke it:

In this new light his passion for research and all the scheme of his life appeared faded and unworthy, as much egotism as though it had been devoted to hunting or golf or any such aimless preoccupation. Fatherhood gripped him and faced him about. It was manifestly a monstrous thing that he should ever have expected Marjorie to become a mere undisturbing accessory to the selfish intellectualism of his career.<sup>37</sup>

<sup>35</sup> 'The Novels of Mr. George Gissing', Contemporary Review, LXXII (August, 1897) 200.

<sup>36</sup> Love and Mr. Lewisham, Chapter 32, pp. 516-7

<sup>37</sup> Marriage- Bk. II- Chapter 2- iv- p. 287

So too, Ann Veronica, despite her academic aspirations, is shown as reaching the central meaning of her life in her marriage (significantly to a biologist, for this central meaning is itself biological) and in motherhood -- in the continuation of the species. Ann's exaltation at the realization of the physical realities of her marriage and of childbearing, reaffirms the repeated description of her as a primitive, 'as primordial as chipped flint.'

In the next two chapters some of the consequences of this relationship between the individual and the species will be considered in more detail, together with the closely-connected Wellsian concept of the 'mind of the race'. Basic to any such discussion of the individual is the question of free will and determinism in human life, a question which Wells treated extensively with reference to what he believed to be its scientific foundations.

Chapter 6. Free Will and Predestination; Freedom and Limitation.

We have seen in Chapter 1, that one striking result of the rise to pre-eminence of scientific materialism as a means of explaining and predicting phenomena, and particularly in the extension of this to the biological sciences, was a corresponding preoccupation with the question of free will in human behaviour.

Free will and determinism in human affairs are the correlatives of chance and design on the universal plane, and hence it might have been assumed that those who held to a belief in design throughout the universe at large would take a determinist stand on the question of human behaviour. In general, however, those who wished to see the universe as the finished design of a benevolent Creator were also most insistent for moral reasons in propounding a belief in free will. Darwinian theory further complicated the issue, for while the original chance variations which were the raw material for the evolutionary process were inexplicable before the establishment of the science of genetics in the twentieth century and therefore seemed to Darwin and his contemporaries arbitrary, they were acted upon by the apparently rigorous laws of natural selection governed by the joint arbiters of heredity and environment. It was this second stage of the process which, extended to the human realm, seemed to deprive man of the freedom of choice and ultimately, therefore, of moral responsibility for his actions and decisions. Thus evolutionary theory appeared to many people abhorrent on two virtually contradictory grounds -

firstly because it posited a universe of chance happenings and secondly because it seemed to stress the predetermination of human character by heredity and environment thereby precluding free will. Darwin himself suffered mental turmoil over the questions of chance and purpose as seen in the evolutionary scheme. In a letter to Asa Gray in 1860 he wrote:

I cannot persuade myself that a beneficent and omnipotent God would have designedly created the *Ichneumonidae* with the express intention of their feeding within the living bodies of Caterpillars, or that a cat would play with mice. Not believing this, I see no necessity in the belief that the eye was expressly designed. On the other hand, I cannot anyhow be contented to view this wonderful universe, and especially the nature of man, and to conclude that everything in it is the result of brute force....I cannot think that the world as we see it is the result of chance; yet I cannot look at each separate thing as the result of design.... I am and shall ever remain in a hopeless muddle. If everything is designed, certainly man must be, yet I cannot admit that man's rudimentary mammae were designed. ...I am in a thick mud yet I cannot keep out of the question.<sup>1</sup>

In the popular mind science was, notwithstanding, the large element of chance in evolution, closely correlated with a mechanistic and hence a deterministic philosophy, and certainly the public utterances of Huxley and Tyndall, the spokesmen for biology, did little to discourage this association. Tyndall had asserted that though there was as yet no clear proof of a link between consciousness and molecular activity, nevertheless a mechanistic interpretation would ultimately be sufficient to explain all the

<sup>1</sup>Charles Darwin, letter to Asa Gray, 22nd May, 1860, *F. Darwin, Life and Letters of Charles Darwin*, (London, 1887) Vol. II. p. 312.

mysteries of nature,<sup>2</sup> while Huxley had claimed publicly that consciousness was reducible to a mere reflection of molecular movement, psychic events in the mind being caused solely by physical events in the nervous system. He thus virtually eliminated the mind in order to preserve the brain, since he saw no means of reconciling them and a frankly Cartesian dichotomy ran counter to his desire for a precise and coherent relation between all phenomena. Huxley's somewhat belated attempts to re-establish public relations with his audience towards the end of this address betray the inconsistency of his position.<sup>3</sup> He claimed:

As I have endeavoured to explain on other occasions, I really have no claim to rank myself among fatalistic, materialistic or atheistic philosophers. Not among fatalists for I take the conception of necessity to have a logical and not a physical foundation; not among materialists, for I am utterly incapable of conceiving the existence of matter if there is no mind in which to picture that existence; not among atheists, for the problem of the ultimate cause of existence is one which seems to me hopelessly out of the reach of my poor powers.<sup>4</sup>

but these capitulations are incompatible with much of his preceding argument.

Among the major novelists of the late Victorian period, we have seen that Hardy was perhaps the most influenced by Darwinism, and that he derived from his reading of evolution a rigorously determinist view of

<sup>2</sup> J. Tyndall, 'The Belfast Address', Fragments of Science (New York, 1892) II, p. 201.

<sup>3</sup> William James analysed these inconsistencies in some detail. 'Automaton-Theory', Principles of Psychology [1890] (New York, 1950) Vol. I, Chapter 5.

<sup>4</sup> T.H. Huxley, 'On the hypothesis that Animals are Automata and its History', Science and Culture and Other Essays (London, 1881) pp. 240-1

humanity. Wells, on the other hand, while also basing his thinking largely on Darwinism, reached a position almost contrary to that of Hardy with respect to the meaningfulness of human activity. Of all his work, the only book which proclaims a genuinely determinist viewpoint is Mind at the End of its Tether. The novels assume the need for choice and responsible action by human beings, while the sociological writings which deal explicitly with the question affirm a strong belief in free will.

The major reason for this divergence between Hardy and Wells is that while Darwinian theory stimulated Wells's dramatic sense of the continuing existentialist conflict in man's effort to survive biologically, and while he acknowledged the sense of struggle as a principle valid in sociology and politics, he did not, like Hardy, become resigned to this amoral struggle for existence throughout the universe, least of all in the human moral realm. Neither did he assume that the survival of the fittest was a valid basis either for ethics or for a theory of human behaviour. On the contrary, he followed Huxley and J.S. Mill in believing that the natural process must be curtailed, controlled and replaced by an ethical one. His position is thus similar to that of George Eliot who also refused to take the step from determinism to necessitarianism. No character of hers is ever compelled to make a particular moral choice, for the 'self' of that character is one of the factors determining his choice and it is this element of 'freedom'

however small, which in her view constitutes the basis of human responsibility and duty.

Several critics have regarded the desolate scene of the inevitable extinction of terrestrial life at the end of 'The Time Machine' as evidence of Wells's basic adherence to a bleak determinism, which he later sought to assuage with a cheerful but insincere optimism. In fact, however, the 'exception' of 'The Time Machine' in Wells's otherwise non-determinist approach provides a clue to his real train of thought, for while it describes vividly an unrelieved determinism on the cosmic scale - the dying earth and the consequent extinction of all life - it nevertheless affirms the possibility of, and indeed the necessity for, voluntary action on the part of the individual. The Time Traveller's rescue of Weena, her decision to stay with him, even against all her instincts, his efforts to protect her, his struggle to regain his machine from the Morlocks, and above all his final decision to re-embark on another time journey are decisive acts which mark him as a free spirit, undeterred by even the restrictions of time and the foreseen extinction of his species. At this theoretical level, Wells was able to maintain both a long-term determinism which took account of evolutionary trends as part of an apparently immutable process whereby the species must adapt or perish, while holding equally firmly to the belief that at the level of individual action man must behave as though he were free, must make decisions and act

responsibly. In the 'Epilogue' of 'The Time Machine' the narrator emphasises this dichotomy affirming, even in the face of the Time Traveller's experiences, his belief in the necessity for human responsibility:

He, I know - for the question had been discussed among us long before the Time Machine was made - thought but cheerlessly of the Advancement of Mankind, and saw in the growing pile of civilization only a foolish heaping that must eventually fall back upon and destroy its makers in the end. If that is so, it remains for us to live as though it were not so.<sup>5</sup>

Wells returned to an explicit consideration of this anomaly between thought and action in several of the non-fictional works.

In Anticipations he imputes his own beliefs about predestination and free will to his ideal New Republicans in terms which he was later to expound in propria persona in First and Last Things:

The men of the New Republic will hold and understand quite clearly the doctrine that in the real world of man's experience, there is Free Will. They will understand that constantly, as a very condition of his existence, man is exercising choice between alternatives, and that a conflict between motives that have different moral values constantly arises. That conflict between Predestination and Free Will, which is so puzzling to untrained minds will not exist for them....In the abstract world of reasoning science, moreover, there is a rigid and inevitable sequence of cause and effect; every act of man could be foretold in its uttermost detail, if only we knew him and all his circumstances fully; in the abstract world of reasoned science, all things now exist potentially, down to the last moment of infinite time. But the human will does not exist in the abstract world of reasoned science....that rigidly predestinate scheme

<sup>5</sup> 'The Time Machine' Short Stories, p. 117

of things in space and time. The human will exists in this world of men and women....In this world of sense and daily life these men will believe with an absolute conviction that there is free will and a personal moral responsibility in relation to that indistinctly seen purpose which is the sufficient revelation of God to them so far as this sphere of being goes.<sup>6</sup>

Seven years later in First and Last Things, Wells devoted an entire section to a discussion of 'Free Will and Predestination', and again distinguished between the theoretical plane of causality which is the basis of science, and the practical everyday level of human behaviour. I quote the passage at some length as it remained his clearest and most extensive statement on the subject:

On the scientific plane, one is a fatalist, the universe a system of inevitable consequences. But ...it is quite possible to accept as true in their several planes both predestination and free will. If you ask me, I think I should say I incline to believe in predestination and do quite completely believe in free will. The important belief is free will.

But does the whole universe of fact, the external world about me, the mysterious internal world from which my motives rise, form one rigid and fated system as determinists teach? ...as a provisional assumption it underlies most scientific work....For me as a person this theory of predestination has no practical value. At the utmost it is an interesting theory....

I am free and freely and responsibly making the future - so far as I am concerned. You others are equally free. On that theory I find my life will work, and on a theory of mechanical predestination nothing works.

<sup>6</sup>Anticipations, Chapter 9, pp. 246-7

I take the former theory therefore for my everyday purposes, and as a matter of fact so does everybody else. I regard myself as a free, responsible person amongst free, responsible persons.<sup>7</sup>

Thus Wells's working philosophy is essentially similar to George Eliot's and virtually the same as the 'solution' proposed less subtly, by the Metaphysical Society on the vexed question of free will - namely that 'if free will does not exist, we must and do act as if it did'.<sup>8</sup>

Clearly this view is related, in Wells's case at least, to the psychological need to feel that what he did had some significance, that he as a person mattered in some abiding sense. In First and Last Things he stated this explicitly:

My most comprehensive belief about the external and internal and myself, is that they make one universe in which I and every part are ultimately important. This is quite an arbitrary act of my mind. It is quite possible to maintain that everything is a chaotic assembly, that any part might be destroyed without affecting any other part....I dismiss the idea that life is chaotic because it leaves my life ineffectual, and I cannot contemplate an ineffectual life patiently....I assert therefore that I am an important part in that scheme.<sup>9</sup>

This affirmation is later echoed by Stephen Stratton, who confesses:

I find it necessary to believe that I matter, that I play a part no one else can play in a progress, in a universal scheme moving towards triumphant ends.<sup>10</sup>

<sup>7</sup>First and Last Things, Bk. II, iii, pp. 234-6

<sup>8</sup>Quoted by U.C. Knoepfelmacher, Religious Humanism and the Victorian Novel (Princeton, N.J., 1965) p. 108.

<sup>9</sup>First and Last Things, Bk. II, i, pp. 231-2

<sup>10</sup>The Passionate Friends, Chapter 3, i, p. 44

This apparent inconsistency in Wells's thought, whereby he attempted to maintain a deterministic philosophy of the universe and of life processes, while insisting on the possibility of, and even the necessity for, an active freedom of will in the circumstances of the individual's everyday life, is related in turn to his beliefs about the dual nature of man. Biologically, man has inherited in his body all the determinism which can be traced through the apparently immutable laws of nature, all the limitations of bodily function, physical circumstances and intellectual development, as well as all the instincts, inherited responses and neuroses which link him firmly with his ancestors, the 'ape and the tiger'. This much was a matter of indisputable biological fact; yet Wells also believed that man could transcend many of these limitations through the full exploitation of his intellectual powers, if only these could be dissociated from selfish, insular aims and superstitions, and focussed instead on a larger, altruistic ideal. This, too, is consistent with Huxley's emphasis on the need to influence the evolutionary process rather than to be subdued by it or to emulate it, and shows the close relationship in Wells's thought between the physical and moral bases for action.

It also elucidates the link between his ideas of determinism and his belief in a developing 'mind of the race' for this latter concept was, I believe, invoked and evolved chiefly in order to reconcile his apparently contradictory convictions of predestination and free will, the importance of the individual and the impossibility of

personal immortality. On the one hand he seemed to think in terms of the species where other men thought of individuals; thus in his doctoral thesis he stresses the fact that the unit is the species, and that men must 'return to the essential', to the collective experience of struggle, if any evolutionary progress is to be made. In discussing the question of immortality he renounced completely any belief in a personal immortality:

I do not believe I have any personal immortality. I am part of an immortality perhaps; but that is different. I am not the continuing thing. I personally am experimental, incidental, ...I am a temporary enclosure for a temporary purpose; that served, and my skill and teeth, my idiosyncrasy and desire, will disperse, I believe, like the timbers of a booth after a fair....I shall serve my purpose and pass under the wheel, and end. That distresses me not at all.<sup>11</sup>

On the other hand, and this is particularly true in the utopian writings, he characteristically despised the masses, the crowd mentality, stressing instead the need for unique individuals who should develop to the utmost their own particular talents and thoughts in order to provide spontaneity and variety within the society.

In synthesising these diverse claims Wells affirmed the importance of individual freedom together with the pre-eminence of the species over the individual by the simple expedient of assuming that the individual is free in any meaningful sense only insofar as he voluntarily contributes all his powers to the developing life of the species. In the short term he is free - either to with-

<sup>11</sup>First and Last Things, Bk. II, xii, pp. 261

hold his gifts by short-sighted and self-centred actions or to act selflessly for the good of mankind but whereas the former course of action will ultimately lead nowhere, the latter will ultimately achieve significance by enriching the life of the species. Thus, in this scheme the individual can attain to a kind of immortality by subordinating himself to the race. Such a framework was capable of supporting also a doctrine of predestination on the evolutionary scale - the scale on which Wells felt bound to accept it - for he saw the sweep of evolutionary development proceeding inevitably whether the individual within the species contributed to it or not. Life was a deep, primal flow, from the first most primitive organism to the most evolved, and all living things were swept along on its slow, lava-like tide, vitalized and fulfilled if they chose to further its purposes, or left abandoned and frustrated if they sought their own petty ends by striving against it.

In his doctoral thesis Wells argued that the conditions under which the illusion of individuality, in its extreme sense, was biologically apposite for progress, no longer exist:

The integrality of the human individual is illusory and does not sweep aside the continuity of life. The individual belongs to his species which existed before he appeared in the world, and will outlast him, Generally a man does not realise that.... He may fluctuate in his terms of reference. So he thinks and feels. The biological reality is that while he can interbreed with every variety of human being, he goes on as a unit in the whole species, and, whatever frame of community he adopts, it can from the eschatological point of view, have no narrower boundary than the species. Every

individual is in the nature of an experiment.<sup>12</sup>

In terms of the evolutionary time-scale, no individual could hope to survive alone, or to make, by himself, any significant contribution to mankind. He could, however, find fulfilment by giving everything in his power to further the development of the species, Homo sapiens.

Within the human predicament as portrayed in the scientific romances and the novels, and particularly in the comic novels, the dichotomy between the determinism of circumstances and the need for active choice as an assertion of free will is expressed most frequently in terms of a character's relation to his environment. A tentative balance is reached between his subjection to his circumstances and his escape from the bonds of family background, education, subsequent social position and all the conventions imposed by that position. Usually the romance or the novel opens with a statement of the protagonist's impotent subjection, but ends with his transcendence and consequent personal freedom and renewal. In the scientific romances the escape from circumstances frequently takes the form of a transition from the known world to another unknown one which, although it may be terrifying, never fails to evoke a sense of deep personal satisfaction. The Time Traveller's preliminary journey fills him with a 'kind of hysterical exhilaration'; Gottfried Plattner, Filmer and Davidson, the characters who achieve liberation in 'In the Abyss', 'Under the Knife', 'The New Accelerator', 'The Argonauts of the Air', 'Mr. Cave in 'The Crystal Egg', Bessel in the 'Stolen Body', the Diamond Maker, Lionel

<sup>12</sup> 'On the quality of Illusion in the Continuity of the Individual Life in Higher Metazoa, with particular reference to Homo Sapiens' Nature, CLV (April 1st, 1944) 395

Wallace in 'The Door in the Wall', and even, in a humbler way, Coombes in 'The Purple Pileus', all experience a kind of ecstasy in becoming free from the bondage of everyday circumstances and humdrum existence.

A fuller consideration of the determinism of character by heredity and environment in the novels will be made in Chapter 8, but it must be noted here that in Kipps, Tono-Bungay and Mr. Polly, the escape motif is primary although there are variations in the solution proposed to the human craving for liberation. Kipps is at first apparently trapped in the drab life of a draper's assistant. His fellow apprentice, Minton, asserts the deterministic view of their circumstances:

'I tell you, we're in a blessed drainpipe  
and we've got to crawl along it till we die.'<sup>13</sup>

Kipps's escape is the triumph of chance and freedom over this deterministic outlook and the pressures of social convention. He is saved from Minton's fate partly because of his own strength of character which refuses to submit to the fatalist view but chiefly, after the appearance of Chitterlow, by chance occurrences which he is flexible enough to seize upon for his advantage. His final emancipation from the perhaps worse fate of sterile gentility is an assertion that only by the full acceptance of one's own character and personality can genuine freedom of the self be attained.

A similar escape from the double prison of circumstances and false values is achieved by Mr. Polly and, to a certain extent, though in a very different setting, by

<sup>13</sup>Kipps, Bk. I, Chapter 2, iii, p. 50

Ann Veronica. Wells was not deluded into believing freedom synonymous with irresponsibility, and both these characters have to distinguish a true from a false liberation. Polly's first attempts to escape are spurious - escapism from the real world through daydreaming and the reading of travel and adventure stories features prominently in his life. Similarly, Ann Veronica's first escape to a rented room in London is purely negative; she is technically free from her father's restrictions, but has no immediate purpose for which to use her freedom; hence she drifts into unworthy causes and situations dangerous to her integrity until she finds her real (in Wells's terms 'biological') purpose, whereupon her freedom assumes its full meaning and validity.

In Kipps, Ann Veronica and Mr. Polly this lesson is somewhat blurred, for the exuberance of the first escape scenes - Kipps's 'night out', Ann's stormy defiance of her father and Polly's experiment in arson - tends in each case to outweigh the more subdued endings, certainly in dramatic quality and perhaps also in literary merit. But in Love and Mr. Lewisham and in Tono-Bungay the moral is firmly stressed that a seeming escape may be only a delusion and hence false - merely escapism. Wells had already portrayed this, with the starkness of an allegory, in The Invisible Man. Griffin, having achieved his invisible state, the goal of his research, experiences an intense elation almost tantamount to a religious rebirth as he triumphantly sets fire to his lodgings and hastens into the city. In this real world, however, the limita-

tions of his physical circumstances press upon him. Ultimately his own insane paranoia and the utter irresponsibility of his aims force the issue and result in his death.

In Love and Mr. Lewisham and in Tono-Bungay the lesson is more subtly expressed, as befits a naturalistic novel, but it is present none the less. Lewisham's 'schema' is a grandiose plan to escape from circumstances, but it is false for two reasons: it takes no account of Lewisham's actual abilities and it is basically irresponsible since it is aimed primarily at the glorification of self rather than service to another person or to society. Hence this way of escape eludes Lewisham; he feels repeatedly baulked by external circumstances although it is clear to the reader that these spring largely from his own deficiencies of character and the inappropriateness of his aims. His final escape is the only genuine one - escape from his own delusions about himself:

\*This will be my work now. The other ... it was just ... vanity! Yes, it was vanity.... A boy's vanity. For me - anyhow. I'm too two-sided....Two-sided? Commonplace! Dreams like mine - abilities like mine. Yes - any man.' <sup>14</sup>

This sense of delusion, strong in Love and Mr. Lewisham, is still more explicit in Tono-Bungay. Indeed, Uncle Ponderevo's whole life is a pageant of delusion - delusion of others about the merits of his quack remedies, but also more tragically, self-delusion at every turn.

<sup>14</sup>Love and Mr. Lewisham, Chapter 32, pp. 514, 516

His belief in his supposed financial genius which finally ruins him, belief in his newly acquired gentility which he expects to assume with his new top hat, even belief in his own patent products, belief that he is basically good at heart and had never intended to rob his nephew or make life a misery for his wife, belief in the power of wealth and ostentation to buy anything, belief in the permanence of his youth - all these crumble, one after another; but unlike Lewisham, Uncle Ponderevo is never enlightened. His whole life has become one immense illusion so that even at the end there is no possibility of self-realization. George, after his uncle's death, muses on the essential unreality of the whole performance, on the escape that was only escapism:

I felt as I sometimes feel after the end of a play. I saw the whole business of my Uncle's life as something familiar and completed. It was done, like a play one leaves, like a book one closes. I thought of the push and the promotion, the noise of London, the crowded, various company of people through which my life had gone.... and suddenly it appeared to me that none of these things existed. ...Before and after I have thought and called life a phantasmagoria, but never have I felt its truth as I did that night. ...He had died a dream death, and ended a dream, his pain dream was over. It seemed to me almost as though I had died too. What did it matter, since it was unreality, all of it, the pain and the desire, the beginning and the end? There was no reality except this solitary road, this quite solitary road, along which one went rather puzzled, rather tired.<sup>15</sup>

<sup>15</sup> Tono-Bungay, Bk. IV, Chapter I, viii, pp. 498-9

Seen together, Lewisham and Edward Ponderevo exemplify the true and the false escape, the true and the false freedom of will. Lewisham is finally free, not because he escapes from material circumstances - indeed there is every indication that his life will continue to be a financial struggle - but because he fully accepts his own limitations and thereby transcends them, envisaging a new and different kind of fulfilment appropriate to his real capabilities. Edward Ponderevo, on the other hand, escapes for a time from penurious circumstances but his freedom is essentially spurious because it is not based on a valid assessment of his own abilities and external circumstances. He strives to fling himself into projects which must ultimately miscarry, while neglecting the possibility of fulfilment in personal relations with his wife and nephew, whom he consistently fails either to know or to understand.

In Wells's work, these complementary concepts of freedom and predestination, escape and imprisonment are intimately related to his own oscillation between optimism and pessimism about the human predicament, an oscillation which has continued to perplex those critics who demand a consistent viewpoint from him. Until recently it was customary to regard Wells as an exuberant optimist, busily planning man's glorious future development, to pass over the difficult Mind at the End of Its Tether as the aberration of a senile mind close to death, and to ignore altogether the significance of the grim picture of terrestrial desolation in 'The Time Machine'. However, Anthony

West extends his analysis of Wells's nominalism to assert that Wells:

...was by nature a pessimist, and he was doing violence to his intuitions and his rational perceptions alike when he asserted in his middle period that mankind could make a better world for itself by an effort of will.... [His] progressive writing represents an attempt to straddle irreconcilable positions, and it involved a perpetual conflict of a wasteful character. In all too much of his work he is engaged in shouting down his own better judgment.<sup>16</sup>

Bergonzi sees Wells in the tradition of fin de siècle malaise, as preoccupied with an end-of-the-world myth and strongly influenced by Max Nordau's Degeneration.<sup>17</sup>

These attempts to demonstrate Wells's innate pessimism about human nature, about contemporary society, and indeed about the whole universe, contain an element of truth which needed stressing. The generation after Wells's death had tended to dismiss him as a facile Victorian liberal who refused to see the evils so manifestly present in the world; but the contrary view has also been falsified by the lengths to which critics have gone in their attempts to make Wells intellectually respectable to a generation in which anything approaching optimism is usually regarded as gross superficiality, and a preoccupation with existential Angst as the only criterion of profundity. Thus West and Bergonzi regard the fin du globe scenes of 'The Time Machine' as amongst the true expressions of the Wellsian ethos. However, it should

<sup>16</sup>A. West, 'H.G. Wells', Encounter VIII (No. 2) (February 1957), 53, 56.

<sup>17</sup>B. Bergonzi, op. cit. Chapter 1. It should be noted, however, that 'Zoological Retrogression' (1891) indicates Wells's familiarity with the concept of degeneration before Nordau's book (published 1894).

be remembered that the original version of 'The Time Machine' contained no such sequence (which indeed ill accords with the Time Traveller's original enthusiastic vitality).<sup>18</sup> I suggest that Wells's vivid evocation of the dying world is less the involuntary product of a mind obsessed with morbid fantasies, than an example of the usual relish with which he extrapolated from known scientific data, via apparently immutable laws, to expound an entirely credible picture of future conditions.<sup>19</sup>

Wells's increasing optimism, during his middle period, about the future of technology, the emergence of a world state and improvements in the quality of life for all citizens was symptomatic of his changing attitude to the universe in general and, like much in his Weltanschauung, has a basis in his personal experience. It was when his newly achieved success as an author brought concomitant financial security and social status and thus freedom from the imprisoning circumstances of his early years, that an escape motif emerged explicitly in his work and a corresponding optimism became dominant. This surely is less the result of a determination to suppress his 'own better judgment', than a further example of Wells's autobiographical preoccupation - the reflection in his work of a natural exuberance at his sudden accession to wealth and position. In 1911, Wells himself wrote of the way in which literary success had changed his outlook and circumstances by providing a passport to social flexibility:

<sup>18</sup> It was only at W.E. Henley's request that Wells extended the germinal idea of time-travelling to provide glimpses of the future. See Experiment in Autobiography Ch. 81, p.515  
<sup>19</sup> c.f. 'Zoological Retrogression', Anticipations, 'The Things that Live on Mars' for parallel procedures.

The literary life is one of the modern forms of adventure. Success with a book, even such a commercially ~~omodest~~ success as mine has been, means in the English-speaking world not merely a moderate financial independence, but the utmost freedom of movement and intercourse. One is lifted out of one's narrow circumstances into familiar and unrestrained intercourse with a great variety of people. One sees the world.<sup>20</sup>

This is the personal counterpart and, I suspect, a major cause, of that recurrent theme in his work - the need to transcend given conditions in order to attain to freedom of self.

At first this urge to overcome limitations was considered in mechanical terms - the surmounting of physical boundaries of time and space constitutes one of the central themes of the early scientific romances - and only later did Wells come to see it as a universal longing, equally applicable in the realm of the psychological and sociological novel. Besides the small souls discussed above, who almost unwittingly break loose from a life of rigid forms, there are the would-be heroic figures, Griffin and Moreau, who deliberately set themselves to transcend the limitations of nature, and those who, like the characters of 'The Door in the Wall', 'The Beautiful Suit' and The Sea Lady, seek to escape to a reality beyond the world of everyday existence. Also in this company of freedom-seekers are the social reformers, deliberately detaching themselves from the comfortable niche society has assigned them, and trying to awaken their contemporaries to a

<sup>20</sup> 'Mr. Wells Explains Himself' T.P.'s Magazine (Dec., 1911) p.3

higher sense of social purpose. In all these cases, the decision as to whether the escape is realistic and feasible, that is, endorsed by the author, depends on the same criterion as was applied to Lewisham, Kipps and Polly: namely whether the desire for escape is based on genuine self-knowledge and acceptance of the inescapable limitations of human and individual nature or whether it is fundamentally escapist and ignores these limitations.

So too, once Wells had attained a position of literary eminence, it became feasible for him to plan his future in a way which would have been unrealistic before. His autobiography describes the almost revelatory realization that he was now in a position to build a house, to have a family and to expect things from life.<sup>21</sup> In a very real sense, Anticipations, the Utopian novels and The Open Conspiracy are an extension of this realization made respectable by its application to the data of biology and sociology.

Later still, at the end of the 'thirties, when Wells's optimism began to decline, there is again a partial cause in his own failing health, as he himself admitted. In The Fate of Homo Sapiens, in the chapter entitled 'Estimating Hope', he writes:

It is well to remind the reader that though all that follows is written as objectively and truly as I can, it is overshadowed by... misadventures of my generation and mental type....A consideration he must bear in mind in weighing what I am putting before him is the possibility that there is a kind of egotistical intolerance in every definitely elderly mind. That is almost inevitable.<sup>22</sup>

<sup>21</sup> Experiment in Autobiography, Chap. 8, vi, p. 638

<sup>22</sup> The Fate of Homo Sapiens, Chap. 10, pp. 107-8

If these related themes of escape from limitations and the confident prediction of the future have their roots in Wells's own personal experiences, they are certainly also consistent with Huxley's reading of evolutionary theory; for if Huxley's belief in the inevitability of mechanical laws operating in natural selection, led to his assertion of an automatist biology and resulted in his 'cosmic pessimism', his stress on the possibility and indeed the necessity for man to militate against these laws, at least in the moral sphere, presupposed an equally powerful optimism.

It would seem, then, that Wells's own career and his understanding of biology, combined to produce in him a strong core of optimism which might be expected to falter under severe opposition, but which nevertheless remained the basis of his views on the nature of man and society. This optimism is not a facile one; he never at any stage believed that the outcome, either for man the individual or for Man the species, would inevitably be favourable. The possibility existed for man to achieve freedom and fulfilment, but these would never be won without struggle and effort; they were no automatic birthright to be thrust into languid hands.

The large number of pamphlets and books which Wells produced cajoling and inciting men to instigate social reforms, improved education systems and world understanding, would be inexplicable had he held either a pessimistic view of man or an optimistic necessitarianism, for his work

explicitly presupposes the value of effort and struggle in producing a new society. Kagarlitsky holds that:

...the aspect of the future which appealed most to Wells was its capacity to illuminate the present. His science fiction novels were primarily satirical and in them everything of the present is seen as from the perspective of the future.<sup>23</sup>

Although there are elements of truth in this contention, and especially in Kagarlitsky's assertion that Wells showed, as no one else had done, that only the future could adequately judge the present, I believe that the spate of novels and articles which Wells later produced detailing the plans for an 'open conspiracy', throws retrospective light on the utopian novels and indicates the alternative view - namely that the gross imperfections of the present drove him to devise a better system for the future in the hope that man might reform first himself and then his world.

Such a hope does not necessarily preclude despair. Man is free to strive for a better society, but he is equally free to ignore the challenge and to decline to make any such effort. He is thus free to bring about his own extinction, either through ignorance of the issues involved or by choosing to retain the evils of the present system. This is the choice presented starkly in The Fate of Homo Sapiens:

If Homo Sapiens is such a fool that he cannot realize what is before him now and set himself urgently to save the situation while there is still some light, some freedom of thought and speech, some freedom of movement and action left in the world, can there be the slightest

<sup>23</sup>J. Kagarlitsky, op. cit., Chap. 1, p. 36

hope that in fifty or a hundred years hence, ...he will be collectively any less of a fool. ....In spite of all my disposition to a brave-looking optimism, I perceive that now the universe is bored with him, is turning a hard face to him, and I see him being carried less and less intelligently, and more and more rapidly, suffering as every ill-adapted creature must suffer in gross and detail, along the stream of fate to degradation, suffering and death. ...Adapt or perish, has always been the implacable law of life for all its children. Either the human imagination and the human will to live rises to the plain necessity of our case, and a renascent Homo sapiens struggles on to a new, a harder and a happier world dominion, or he blunders down the slopes of failure through a series of unhappy phases, in the wake of all the monster reptiles and beasts that have flourished and lorded it on the earth before him, to his ultimate extinction. Either life is just beginning for him or it is drawing very rapidly to its close.<sup>24</sup>

Chapter 71 of A Short History of the World, as revised for the 1945 edition, was entitled, 'From 1940 to 1944. Mind at the End of its Tether'. Section i of the chapter describes the course of World War II in 1940 and 1941, while sections ii to viii give a recapitulation of biological evolution, presenting the same alternatives - adapt or perish. These sections were re-used in a slightly expanded form, as chapters 4 to 8 of Mind at The End of its Tether, concluding with the hope that the descendants of Homo sapiens will in fact have adapted sufficiently to continue their evolutionary dominance. Yet the tone of the first half of Mind at the End of its Tether is utterly inconsistent with any such hope, for it states categorically that a new element has entered into the

<sup>24</sup> The Fate of Homo Sapiens, Chapter 26, pp. 311-2

history of the universe and that the world is rapidly approaching an end from which no escape is possible, thereby rendering any effort by mankind useless. Wells claims that this is not, as one might expect, the consequence of man's failure to educate himself and to reform his base and selfish progress, but rather it is because:

... a frightful queerness has come into life.  
 ....This new cold glare mocks and dazzles  
 the human intelligence...There is no way  
 out or round or through the impasse.<sup>25</sup>

That is, the new element is not the result of anything man has done or failed to do; nor can it be prevented. This is determinist philosophy in the most uncompromising terms, and it is entirely alien to the doctrines that Wells had hitherto been promulgating, since it precludes any call for responsible judgment or action. In this it differs not only from the utopian writings of Wells's middle years, but also from the early scientific romances, even those which portray the overthrow of mankind, for there the disasters are seen as the direct result of man's own stupidity.

It would seem, then, in the sequence of Wells's thought, that the anomalous section is the single instance of the brief, pessimistic opening of Mind at the End of its Tether, and not the so-called optimistic period of the utopias which involved his major output, and which had, I believe, intimate links with his earlier work. Indeed, the very inconsistency inherent in Mind at the End of its Tether, between the pessimism of the first section and the

<sup>25</sup>Mind at the End of its Tether i, p. 69

recapitulation of optimism in the second half, constitutes a strong argument against attributing too much weight to this final work, and should certainly counsel against accepting it as a negation of the whole corpus of his previous work where, as we have seen, the desire for a synthetic viewpoint and the eradication of inconsistencies, was a paramount aim. In this connection it should also be remembered that on Wells's desk at the time of his writing Mind at the End of its Tether, and in a similar stage of completeness at his death, was the fundamentally optimistic work, The Happy Turning, which reaffirms his earlier hope for mankind. This must be read as further evidence against the view that the pessimism of the last book is an indication of a latent, deterministic despair throughout Wells's work. Perhaps, after all, the best 'explanation' is that of Wells himself, as voiced in The World Set Free, published thirty-one years earlier. In this novel Marcus Karenin, one of the inspirational figures of the new world-state, about to die in hospital, warns his secretary not to remember his last hours which may be rent by pain or numbed by anaesthetic:

I do not see why life should be judged by its last trailing thread of vitality....  
 I know it for the splendid thing it is....  
 I know it well enough not to confuse it with its husks. Remember that, Gardener, if presently my heart fails me and I despair, and if I go through a little phase of pain and ingratitude and dark forgetfulness before the end. Don't believe what I may say at the last. If the fabric is good enough, the selvage doesn't matter. It can't

matter. So long as you are alive, you are just the moment, perhaps, but when you are dead then you are all your life from the first moment to the last.<sup>26</sup>

As we have seen in Chapter 2, Anthony West believed that Wells's espousal of the Nominalist position necessarily involved him in a denial that any system of causality should be operative in the universe, and that this in turn precluded any grounds for optimism. However, Wells's hope for mankind was based upon two factors - human intelligence and reasoning which would, given adequate education, be able to determine the right course of action by envisaging the corresponding results of any potential behaviour, and the human will to choose the right action once this had been determined. Of these factors, the second would be inoperative if man were powerless in the clutch of circumstances, lacking the freedom of will to make an effective choice; but equally the first factor would be eliminated if mind were merely a 'local accident' in the universe, and the chain of events followed no causal progression, since in that case there would be no possibility of envisaging the results of one's actions or of determining their moral value.

It is West's assertion that Wells did not basically believe in the power of man's intellect because he did not believe in a rational universe, and hence he had no real hope to offset despair.<sup>27</sup> Now we have seen that Wells

<sup>26</sup> The World Set Free, Chap. 5, iii, p. 223

<sup>27</sup> A. West, op. cit., p. 53, West cites 'The Time Machine' as the first example of Wells's necessary pessimism. It should be noted here, as a minor point, that the very fact that the Time Traveller, the narrator and the reader can all understand and account for the cosmic changes described (and which, to be strictly realistic, Wells himself could predict from known geological and astronomical data) should negate any conclusion that he believed mind to be merely a 'local accident'.

himself was not unaware of these issues, for he considered them explicitly at several stages of his career and only in the final case, Mind at the End of its Tether, did he imply that the universe was not to be approached rationally. In 'The Discovery of the Future' he reaffirmed explicitly what he had struggled to express in 'The Rediscovery of the Unique', namely that, on the statistical scale, the laws of causality operate with predictable accuracy, while on the individual scale they are less adequate - a statement which is essentially the basis of the science of statistics:

It is one of the persuasions that come into one's mind, as one assimilates the broad conceptions of science, that the adequacy of causation is universal; that in absolute fact if not in that little bubble of relative fact which constitutes the individual life, in absolute fact the future is just as fixed and determinate, just as settled and inevitable, just as possible a matter of knowledge as the past....The man of science comes to believe at last that the events of the year A.D. 4000 are as fixed, settled and unchangeable as the events of the year 1600.<sup>20</sup>

It is clear also from the discussion in The Work, Wealth and Happiness of Mankind, an expanded form of the treatment in First and Last Things, that Wells himself, while endeavouring to define the Nominalist and Realist positions as lucidly as possible, professed both a theoretical belief in strict Nominalism:

The discovery of Evolution, the realization, that is to say, that there are no strict limits to animal and vegetable species, opened the whole world of life and its destiny to Nominalist thinking. The realization by the world of mathematical physics that the universe can be represented as a four-dimen-

<sup>20</sup> 'The Discovery of the Future' Nature LXV (No. 1684) (Feb. 6th, 1902) 328

sional universe of unique events has abolished the conception of the quantitative equivalence of cause and effect and made every atom unique. Only the indifference of school and college to current thought has prevented every thinking person from becoming a Nominalist by the present time.<sup>29</sup>

and the pragmatic view that:

no engineer bothers about these considerations of marginal error and the relativity of things, when he plans out the making of a number of machines 'in series' with replaceable parts. Every part is unique indeed, and a little out of the straight, but it is near enough and straight enough to serve the machine's work.<sup>30</sup>

It would seem then that Wells contrived to maintain two apparently contrary sets of propositions, and, by showing the fundamental relation between them, to attain more closely to a basic truth than would have been possible through a rigorous devotion to either one alone. He holds that, although determinism may operate on the cosmic scale, nevertheless, at the level of human behaviour we must and should act as though we were free; and at the minute particle level, he holds that, while each entity is in fact unique, we must and should reason as though it were possible to classify and group similar entities for the purpose of making causal predictions about them.

Thus Wells, the Nominalist, does not despair of finding order and causality in the universe nor does he deduce that intelligence can have no function in the cosmos because matter is essentially chaotic. Had he done so, it would indeed have been feasible to conclude that his position was conducive only to despair - the despair voiced in Mind at the End of its Tether. On the contrary, he derived from his innate belief in the uniqueness of every entity a mysti-

<sup>29</sup> The Work, Wealth and Happiness of Mankind, Chap. 2, ii, p. 69

<sup>30</sup> ibid., Chap. 2, iv, p. 76

cism which he believed provided a faith and a hope for mankind, and one which he could reconcile with a working belief in the principles of science and rationality.

## Chapter 7. Science as Myth and Mysticism

It was noted in the Introduction that Samuel Butler who commenced writing from a Darwinian position, fully aware of mechanistic interpretations of the universe, came eventually to adopt a vitalistic position bordering on mysticism, whereby he renounced:

...the present mindless, mechanical, materialistic view of nature...to insist on the presence of a mind and intelligence throughout the universe to which no name can so fittingly be applied as God.<sup>1</sup>

Ironically Wells, who began by espousing the scientific method even more rigorously than Butler, also came finally to propound the concept of a 'mind of the race' which was comparable to Butler's 'race memory' and, like this latter, essentially mystical. Roppen comments:

In theory Wells, who had more scientific schooling than any of our writers [Hardy, Butler, Meredith, Shaw] comes near to fatalism; in his Utopian dream he excels in the art of pathetic fallacy and teleological projection. Without this intuitive adherence to a teleological belief, he could not have brought Meredith's ideals of 'brain-rule' and 'brotherhood' to their apex of Utopian perfection in his vision of 'men like gods'.<sup>2</sup>

A similar development is observable in the work of Aldous Huxley and leads to interesting speculations upon the effect which scientific enquiry may have on the mind which attempts to combine this with literary expression.

The most profitable way of assessing the mystical elements in Wells's work involves tracing first its emergence in the non-fictional work and attempting to

<sup>1</sup> H.F. Jones, Samuel Butler, Author of Erewhon (London, 1919) I, p. 385

<sup>2</sup> G. Roppen, Evolution and Poetic Belief (Oslo, 1956) p.

account for its roots and ramifications, before considering its importance as a literary theme in his novels. This strand of mysticism which arises directly from Wells's scientific approach has no connection with his so-called 'religious' phase during the First World War, a phase which has already been well documented in relation to Mr. Britling Sees it Through and God, The Invisible King<sup>3</sup> and which will not be discussed here since its relevance to Wells's scientific thought is minimal. Wells himself later regarded this period as 'a falling back of the mind towards immaturity, under the stress of dismay and anxiety'.<sup>4</sup>

There are, however, two major and closely related aspects of Wells's mystical thought which are relevant here. One is the teleological element whereby he came increasingly to believe in a guiding Mind and Purpose, active in the affairs of mankind and directing men's lives towards a greater and more fulfilling development. The second, which is actually a development of this, is his concept of a Mind of the Race in which individual aims and wills become submerged for the greater glory and development of the species Homo sapiens. I propose to consider these two strands of thought in turn and then to attempt some assessment of their scientific validity.

<sup>3</sup>See e.g. W. Archer, God and Mr. Wells (London, 1917) and Wells's own Experiment in Autobiography, Chapter 9, iv.

<sup>4</sup>Experiment in Autobiography, Chapter 9, iv, p. 673.

In Wells's early work there is no direct implication of a mystical element in the universe although there is, as we have seen, the necessary prerequisite for this, namely the affirmation of a sense of mystery and unpredictability at the heart of all things. There is certainly at this stage, no clear assertion of a guiding purpose, for such a teleological belief would have run directly counter to Darwinism and placed Wells instead in the Lamarckian camp. Ironically, the germinal idea for the increasingly teleological trend of his thought seems to have come, like so many of Wells's beliefs, from Huxley, the champion of Darwin and the most implacable opponent of Lamarckism. Huxley's stress on the concept of an 'Ethical Process' as running counter to the amoral process of biological evolution, and, ideally, inspiring men to a new reforming and directing rôle in evolution had, as we have seen, a strong influence on Wells. It underlay the whole body of his utopian thought which presupposes as a sine qua non the efficacy of a purposive moral effort. Thus Wells implicitly associates the evolution both of his ideal individuals and of his ideal society with a teleological principle, for without it no utopian schemes could have been formulated. His Modern Utopia is confessedly the result of 'a great and steadfast movement of will' for 'Will is stronger than Fact, and it can mould and overcome Fact.'<sup>5</sup> Significantly, A

<sup>5</sup> A Modern Utopia, Chapter 11, v, p. 326

Modern Utopia also marks the beginning of an overtly mystical religious element in his work. Despite his earlier protestations Wells realised that a purely intellectual humanism was in general inadequate to promote and foster a strongly moral and ethical code. The Samurai are therefore permitted a religion and a god. The former is free from dogma and the latter is 'a transcendental and mystical god' whose worship provides a source of moral energy to the worshippers.<sup>6</sup> This concept however is still a purely theoretical concession on Wells's part and it becomes apparent that he does not really understand how to relate this mystical experience to the ethical significance which the Samurai are alleged to gain from their worship. Indeed one still senses beneath the ritual the rationalism of one who regards such religious observances as an opiate.

After A Modern Utopia, where intelligence itself is still supposed to confer a kind of grace, there is an increasing tendency on Wells's part to rely upon a drastic change in human nature rather than merely on the results of a basic ethical drive, and in several novels the change is envisaged as emanating from some external mechanism - from science, from a catastrophic war, from the diffusion of a euphoric gas, or ultimately, from some higher form of intelligence which is consciously directing the development of mankind. All these mechanisms are

<sup>6</sup>ibid., Chapter 9, vii, p. 268

virtually a confession of Wells's disbelief in man's ability to evolve morally unless he be jolted into a new awareness by some external impetus.

The utopia of Men Like Gods has developed through a purposive urge in the individual mind, but there is an implication that some unspecified external factor was involved in making effective this urge towards moral and intellectual evolution, an urge which is conspicuously close to Lamarckism.

In The Star Begotten cosmic rays induce an increased mutation rate, leading to the development of a new and superior race of men, but these cosmic rays emanate, in turn, from

... beings like ourselves ...but far wiser, more intelligent, much more highly developed...

and through their agency ' a new sort of mind is coming into the world.'<sup>7</sup> Ultimately, in The Star Begotten, there is a mystic, almost oracular promise that we should 'trust the undying intelligence behind our minds' as being a manifestation of these superior, directing beings.

Thus contrary to his original intentions, and probably without his perceiving it, Wells through his vacillation between the fatalism of Darwinian selection and a native teleological optimism, arrived finally at a belief in a creative will almost indistinguishable from the teleological message of those Lamarckists like Shaw, who preached a vision of life as purpose, will and effort.

<sup>7</sup> The Star Begotten, p. 160

In The Science of Life Wells holds firmly, almost desperately, to the Darwinian affirmation that any apparent purpose in evolution is an illusion, that 'Life...is not the arbiter of its own destiny.'<sup>8</sup>, yet the whole imaginative and moral basis of the utopias resides in the contrary view - that in man at least there is a purpose, a will and a power to strive for a 'better' life.

This apparent anomaly however does not necessarily involve a complete denial of Wells's biological and scientific training. He makes no claims for any teleological evolution in the past, as Lamarck had done, but only urges a moral purpose as the incentive for the future - as Huxley had done before him. We have seen that Wells was already fully aware of the two fundamentally different kinds of evolution, biological and cultural, and of their diverse characteristics. There is ample scope for ethical purpose and drive in cultural evolution which became operative with the advent of man on the biological scene, and thus Wells's emphasis on the need for a purposeful development of society, and for a moral and intellectual evolution of mankind in the future, does not inevitably entail a capitulation to Lamarckism. His position is not dissimilar to that expressed by the eminent twentieth-century biologist, Julian Huxley:

In the light of evolutionary biology, man can now see himself as the sole agent of further evolutionary advance on this planet, and as one of the few possible instruments of progress in the universe at large. He finds himself in the unexpected position of business manager for the cosmic process of evolution. He no longer ought to feel

<sup>8</sup> The Science of Life, p. 386

separated from the rest of nature, for he is part of it - the part which has become conscious, capable of love and understanding and aspiration. He need no longer regard himself as insignificant in relation to the cosmos.<sup>9</sup>

It is interesting that Julian Huxley stresses, as a necessary part of man's purposeful rôle in evolution, the fact that he 'no longer ought to feel separated from the rest of nature, for he is a part of it...'. This belief in man's unity with the rest of nature was the second and most important postulate in the development of Wells's mystical thought, but because there was little or no hint of it in the early works, critics have tended to pass over it with a the minimum of recognition, or even to ignore it altogether.

Like much mystical thought, Wells's concept of a Mind of the Race implies a sense of oneness with the universe at large, or at least with a significant part of it. Yet by temperament and upbringing Wells began his career as an individualist, and the effect of his scientific training was at first merely to reinforce this attitude by encouraging him to justify his belief in individualism as scientifically as possible. Characteristically he did this on the widest scale, maintaining the extreme Nominalist position that any and every entity was ultimately unique. The scientific romances are, almost without exception, stories about individuals, often glorifying the exceptional skill or daring of a single

<sup>9</sup>J.S. Huxley, Evolution in Action, (London, 1953) p. 132

man - the Time Traveller, Dr. Moreau, Griffin, and Filmer are the prototypes of a host of lesser figures who distinguish themselves by endeavouring more or less successfully to escape the limitations imposed upon the multitude of ordinary men and women.

The early novels are a continuation of this attitude - Mr. Lewisham embarks on a solitary quest while Kipps, Ann Veronica and Mr. Polly are fundamentally stories of individuals set in relief against the background of their uncomprehending society.

Of the non-fictional works in this period, Anticipations, also, is still basically individualist in outlook, still couched in the traditional nineteenth-century terms of a personal struggle against competition in a laissez-faire society, with the added dimension of a personal biological survival - the largest number of offspring who can be reared in health and well educated. The typical New Republican is described as being:

...a father of several children, I think, because his scientific mental basis will incline him to see the whole of life as a struggle to survive; he will recognize that a childless, sterile life, however pleasant, is essentially failure and perversion, and he will conceive his honour involved in the possession of offspring.<sup>10</sup>

The stress on a more community-based and correspondingly less individualistic attitude seems to have arisen concurrently with Wells's interest in the socialist

<sup>10</sup> Anticipations, Chapter 4, p. 93

programme for social reform. In New Worlds for Old, one of his several efforts to promulgate socialist ideals, he speaks of 'The Mind of the Civilized State',<sup>11</sup> envisaged as the on-going body of ideals to which all citizens will voluntarily subdue their own individualistic and short-term aims. I believe it was chiefly from this 'Mind of the Civilized State' concept that Wells evolved his more mystical 'Mind of the Race' theory. A concept which began as a practical but limited programme - namely the organization of the existing body of knowledge, incorporating the thinking of the best minds in each generation - gradually swelled to assume almost limitless proportions in the Wellsian ethos, while Wells unjustifiably continued to attribute to it virtually the same concreteness and feasibility as had attached to his original social programme. It is the fallacy of misplaced concreteness on a grand scale.

There is perhaps also a subsidiary, albeit unrecognized, contributing factor in the evolution of the Mind of the Race concept, namely the extension of one of Wells's favourite analogies - that of the insect community. There are numerous references throughout the scientific romances as well as in The Sleeper and The First Men in the Moon to insect communities as being parallel to human societies. At least two of the short stories, 'The Empire of the Ants' and 'The Valley of the Spiders', describe the defeat of human civilization by an insect species which is more fitted to survive because it practises

<sup>11</sup>New Worlds for Old, Chapter 13, p. 301

co-operation and thus presents a united front against the sporadic efforts of self-seeking individualistic humans. Nor can it have been accidental that the Selenites, allegedly more advanced on the evolutionary scale than man, are organized on lines closely resembling a bee community. As Cavor, who, significantly, is kept by the Selenites in a hexagonal cell, reports:

All sorts and conditions of Selenites - each is a perfect unit in a world machine....Every one of these common Selenites is exquisitely adapted to the social need it meets.<sup>12</sup>

It is relatively easy for the unwary thinker to regard the purely instinctive 'altruism' of the insect communities as the direct analogue of the educated human desire to further the ideals of society, and then to extrapolate backwards and attribute an innate biological 'mind of the race' to mankind. Wells nowhere draws such an analogy explicitly but there is sufficient evidence to suggest that this, or a similar consideration, may have been a contributory factor in the development of his 'mind of the race' concept.

Whatever the actual precedents it is not, I think, accidental that First and Last Things, the book in which Wells first confessed explicitly to a sense of mysticism, was also the place in which he first fully expounded his belief in a sense of community uniting all mankind, perhaps the whole of life, or even all Being. There could scarcely be a more thoroughgoing expression of

<sup>12</sup>The First Men in the Moon, Chapter 23, pp. 237, 240

mysticism, and it is characteristic of such a position that no real attempt is made to justify or explain what is ultimately an intimate and personal conviction. Wells merely states it categorically as a fact of his own experience that:

...at times I admit the sense of personality in the universe is very strong. If I am confessing, I do not see why I should not confess up to the hilt. At times, in the silence of the night and in rare lonely moments, I come upon a sort of communion of myself and something great that is not myself. It is perhaps poverty of mind and language that obliges me to say that then this universal scheme takes on the effect of a sympathetic person - and my communion of a fearless worship. These moments happen, and they are the supreme fact in my religious life to me, they are the crown of my religious experiences.<sup>13</sup>

No overt correlation is drawn between this confession and his assertion of a 'Being of Mankind' but the relation between the two seems to be not merely arbitrary for the second is allegedly a religious tenet encountered under the same conditions of immediate personal awareness, rather than derived by any logical process of thought. Wells expresses it in explicitly religious terms.

I will boldly adopt the technicalities of the sects...and declare that I have been through the stresses of despair, and the conviction of sin, and that I have found salvation.

I believe in the scheme, in the Project of all things, in the significance of myself and all life...

The essential fact in man's history to my sense is the slow unfolding of a sense of community with his kind, of the possibilities of co-operations, leading to scarce dreamt-of collective powers, of a synthesis of the species, of the develop-

<sup>13</sup>First and Last Things. Bk. II, pp 233-4

ment of a common general idea, a common general purpose out of a present confusion. In that awakening of the species one's own personal being lives and moves - a part of it and contributing to it. One's individual existence is not so entirely cut off as it seems at first; one's entirely separate personality is another, a profounder, among the subtle inherent delusions of the human mind...between us and the rest of mankind there is something, something real, something that rises through us and is neither you or me, that comprehends us, and that is thinking and using me and you to play against each other.<sup>14</sup>

In the preface to the 1914 edition of Anticipations Wells again attempted to clarify his expression of this mystical awareness:

I saw then [i.e. during his period in the Fabian Society] what hitherto I had merely felt, - that there was in the affairs of mankind something unorganized which is greater than any organization. This unorganized power is the ultimate Sovereign in the world. It is a thing closely interwoven with the sum of educational forces. It is a thing of the intellectual life, and it is also a thing of the will. It is something transcending persons just as physical or biological science or mathematics transcends persons. It is a racial purpose to which our reason in measure of its strength submits us. It is what was intended when people used to talk about an Age of Reason....Since writing 'Anticipations' I have got into the habit of using for it the not very elegant phrase, the Collective Mind. I hope someone will soon find a better expression. This Collective Mind is essentially an extension of the spirit of science to all human affairs, its method is to seek and speak and serve the truth and to subordinate oneself to one's conception of a general purpose.<sup>15</sup>

Realizing how amorphous such a concept was, Wells tried to adduce more tangible biological evidence for the demonstrable common ancestry of all men. First and Last Things expounds in considerable and somewhat tedious detail the commonness of our inheritance:

<sup>14</sup> *ibid.*, Bk. II, viii, pp. 247-9

<sup>15</sup> Introduction to the 1914 edition, reprinted in the Atlantic edition, Vol. IV, pp. 281-2

Disregarding the chances of intermarriage, each one of us has two parents, four grandparents, eight great-grandparents, and so on backwards, until very soon, in less than fifty generations, we should find that but for the qualification introduced we should have all the earth's inhabitants of that time as our progenitors. For a hundred generations it must hold absolutely true; everyone of that time who has issue living now is ancestral to all of us.<sup>16</sup>

So too, in the future, 'in less than fifty generations... all the population of the world will have my blood.'<sup>17</sup>, and this future mixing of the hereditary pool, as much as common ancestry, unites each individual in a continuing stream of being:

It is not the individual that reproduces itself, it is the species that reproduces through the individual and often in spite of his characteristics. The race flows through us; the race is the drama and we are the incidents....Insofar as we are individuals, insofar as we seek to follow merely individual ends, we are accidental, disconnected, without significance, the sport of chance. Insofar as we realize ourselves as experiments of the species for the species, just insofar do we escape from the accidental and the chaotic. We are episodes in an experience greater than ourselves....We signify as parts of a universal and immortal development.<sup>18</sup>

This passage attempts to interweave a would-be scientific rationale with a mystical philosophy, not only in its thought but also in the language used. Its mystical content is apparent in the stress on the nothingness of the individual except in the purpose of another higher being. Wells explicitly reiterates the paradoxical assertion of the mystics that they, like every entity

<sup>16</sup> *ibid.*, Bk. II, viii, p. 249

<sup>17</sup> *ibid.*, p. 250

<sup>18</sup> *ibid.*, Bk. II, ix, p. 256

in creation, are simultaneously of no account and of infinite importance in the universe. Yet the phrases 'accidental...sport of chance', 'the accidental and the chaotic', are as reminiscent of Darwinian phraseology as of mystical philosophy, while the metaphor 'experiments of the species for the species' provides a credible, and at first reading a suitably biological, prelude for the groundless assertion of 'a universal and immortal development'. In his endeavour to justify his position scientifically, Wells repeatedly uses such phrases as, 'Let me point out that this is no sentimental or mystical statement. It is hard fact as any hard fact we know...' <sup>19</sup> and 'While I am being thus biological...' <sup>20</sup>, and 'This is not any sort of poetical statement, it is a statement of fact.' <sup>21</sup> The attempted biological basis becomes most tenuous in the question of personal immortality, for Wells seems to have reasoned that because mankind was identifiable physically, biologically, as one species, therefore the individual personality was necessarily also part of a group consciousness. Inevitably in describing this concept of a stream of personality Wells's language becomes blatantly and confessedly mystical:

...I believe in the great and growing being of the species, from which I rise, to which I return, and which, it may be, will ultimately even transcend the limitation of the species and grow into the conscious Being of all things. ....What the scheme as a whole is I do not clearly know; with my limited mind I cannot know. There I become a Mystic. <sup>22</sup>

<sup>19</sup> *ibid.*, Bk. II, viii, p. 249

<sup>20</sup> *ibid.*, Bk. II, ix, p. 255

<sup>21</sup> *ibid.*, p. 256

<sup>22</sup> *First and Last Things* Bk. II, i, p. 232

Again, one of the seven articles of faith of the Open Conspiracy is 'the admission that our immortality is conditional and lies in the race not in our individual selves'.<sup>23</sup> For the next decades the theme on which Wells was to concentrate most of his literary energies was this concept of individuals and particularly of states and nations as being essentially, if not entirely, subsidiary to the continuing stream of the race. This is the basis of his utopias and political novels; it is the justification for his theory of morality and social conscience, and even underlies his determination to write a history of the world which should be as free as possible of any national bias, and hence acceptable everywhere as a common textbook. The following sentences from First and Last Things might adequately serve as the text for almost all his work for the next thirty-four years:

Our individualities, our nation and states and races are but bubbles, clusters of foam upon the great stream of the blood of the species, individual experiments in the growing consciousness of the race...I believe the species is still as a whole unawakened, still sunken in the delusion of the permanent separateness of the individual and of races and nations, so that it turns upon itself, and frets with itself and fails to see the stupendous possibilities of the deliberate self-development that lie open to it now.<sup>24</sup>

Three years later in The New Machiavelli, Wells attempted to introduce a metaphysical theme into the contemporary

<sup>23</sup>The Open Conspiracy, Chapter 12, p. 179

<sup>24</sup>First and Last Things, Bk. II, viii, p. 250

political situation, Remington finds the inspiration for his plan to order society and eliminate inefficiency and waste, in his belief that there is a level of reality and meaning higher and more valid than that of individual lives. He relates that he:

glimpsed for a while the stupendous impudence of our ambitions...All the history of mankind, all the history of life, has been and will be the story of something struggling out of the indiscriminated abyss, struggling to exist and prevail over and comprehend individual lives - ...that something greater than ourselves, which does not so much exist as seek existence, palpitating between being and non-being, how marvellous it is! It has worn the form and visage of ten thousand different Gods...<sup>25</sup>

Clearly, such an overtly metaphysical position was contrary to the more usual methods of political reformers and precluded a permanent alliance with other reformers as effectively as with firm reactionaries. Wells retaliated by associating the non-metaphysical position of the Webbs and many of the Fabians with the Realist philosophy which he abhorred, <sup>and</sup> ~~as~~ thus has Remington, a thorough-going Wellsian Nominalist, denounce the classifying zeal of the Baileys as:

...the common habit of all so-called educated people who have no metaphysical aptitude and no metaphysical training. It leads them to a progressive misunderstanding of the world.<sup>26</sup>

Hynes, whose criticism of the novel is by no means unrepresentative, calls it a 'bad novel, ill-conceived as fiction and preposterous as political theory' and asserts that Wells was:

<sup>25</sup> The New Machiavelli, Bk. III, Chapter 1, V, p. 327

<sup>26</sup> ibid., Bk. II, Chapter 2, iv, p. 231

all his life a man with a metaphysical itch, a prophet without a religion, and his errant career in Fabianism is best understood as a furious attempt to turn a political philosophy into a religion with himself as John the Baptist. That such an effort failed is not surprising and certainly is not to be regretted.<sup>27</sup>

Although Hynes does not analyse it, one of the major objections to the metaphysical element in The New Machiavelli must be the apparent inconsistency involved between the strongly Nominalist position which Remington adopts against the Bailyes and his simultaneous assertion of a 'mind of the race' concept, for the latter involves an elevation of communal ideal over and against the will of the individual, and therefore seems more akin to the Realist stress on the classification of individuals into larger groups, than to the Nominalist emphasis on the uniqueness of the individual and the inadequacy of all collective terms.

In fact, however, this 'inconsistency' is chiefly illusory; the apparent anomaly arises through the confusion involved in two separate uses of the concept of individual. On one hand there is a sense of the individual as distinct from the community of which he is a member, and on the other hand there is the Nominalist sense of the individual as a unique person or entity, as distinct from the Realist emphasis on categorizing of such entities into groups for the purpose of definition. Wells (and Remington) championed the individual in the second, the Nominalist, sense, but having once developed his community awareness, he no longer supported the causes of individuals

<sup>27</sup>S. Hynes, The Edwardian Turn of Mind, (Princeton, New Jersey, 1968) pp. 124-5

in the first sense, individuals for whose ends masses suffered. Thus the Mind of the Race concept, which stresses the importance of the community as opposed to the individual is not necessarily on these grounds a Realist concept, for in the Nominalist sense Wells still upheld the individual as opposed to the political (or any other) label. Indeed this is part of the force behind Remington's change of political allegiance; to him, as a declared Nominalist, the party label means nothing, and the individual project everything and he is therefore prepared to support whichever party he considers most likely to forward his aim. However, Wells's Mind of the Race concept is in fact Realist in another sense, for it is held to be beyond deductive proof, and cannot be explored experimentally in the Nominalist way. Rather it becomes a 'term' which is assumed to correspond to a concrete reality because it has a formulated name - a fallacy for which Wells repeatedly castigated the Realists.

In The World Set Free, a novel with which Wells took, as we have seen, considerable trouble to attain scientific accuracy and which has been acknowledged for its perceptiveness in this field, there is, side by side with the emphasis on science, an affirmation of a mystical element in life. Karenin, discussing the novelists of the new era, comments:

Our later novelists give a vast gallery of individual conflicts in which old habits, and customs, limited ideas, ungenerous temperaments and innate obsessions are pitted against this great opening out of life that has happened

to us....The clearer their vision and the subtler their art, the more certainly do these novelists tell of the possibility of salvation for all the world. For any road in life leads to religion for those upon it who will follow it far enough.<sup>28</sup>

A few pages later, Karenin explicitly associates this attitude with the Mind of the Race and further identifies it with the concept of Science in the abstract; again the relation is simply asserted without any attempt at justification.<sup>29</sup> Later again, he reflects:

...we are becoming more and more capable of transmitting what we have learned and preserving it for the race. The race, the racial wisdom, science, gather power continually to subdue the individual man to its own end.<sup>30</sup>

In this novel, too, the characteristic ending recurs, when Karenin, dying in body but not in spirit, cries defiantly:

'And you, old Sun...beware of me...I shall launch myself at you and I shall reach you and I shall put my foot on your spotted face and tug you about by your fiery locks. One step I shall take to the moon, and then I shall leap at you....Old Sun, I gather myself together out of the pools of the individual that have held me dispersed so long. I gather my billion thoughts into science and my million wills into a common purpose.'<sup>31</sup>

Once again the feasibility of a body of common knowledge — 'gather my billion thoughts into science' — is taken to justify, by extension, the assertion of a common will in some undefined but supposedly concrete sense — 'my million wills into a common purpose'.

A year later, in Boon, Wells returned to a justification of his concept of a Mind of the Race. Again he

<sup>28</sup>The World Set Free, Chapter 4, xii, p. 211-2

<sup>29</sup>ibid., Chapter 5, iv, p. 225

<sup>30</sup>ibid., Chapter 5, viii, p. 244

<sup>31</sup>ibid., Chapter 5, ix, pp. 247-8

uses the same method of assertion without explanation or proof, as though the Mind of the Race were an axiomatic article of faith. Here again Wells merely states that this Mind of the Race does exist and will merge with a mystic god-mind; he cannot justify his belief. In this novel Wilkins and Boon both represent facets of Wells's own personality, but whereas Wilkins represents the rigorous, intellectual mind which Wells wanted to be, although he only spasmodically attained to it, Boon is closer to Wells the creative dreamer and myth-maker. It is significant that Wilkins's scepticism of the idea is never finally answered by Boon. Wilkins says:

'I want to suggest that the Mind of the Race may be just a gleam of conscious realization that passes from darkness to darkness.'

'No,' said Boon.

'Why not?'

'Because I will not have it so,' said Boon.<sup>32</sup>

Thus, ironically, the view of Man which Wells had adopted so obediently from Huxley and the general evolutionary approach to life, led him finally to his least scientific and most mystical extremes of thought. Dickson writes of Boon that it

is the confession of faith of a tired troubled mind, maintaining dispiritedly against his own questioning, the certainties to which he had clung for so long.<sup>33</sup>

In The Dream Wells succeeded in using his principle of a continuing consciousness within which all individual consciousness and experience are subsumed, as an integral part of the narrative fabric, and this provides a discussion

<sup>32</sup>Boon, Chapter 2,iii, p. 423

<sup>33</sup>L. Dickson, op. cit., p. 248

of some interesting implications of the theory. Sarnac, from a civilization some two thousand years in advance of Wells's own, dreams that he lives through the experiences of Harry Mortimer Smith, an individual of the early twentieth century. Harry's first wife, Hetty, is seen as a prefiguration of Sunray, Sarnac's own chosen companion, and in the epilogue Sarnac and his audience discuss the implications of this similarity:

'It was very dreamlike, the way Hetty grew more and more like his dear lady and at last dissolved altogether into her.'  
 'But if Smith was a sort of anticipation of Sarnac,' said Starlight, 'then it was natural for him to choose as his love a sort of anticipation of Sunray.'...  
 'That tale,' said the guest-master stoutly, 'was no dream. It was a memory floating up out of the deep darkness of forgotten things into a living brain - a kindred brain.' Sarnac thought. 'What is a personality but a memory? If the memory of Harry Mortimer Smith is in my brain, then I am Smith.'...  
 'When children have dreams of terror, of being in the wild with prowling beasts, of long pursuits and hairbreadth escapes, perhaps it is the memory of some dead creature that lives again in them?...Maybe life from its very beginning, has been spinning threads and webs of memories. Not a thing in the past, it may be, that has not left its memories about us....I can well believe, without any miracles, that Sarnac has touched down to the real memory of a human life that lived and suffered two thousand years ago.'...  
 'In everything he said and did, even in his harshest and hardest acts, Smith and Sarnac were one character. I do not question for a moment that Sarnac lived that life.'<sup>34</sup>

In William Clissold Wells tried again with doubtful success to expound his philosophical beliefs through his protagonist. Reviewing the novel, D.H. Lawrence remarked:

<sup>34</sup> The Dream, Chapter 8, i, pp. 314-6

What has got him [William Clissold] into such a state is a problem, unless it is his insistence on the Universal Mind, which he, of course, exemplifies. The emotions are to him irritating aberrations. Yet even he admits that even thought must be preceded by some obscure physical happenings, some kind of confused sensation of emotion which is the necessary coarse body of thought, and from which thought, living thought, arises or sublimates.

This being so, we wonder that he insists on the Universal or racial mind of man as the only hope of salvation. If the mind is fed from the obscure sensations, emotions, physical happenings inside us, if the mind is really no more than an exhalation of these, is it not obvious that without a full and subtle emotional life the mind itself must wither; or that it must turn itself into an automatic sort of grind-mill, grinding upon itself.<sup>35</sup>

Lawrence is of course partially justified in accusing Wells of excessive intellectualism; it is arguable that a pre-occupation with rationalistic science had dulled his aesthetic and emotional senses, just as long concentration on biology had atrophied Darwin's early appreciation of poetry.<sup>36</sup> But Lawrence has misunderstood Wells's meaning of 'Mind', and has assumed it to be associated with that sterile intellectualism of which he was the implacable enemy. In fact, as we have seen, Wells used the phrase 'Mind of the Race' to include not only the intellect, but art and consciousness as well - all the facets of life embraced by the term 'civilization'.<sup>37</sup>

Even in The Science of Life, written in conjunction with Julian Huxley and G.P. Wells, Wells continued to promulgate a mystical approach to biology by preaching the submergence of the individual within the species. Here, as

<sup>35</sup> D.H. Lawrence, Calendar, III (Octo., 1926) 256.

<sup>36</sup> C. Darwin, Autobiography, ed. N. Barlow (London, 1958) pp. 138-9

<sup>37</sup> Ironically, Lawrence's phrase, 'blood consciousness' and the concepts which he implies thereby, are very close to Wells's 'great stream of the blood of the species', although neither author seems to have seen any correlation.

would seem appropriate, he asserts that his view can be biologically justified, though he does not explicitly expound the reasons for this claim. Discussing the means whereby man has endeavoured to reconcile himself to the certainty of his death as an individual, Wells first considers the feasibility of belief in a personal immortality and then turns to an elaboration of his concept of a mind of the race as the alternative and superior form of immortality:

The second line of accommodation is the realization of his participation in a greater being with which he identifies himself. He escapes from his ego by this merger, and acquires an impersonal immortality in the association; his identity dissolving into the greater identity. This is the essence of much religious mysticism and it is remarkable how closely the biological analogy of individuality brings us to the mystics. The individual, according to this second line of thought, saves himself by losing himself. But in the mystical teaching he loses himself in the Deity, and in the scientific interpretation of life he forgets himself as Tom, Dick or Harry, and discovers himself as Man. ...Western mystic, and Eastern Sage find a strong effect of endorsement in modern science and in the everyday teaching of practical morality. Both teach that self must be subordinated; that self is a method and not an end.

We have already...the gradual appearance of what we may call synthetic super-minds in the species Homo sapiens, into which individual consciousnesses tend to merge themselves. ... They seem to be heading towards an ultimate unification, into a collective human organism whose knowledge and memory will be all science and all history, which will synthesize the pervading will to live and reproduce into a collective purpose of continuation and growth.<sup>38</sup>

<sup>38</sup> The Science of Life, Bk. IX, Pt. III, Chapter 59, viii, p. 1497.

Wells and his co-authors give no reasons for this assertion and indeed it is difficult to determine whether the collective human organism will be represented in their view, by a group of superminds, by a vast computer network, or by Wells's 'World Brain' representing the thoughts of the best minds of each generation.

The following year in the companion volume, The Work, Wealth and Happiness of Mankind, Wells again stated in somewhat extravagant terms the possibility that mysticism was at least not inconsistent with the scientific approach.

It may be that consciousness is an illusion of movement in an internal, static, multi-dimensional universe...We may be, as Sir James Jeans seems to suggest, part of a vast idea in the meditation of a divine circumambient mathematician. It is a wonderful exercise for the mind to peer at such possibilities....It leads plainly towards the belief that with minds such as ours the ultimate truth of things is for ever inconceivable and unknowable. It brings us to the realisation that these theories, the working diagrams of modern science are in the end less provisional only in the measure of their effective working than the mythologies and symbols of barbaric religions. ...It is impossible to dismiss mystery from life. Being is altogether mysterious. Mystery is all about us and in us, the Inconceivable permeates us, it is 'closer than breathing and nearer than hands and feet'.... Ultimately the mystery may be the only thing that matters.<sup>39</sup>

However, Wells's most explicit attempt to correlate the search for the Mind of the Race with mystical religious experience occurs at the end of his Experiment in Autobiography. Here he not only classifies together the

<sup>39</sup> The Work, Wealth and Happiness of Mankind, Chap. 2, iv, p. 73

widest range of beliefs, from his own Open Conspiracy and positivist science to the mysticism of Christianity, Islam and Buddhism but at the same time elucidates the fundamental differences between them in an effort to demonstrate the intellectual respectability of his apparently mystical approach by comparing it with modern materialistic modes of thought.<sup>40</sup> The predominant example given here of the 'modern mystic' is the world statesman, of whom Dick Remington was the prototype, but in his essay 'Religion and Science' Wells specifically associated the religious pursuit with the scientist:

The scientific worker, whatever his upbringing may have been and whatever sectarian labels he may still be wearing, does in fact believe in Truth - which is his God - in a God who is first and foremost Truth and mental courage. His life business is unfolding the divinity in things, and the real conflict is between the Truth as he unfolds it and the priests and exploiters of the false Gods who still dominate most men's lives.<sup>41</sup>

The fictional advocate of this assertion is George Pondero who also makes explicit the identity of Science with Truth: 'Sometimes I call this reality Science, sometimes I call it Truth'<sup>42</sup>. Again, in 'The World Well Educated', Wells stressed the need for such a goal of Ultimate Truth in education and here, too the goal becomes so all-inclusive as to become vague and diffuse:

The True God, the God of Truth, if we may so extend the word God as to mean any directive and unifying idea whatever by which men live, that God still appeals to us and escapes us. In a more rational world the universal religion will be philosophy and all men will be seekers. Perpetually and for

<sup>40</sup> Experiment in Autobiography, Chap. 9,x, pp. 824-6

<sup>41</sup> 'Religion and Science', in Guide to the New World, p. 103

<sup>42</sup> Tono-Bungay, Bk. IV, Chapter 3.iii, p. 529

ever we shall be approaching that unattainable Ultimate Truth.<sup>43</sup>

Even in his doctoral thesis Wells was determined to expound his belief in the need for the individual to subdue his own immediate and personal aims to the on-going development of the race. In a scientific thesis it was obviously desirable that such a concept should not merely be affirmed, but that the maximum amount of biological proof should be adduced in its support. Again Wells returns to the point that the differences between men of different races are slight when set against the background of evolutionary development, and argues that the unit is, by definition, Homo sapiens, since all races are capable of interbreeding and this is the biological definition of a species.

The integrality of the human individual is illusory and does not sweep aside the continuity from life. The individual belongs to his species....The biological reality is that while he can interbreed with every variety of human being, he goes on as a unit in the whole species and, whatever frame of community he adopts, it can, from the eschatological point of view, have no narrower boundary than the species. Every individual is in the nature of an experiment.<sup>44</sup>

As evidence for his assertions, this marks little advance on the would-be biological 'proofs' cited thirty-four years earlier in First and Last Things, and its scientific merit is negligible.

We have seen that Wells's belief in a Mind of the Race appears to have arisen as an extension of his proposal for a 'mind of the civilized state', itself,

in turn, an expression of his desire for a wider community

<sup>43</sup> 'The World Well-Educated' in Guide to the New World, p. 148.

<sup>44</sup> 'On the Quality of Illusion in the Continuity of Individual Life in the Higher Metazoa, with Particular Reference to Homo Sapiens', Nature CIII (April 1st 1944)

awareness; and that the concept of the Mind of the Race began to assume, in his thinking a concreteness which rational argument and logical deduction could not justify. This process of ascribing concreteness to an idea because it has been given a name - the Realist fallacy which Wells had so often attacked - is reflected in the means whereby Wells expressed his beliefs in the novels. Thus far we have considered chiefly his explicit assertions of existence of a Mind of the Race, but a parallel development may be seen in the imagery in which he clothed his metaphysical beliefs.

In the scientific romances the imagery suggestive of a mystical element of experience is minimal. The nearest approach to it is the recurrence of star imagery to suggest remoteness and idealism, and of escape imagery to suggest a mental and sometimes spiritual release from the bonds of custom and social circumstance.<sup>45</sup>

In Wells's first full-length novel, Love and Mr. Lewisham, the suggestion of a more metaphysical level of experience, transcending the individual's own personal sphere is introduced only at the conclusion of the novel and its expression, as befits Lewisham's character, is vague, indeterminate and inarticulate. Reflecting upon his aborted scientific career, and upon his child-to-be, he muses:

'Come to think, it is all the Child. The Future is the Child. The Future. What are we - any of us - but servants or traitors to that?'<sup>46</sup>

<sup>45</sup>See e.g. V.S. Pritchett, 'The Scientific Romances' in The Living Novel (Dublin, 1960) pp. 122-9, and P. Parrinder, H.G. Wells (Edinburgh, 1970)

<sup>46</sup>Love and Mr. Lewisham. Chapter 32. p. 516

Here 'the Future' is a vague term, apparently intended to convey the amorphous entity which Wells was later to designate as the Mind of the Race, but at this stage the vagueness was almost certainly Wells's as well as Lewisham's.

In The Food of the Gods, written four years later, the mystic ongoing force has become identified with 'growth', of which the whole story is a parable. At the end of the novel young Cossar addresses the other Giant children in these terms:

'Tomorrow, whether we live or die, the growth will conquer through us. That is the law of the spirit for evermore. To grow according to the Will of God!... Greater...greater, my Brothers! ...growing ...Till the earth is no more than a foot-stool ...' For one instant he shone, looking up fearlessly into the starry deeps. ...Then the light had passed and he was no more than a great black outline against the starry sky, a great black outline that threatened with one mighty gesture the firmament of heaven and all its multitude of stars.<sup>47</sup>

This passage shows the extent to which the star imagery of the early scientific romances has become extended to suggest an element of symbolism which is metaphysical at least in implication. Apparently the symbol appealed strongly to Wells for he repeated it almost verbatim several times during his career, not only in the fictional works but also in the documentary works where it seems to have assumed, in Wells's mind, an objectivity equivalent to that of the more mundane facts surrounding it. Indeed, its first occurrence was

<sup>47</sup>The Food of the Gods, Bk. III, Chap. 5, iii, pp. 305-6

in 'The Discovery of the Future', his lecture to the Royal Institution:

A day will come...when beings, beings who are now latent in our thoughts and hidden in our loins, shall stand upon this earth as one stands upon a footstool, and shall laugh and reach out their hands amidst the stars.<sup>48</sup>

Again, in Marriage, Trafford muses on his future in similar terms:

'Logic and language, clumsy implements, but rising to our needs...thought clarified enriched, reaching out to every man alive - some day - presently - touching every man alive, harmonizing acts and plans, drawing men into gigantic co-operations, tremendous co-operations,...Until man shall stand upon this earth as upon a footstool and reach out his hand among the stars.'<sup>49</sup>

The image recurs, in almost the same words, at the conclusion of The Outline of History:

Life, for ever dying to be born afresh, for ever young and eager, will presently stand upon this earth as upon a footstool, and stretch out its realm amidst the stars.<sup>50</sup>

and again in Men Like Gods where, in Mr. Barnstaple's vision:

The sons of Earth also, purified from disease, sweetminded and strong and beautiful, would go proudly about their conquered planet and lift their daring to the stars.<sup>51</sup>

This imagery can be interpreted on two levels - the biological sense of continuity with future generations whose achievements will almost certainly include space-

<sup>48</sup> 'The Discovery of the Future' Nature LXV, No. 1684, (Feb. 6th, 1902) 331

<sup>49</sup> Marriage, Bk. III, Chap. 4, x, pp. 529-530

<sup>50</sup> The Outline of History, Bk. IX, Chap. 41, v, p. 759

<sup>51</sup> Men Like Gods, Bk. III, Ch. 4, iii, p. 316

travel<sup>52</sup>, and a more mystical sense of some intrinsic life force flowing through us and our descendants (and indeed through the whole universe) to which they reach out their hands. Wells's plausibility depends on leading us to the second level of meaning through our acceptance of the first. Indeed this sequence of response may well mirror the pattern of his own thinking.

If Wells's concept of the Mind of the Race was to be effective in his work, however, it was necessary that it should find valid expression not merely in flights of imagery, however vivid, but also in the characters in whom he chose to embody it. A fuller treatment of characterization will be given in the next chapter but it must be remarked here that a certain apparent anomaly is present, in that even those Wellsian heroes who are allegedly awakened to a sense of their potential fulfilment in the Mind of the Race remain, for the most part, staunch individualists standing apart from their fellow beings and regarding them with an indifferent if not alienated gaze. Trafford, William Clissold, William Porphyry Benham, and even Remington (who does at least try to serve humanity until his private life causes him to be edged out of the political arena) are closer to the traditional hero figures, individualists to the core standing above and apart from their lesser contemporaries, than to Wells's theoretical men of the future who allegedly see themselves as part of the evolutionary stream.

<sup>52</sup> Wells suggested this explicitly in A Modern Utopia when he speaks of the stars not escaping us in the end, for before the sun declines to its twilight and the earth becomes uninhabitable men will have discovered other homes in the universe. In this speculation, Wells anticipated J.B. Haldane's Possible Worlds, (1927).

I do not believe that this disparity was accidental, nor that it escaped Wells's notice. In part the anomaly is occasioned by the two senses of 'individual', as discussed above, and insofar as this is the cause, the apparent contradictions are removed when it is recognized that one may in practice support individuals, as opposed to labelled movements, while offering allegiance to the ideal of mankind, as opposed to the limited aims of individuals. More importantly though, in Wells's view, is the fact that his individual characters who are aware of the wider vision must be seen as signposts pointing the way forward to the future evolution of mankind. They cannot, and should not become submerged in the mass of average men, for the masses are yesterday's men, living in the chaotic past and unaware of the vision of the future. Remington, Trafford, Karenin and the eventually enlightened Mr. Barnstaple, are the models for tomorrow's men. Every mutant in the history of evolution is an apparent misfit at the time of its first appearance, for it is produced by chance and not in answer to an environmental change; only later, under different conditions, may its progeny be selected as the spearhead of the evolutionary advance. These Wellsian heroes of the present have to struggle to maintain their vision in the face of the blind chaos of their environment. Only in the utopias of the future will the values they perceive and cherish be fully vindicated and accepted by all, for it is the essential

characteristic of this future state that all will accept and submit gladly to the purposes of the ongoing stream, the life force. Wells believed that already this process of acceptance and awareness was beginning:

The supporters of the thing that is, seem everywhere touched by doubt...We advanced thinkers owe our present immunity, such as it is, very largely to the fact that even those of our generation who are formally quite against us have nevertheless been moving, if less rapidly and explicitly, in the same direction as ourselves. In their hearts they do not believe we are essentially wrong; but they think we go too far, - dangerously and presumptuously too far. Yet all we exist for, - our sort, - is to go too far for the pedestrian contingent.<sup>53</sup>

It is necessary, finally, to consider whether Wells's concept of a Mind of the Race was in any sense a scientifically based one. It is customary to consider the early works as being the product of Wells's scientific thinking, and the later works as representing an abstrusely metaphysical, certainly an unscientific, aspect of his thought. We have already seen that from the Nominalist point of view the Mind of the Race concept is unscientific because it precludes experimental examination. It is a purely inductive line of thought, and Wells's few attempts to justify it biologically are at best unconvincing and at worst intellectually dishonest. However, there is another sense in which the Mind of the Race concept can indeed be considered as a scientific one.

<sup>53</sup> Experiment in Autobiography, Chapter 9, x, p. 824

Science is by no means exclusively deductive in its method, and insofar as it is also inductive, it tends in its theories towards an ultimately synthetic monism. Aldous Huxley, expressing the two divergent ways of thought involved in the scientific and the literary approach to experience, comments:

For Science in its totality, the ultimate goal is the creation of a monistic system in which - on the symbolic level and in terms of the inferred components of invisibly and intangibly fine structure - the world's enormous multiplicity is reduced to something like unity, and the endless succession of unique events of a great many different kinds gets tidied and simplified into a single rational order....The man of letters, when he is being most distinctively literary, accepts the diversity and manifoldness of the world, accepts the radical incomprehensibility on its own level, of raw unconceptualized existence, and finally accepts the challenge which uniqueness, multifariousness and mystery fling in his face and, having accepted it, addresses himself to the paradoxical task of rendering the randomness and shapelessness of individual existence in highly organized and meaningful works of art.<sup>54</sup>

In this sense Wells's Mind of the Race theory tends towards the scientific rather than the literary end of the spectrum for characteristically he oversimplifies in the interests of bringing a single explanatory theory to bear upon the multifarious data of existence. His Mind of the Race represents for him 'a monistic system in which...the world's enormous multiplicity is reduced to something like unity, and the endless succession of unique events of a great many different kinds gets tidied and simplified into a single rational order'. Indeed, there could scarcely be a more adequate summary of Wells's aim and

54. A. Huxley, Literature and Science (London, 1963) iii, pp. 11-12

purpose throughout his twentieth-century writing.

Again, if his thought tends towards mysticism, this too is not necessarily unscientific. Aldous Huxley, in the same monograph, quotes the physicist, Heisenberg:

Modern science shows us that we can no longer regard the building blocks of matter, which were considered originally to be the ultimate objective reality, as being things 'in themselves'....Knowledge of atoms and their movements 'in themselves', that is to say, independent of our observation, is no longer the aim of research; rather we now find ourselves from the very start in the midst of a dialogue between nature and man, a dialogue of which science is only one part, so much so that the conventional division of the world into subject and object, body and soul, is no longer applicable, and raises difficulties. For the scientists of nature, the subject matter of research is no longer nature in itself, but nature subjected to human questioning, and to this extent man once again meets only with himself.<sup>55</sup>

and goes on to comment that this:

has a familiar ring. It reminds one of certain utterances of the poets and mystics. Carried far enough, the analysis of man's public experiences comes, in theory at least, to the same conclusion as is reached existentially in the most private of all private experiences - infused contemplation, samadhi satori.<sup>56</sup>

Nicholson's estimate of Wells's philosophy is closely parallel to Huxley's analysis of Heisenberg, and although both must be accepted with certain minor reservations, the similarity should still be sufficient to absolve Wells from the hasty and superficial estimate of 'unscientific' or 'pseudo-scientific'. Nicholson writes:

Wells's glorification of man may make him seem the most human-centred of philosophers, but in his imagination he saw man as part

<sup>55</sup> ibid., XXV, p. 65

<sup>56</sup> ibid., XXV, p. 65

of a biological process, one with the rocks, flowers, trees and the sabre-toothed tiger. He saw him not as the overlord of the garden, but as part of the garden, the topmost branch on the highest tree. And the tree was always growing, stretching out, developing new flowers, or casting its seeds on to uncolonized territory.<sup>57</sup>

<sup>57</sup>N. Nicholson, H.G. Wells, (London, 1950) p. 91

Section III The Influence of Science on Wells's approach  
to Characterisation.

Chapter 8: Wells's Concept of the Individual

Before Wells embarked on the study of science at South Kensington he was already well acquainted with such diverse social settings as his father's unprofitable china shop in Bromley, Up Park, the gracious home where his mother was housekeeper, two drapery shops and a chemist shop where he served aborted apprenticeships, and Midhurst Grammar School where he spent a year as a student teacher. All these scenes were later to feature in the novels of his middle period, described with great vividness and peopled with vigorous life-like characters apparently modelled on Wells's former acquaintances. Yet these scenes and characters formed no part of his early writing.

The scientific romances, as we have seen, are concerned with character only as a secondary interest if at all, and indeed this was almost inevitable if they were to succeed in their purpose of focussing the reader's attention and interest on impersonal considerations. Edmund Crispin has written of science fiction in general that:

The characters in a science fiction story are usually treated rather as representatives of their species than as individuals in their own right. They are matchstick men and matchstick women, for the reason that if they were not the anthropocentric habit of our culture, would cause us, in reading, to give altogether too much attention to them and altogether too little to the non-human forces which constitute the important remainder of the dramatis personae.

Where an ordinary novel or short story resembles portraiture or at the widest the domestic interior, science fiction offers the less cosy satisfaction of a landscape with figures; to ask that these distant mannikins be shown in as much detail as the subject of a portrait is evidently to ask the impossible.<sup>1</sup>

and Wells seems to have held a similar view. It therefore becomes relevant to ask whether his intervening years as a science student, and the composition of his scientific romances had affected his perspective and attitudes when he came to reconsider his earlier associates as the subject of fiction, or whether they are rendered with the freshness of a first impression.

One's first reaction is to assert that such characters as Hoopdriver, Kipps and Polly are untouched by the harsh light of scientific investigation, that they spring, Dickensian-like, from the page with all the freshness of immediate observation, and indeed at least one critic has dwelt at length on the similarities between Wells's comic characters and those of Dickens.<sup>2</sup> However, a closer analysis shows that there are several important ways in which Wells's approach to characterization had been modified by his scientific training. None of these is, in itself, unique to Wells's work, but seen together their cumulative effect indicates very strongly the influence of his scientific outlook.

The first and perhaps most noticeable effect of Wells's training is the stationary attitude in which so many of his characters are presented - as though anaesthetised for dissection or frozen into tableaux. His habit of looking at the world as if through a microscope

<sup>1</sup> E. Crispin, quoted by Kingsley Amis, New Maps of Hell (London, 1961) p. 128

<sup>2</sup> W. Cross, 'The Mind of H.G. Wells', Yale Review XVI (Jan, 1927) 314

or through the art of the taxidermist has already been discussed in relation to a number of the scientific rc-mances where the actual image of the microscope or telescope appears explicitly in the story. The same attitude often underlies the presentation of character even in stories where the explicit mention of such instruments would be out of place. Frequently his actors are introduced in a characteristic pose, like exhibits against their appropriate backgrounds. We move up to them and examine them from all sides, and are told the necessary supporting details about their family and background, while they themselves remain immobile. Uncle Ponderevo is seen in a whole series of such tableaux against backgrounds which suggest themselves as correlatives of the hoardings proclaiming 'Tono-Bungay'. From his first appearance in grey carpet-slippers outside the ill-fated Wimblehurst shop, through the periods of silk top hats and increasing flabbiness, to his final demise, he is visualized on the grand scale. The frequent epithet of 'Napoleonic' is not accidental, for this little man strikes poses through every situation until the last. In the early stages of his acquired wealth he postures memorably in his first silk hat, so memorably that the chapter title records this detail: 'The Dawn Comes and My Uncle Appears in a New Silk Hat'.

I discovered my uncle in a wonderful new silk hat - oh, a splendid hat! with a rolling brim too big for him - that was its only fault. It was stuck on the back of his head, and he was in a white waistcoat and shirt sleeves....His glasses fell off at the sight of me. His round inexpressive eyes shone brightly. He held out his plump hand.<sup>3</sup>

<sup>3</sup>Tono-Bungay Bk. II, Chap. 2,i, pp. 168

Later, as the financial assets accumulate still further, this progress is charted by changes in stance and gesture:

There was, I seem to remember, a secular intensification of his features, his nose developed character, became aggressive, stuck out at the world more and more; the obliquity of his mouth I think increased. From the face that returns to my memory projects a long cigar that is sometimes cocked jauntily up from the highest corner, that sometimes droops from the lower; it was as eloquent as a dog's tail, and he removed it only for the more emphatic modes of speech...he preferred silk hats with ample rich brims, often a trifle large for him by modern ideas, and he wore them at various angles to his axis.<sup>4</sup>

To the end, even after his uncle's death, George can still scarcely believe that the whole episode of Edward Ponderovo's life was anything more than a series of theatrical events:

I felt as I sometimes feel after the end of a play. I saw the whole business of my Uncle's life as something familiar and completed. ...Before and after I have thought and called life a phantasmagoria, but never have I felt its truth as I did that night.<sup>5</sup>

Lewisham, too, is introduced to us in the stage setting of his attic study-bedroom, a scene which is carefully planned and constructed to tell us a great deal about the essential Lewisham; indeed the novel is virtually a series of such stage settings appropriate to critical points of the protagonist's career and connected by the continuing presence of Lewisham throughout.

This manner of visualizing characters as fundamentally static, spread like specimens awaiting examina-

<sup>4</sup> *ibid.*, Bk. III, Chap. I, i, pp. 279-280

<sup>5</sup> *ibid.*, Bk. IV, Chap. 1, viii, p. 498.

nation, has its counterpart in the kinds of characters whom Wells chose to consider and in the way he treated them. Here Wells displays the bias of the scientific mind which is comparatively uninterested in the multifarious differences between human beings, in the details which constitute an individual's unique personality; he is interested, instead, in people as characteristic examples - examples of the laws of causality and of genetic and sociological laws.<sup>6</sup> Hence the majority of his character studies are of unambiguously average specimens of humanity, the 'little men' who are unable to cope with life and its social demands. Wells is at pains to stress their basic ordinariness, as though to guarantee the randomness of his sample and hence the validity of his conclusions about the human species. Hoopdriver, Lewisham, Kipps, Aunt Susan, Mr. Polly, Willie Leadford and his mother, and Mr. Britling are all 'little' people with no claim to fame or special interest, and even Uncle Ponderevo's apparently vivacious personality is shown to be a façade behind which the 'real' character is small and frightened, trying desperately to lose itself in escapist fantasies of

<sup>6</sup>William Irvine writes of Huxley: 'Probably Carlyle also awakened the young man's literary sense. That he did not turn so fine a talent permanently to literature is not surprising. Huxley was too little attracted to the characteristic subject matter of the writer. He became interested in man as a physical mechanism, as an anthropoid ape, as a social unit and a citizen, as a delicate machine for the discovery of scientific truth, but never to any appreciable extent in man as a personality and a human being.' W. Irvine, Apes, Angels and Victorians, (New York, 1959) Chap. 2, pp. 12-13

its own importance. Bert Smallways's mediocrity is stressed several times, apart from his name. We are told that he:

was a vulgar little creature, the sort of pert limited soul that the old civilization of the early twentieth century produced by the million in every country of the world... It was as if Heaven was experimenting with him, had picked him out as a sample from the English millions to look at him more nearly and to see what was happening to the soul of man.<sup>7</sup>

Here Wells is doing precisely what he attributes to Heaven - experimenting with Smallways as a sample of the English millions and assuming that he can thereby gauge what is happening to the soul of man.

Where Wells contrives to combine a real interest in a character as an individual with the awareness that he also represents to a considerable degree his social background, his success is undeniable. Henry James wrote to Wells on the publication of Kipps:

You have for the very first time treated the English 'lower middle' class, etc., without the picturesque, the grotesque, the fantastic and romantic interference of which Dickens, e.g., is so misleadingly, of which even George Eliot is so deviatingly, full. You have handled its vulgarity in so scientific and historic a spirit, and seen the whole thing in its own strong light. And then the book, has, throughout, such extraordinary life; everyone in it, without exception, and every piece and part of it, is so vivid and sharp and raw. Kipps himself is a diamond of the first water, from start to finish, exquisite and radiant; Coote is consummate, Chitterlow magnificent.<sup>8</sup>

<sup>7</sup>War in the Air, Chap. 3,i, p. 66

<sup>8</sup>Henry James, letter to Wells, 19th November, 1905, quoted by L. Edel and G.N. Ray, Henry James and H.G. Wells, (Urbana, 1958) p. 105.

Yet with his minor characters, Wells's desire to create a typical representative often degenerated into mere caricature which appears to result less from an objective viewing of society than from an intention to vilify certain aspects of social tradition and convention. Thus several of his minor characters are little more than embodiments of the more unattractive traits of the Victorian age as Wells chose to imagine it, distorted representatives of a system seen through the eyes of one prejudiced against almost anything inherited from the past. Mr. Stanley, Mr. Pope and Mr. Magnet are such scape-goat figures. Even amongst the major characters there is often a suspicion of caricature, as Wells himself later commented, remarking also on the chief flaw in those characters who were too closely identified with their background:

only one or two of my novels deal primarily with personality, and then rather in the spirit of what David Low calls the caricature-portrait than for the purpose of such exhaustive rendering as Henry James had in mind. Such caricature-individualities are Hoopdriver in The Wheels of Chance (1896) Kipps (1905) and Mr. Polly in The History of Mr. Polly (1910) My uncle and aunt in Tono-Bungay (1909), one or two minor characters in The Dream (1924), Christina Alberta's Father (1925) and The Bulpington of Blup (1932) are also caricature-individualities. ...I doubt if any of these persons have that sort of vitality which endures into new social phases. In the course of a few decades they may become incomprehensible!<sup>9</sup>

<sup>9</sup> Experiment in Autobiography, Chap. 7, v, p. 499

Although Wells was himself an able literary critic, he was apparently not averse to type characters provided they were subservient to his purpose. In his autobiography he wrote of Love and Mr. Lewisham, The Sea Lady, Kipps, In the Days of the Comet, The New Machiavelli, Marriage, The Passionate Friends, and The Wife of Sir Isaac Harman:

In all these novels, the interest centres not upon the individual character, but upon the struggles of common and rational motives and frank enquiry against social conditions and stereotyped ideas. The actors in them are types, therefore, rather than acutely individualised persons. They could not be other than types.<sup>10</sup>

We have seen that to Wells, at least in theory, the species Homo sapiens was both more interesting and more important than the warring individuals who comprised it. If the human species as a whole was a cumbersome topic for literature, the nearest manageable approximation was provided by a panoramic view of society as a whole, and hence the social novel was the form to which Wells turned with increasing frequency, often with the tacit but clear assumption that, on analogy with insect communities, one society was very similar to another, so that the study of a 'typical' member within his natural milieu might serve as a close approximation to the species as a whole.

The practical outcome of Wells's tendency to consider man, the unit in society, as both more important and more interesting than man the autonomous individual is that many of his novels begin with a panoramic view of society before focussing on its individual members. This sequence reflects the chronological development of Wells's own interest for, as he later recorded in his autobiography:

<sup>10</sup> ibid, Chapter 7, iv, p. 477

Exhaustive character study is an adult occupation, a philosophical occupation. So much of my life has been a prolonged and enlarged adolescence, an encounter with the world in general, that the observation of character began to play a leading part in it only in my later years. It was necessary for me to reconstruct the frame in which individual lives as a whole had to be lived before I could concentrate upon any of the individual problems of fitting them into this frame.<sup>11</sup>

The War of the Worlds opens with the widest possible panoramic sweep - the earth as seen from Mars. Men are viewed as specimens, not only en masse, but as a species, as the comparison with the infusoria under the microscope emphasises:

As men busied themselves about their affairs, they were scrutinized and studied, perhaps almost as narrowly as a man with a microscope might scrutinize the transient creatures that swarm and multiply in a drop of water. With infinite complacency men went to and fro over this globe....It is possible that the infusoria under the microscope do the same.<sup>12</sup>

The alleged author of In the Days of the Comet, the 'man who wrote in the tower' in order to describe the lives and events of individuals, elevates himself to a situation which enables him to look down upon them from afar and from above:

He seemed to be in a room in a tower, very high, so that through the tall window on his left one perceived only distances, a remote horizon of seas, a headland, and that vague haze and glitter in the sunset that many miles away makes a city.<sup>13</sup>

Even then he surveys the scene below not directly but in a concave, and hence distorting, mirror. The situation is reminiscent of the Martian astronomers with their telescopes

<sup>11</sup> ibid., Chap. 7, v, pp. 501-2

<sup>12</sup> The War of the Worlds, Bk. I, Chap. 1, p. 213

<sup>13</sup> In the Days of the Comet, Prologue, p. 3

trained on earth as the star passes<sup>14</sup>. In all cases the human characters are diminished to the status of specimens.

The World Set Free commences with a panoramic sweep in time - man's development since the dawn of his history - while Tono-Bungay begins with a broad survey of virtually all social ranks as George reviews his experiences in a cross-section of settings and then proceeds to a description of Bladesover which is explicitly stated to be a 'complete authentic microcosm ... a little working model - and not so very little either - of the whole world.'<sup>15</sup> All this is given to us before any individual characters are introduced; indeed Wells himself later wrote of Tono-Bungay that:

It was an indisputable Novel, but it was extensive rather than intensive. That is to say it presented characters only as part of a scene. It was planned as a social panorama.<sup>16</sup>

If Wells's scientific training thus influenced his conception of character in general - the kinds of character he chose to study and his approach to them - it affected his presentation of individual characters even more profoundly.

Because Wells tended to view characters as specimens arranged or posed for his inspection, he tended also to record what he observed in firm clear lines analogous to dissection-diagrams in a laboratory manual. Such a manner of looking at the world records the small, apparently insignificant details which are later seen to have

<sup>14</sup>The Star, p. 570

<sup>15</sup>Tono-Bungay, Bk. I, Chap. 1, iii, p. 9

<sup>16</sup>Experiment in Autobiography, Chap. 7, v, p. 503

meaning in their particular context, and typically, the Wellsian character novels proceed through an accumulation of these fine details, not set down randomly but correlated and patterned to produce a coherent picture. Wells had employed this method with considerable success in novels of the future where he was concerned to make real to his readers a scene hitherto outside their experience or imagination. Here his technique was to build up a massive edifice of detail until the reader seemed to step into the scene, a procedure most necessary in the case of a futuristic milieu which is essentially unfamiliar. Thus in 'A Story of the Days to Come' and in The Sleeper, we follow Denton and Graham through an unfamiliar city, observing one detail after another until a credible, three-dimensional structure has been realized for us and becomes the background for the subsequent events of the story. It is not insignificant that Wells uses, in these cases, precisely the same technique as he had used in his article, 'The Things that Live on Mars' - the painstaking building up of a background which is unfamiliar to the reader, and then the gradual extrapolation from these environmental details to a scientifically credible picture of the conditions and population of Mars.

When this analytic gaze is turned upon the characters themselves, there is again the careful enumeration of external details - the clothing worn, the stance, the stature, the characteristic gestures or expressions, the normal background, a particular manner of speaking. This desire for the clearest and most accurate accounts of characters and their environments led Wells to stress the

need for the utmost realism in presentation, and links him at this point not only with the English realist novel, but also with the French Naturalist tradition. Wells himself wrote that Tono-Bungay was 'planned as a social panorama in the vein of Balzac'<sup>17</sup> and there is little doubt that he would have been in accord with Zola's conception of the novelist as a scientific experimenter operating on 'the characters, the passions and the human and social data':

If we except form and style, the experimental novelist is nothing but a special kind of scientist who uses the tools of other scientists - observation and analysis. Our domain is the same as that of the physiologists except that it is more vast.<sup>18</sup>

This synthetic process whereby Wells sought to build up a picture of reality by the accumulation of numerous background details, was characteristic of many of his novels, particularly of the early novels of character. Several of his contemporary critics abhorred this method of amassing detail and remarked upon the fact that so many of his novels began with a painstaking description of a room and its contents.<sup>19</sup> In fact no less than ten of the novels contain such a description.<sup>20</sup>

So important did Wells consider the exact and truthful rendering of a character's background and material circumstances that he often conformed to the most stringent standard of fidelity, namely that of authorial experience. This, again, links his work with the Naturalist movement

<sup>17</sup> ibid. chap. 7, v. p. 503

<sup>18</sup> E. Zola, The Experimental Novel, reprinted in Becker (ed.) Documents of Modern Literary Realism (Princeton, 1963) p. 193

<sup>19</sup> Athenaeum (October, 1910) 450; Spectator CV (Oct. 22, 1910), 654-5; Spectator CVII (Oct., 1911) 602.

<sup>20</sup> The Wheels of Chance, Love and Mr. Lewisham, Kipps, In the Days of the Comet, Tono-Bungay, The New Machiavelli, The Wife of Sir Isaac Harman, The Undying Fire, Meanwhile and The Dream.

for it seems not unreasonable to conclude that it was at least partly Wells's belief in the need for experience as a prerequisite for valid characterization, and not merely, as critics have often assumed, a failure of imagination, which led him to write of so many autobiographical or semi-autobiographical situations. The Emporium where Hoopdriver works, Bladesover, and the chemist shop of George's apprenticeship, the Bromstead of The New Machiavelli, Mr. Polly's ill-fated shop, Lewisham's term as a student-teacher, even the room he occupies and his years at South Kensington, Capes the biology demonstrator entering into an affair with a girl student whom he later marries, and much of Mr. Britling's background are all confessedly drawn from Wells's own experiences, while George Ponderevo and Remington read almost exactly the same selection of books in their programme of self-education as Wells himself had done.<sup>21</sup> The desire for autobiographical accuracy inevitably led to charges of direct portraiture, as in the case of Ann Veronica and the near-libellous representation of the Webbs in The New Machiavelli, a novel which, perhaps necessarily, also contains recognizable portraits of several other well-known figures in the contemporary political scene. Indeed, where Wells departs at all from factual precedent in these novels, it is usually in order to explore the given situation more clearly and objectively rather than to import an element

<sup>21</sup> Voltaire, Vathek, Rasselas, Tom Paine, Plato's Republic, Gulliver's Travels, and later The Free Thinker, Shelley, Carlyle, William Morris. c.f. Experiment in Autobiography Chap. 3, vi, p. 138, and Chap. 6, ii, p. 305

of fantasy. Even when his novels were not concerned with manifestly autobiographical situations or with Wellsian protagonists, there is almost invariably a third autobiographical level present in that Wells did not so much describe the effects of the characters' behaviour on one another as describe the effect of that behaviour on himself. Henry James realized this relatively early in Wells's career. On reading Marriage he wrote to Wells:

I see you 'behave' all along much more than I see them even when they behave...with whatever charged intensity or accomplished effect; so that the ground of the drama is somehow most of all in the adventure for you - not to say of you, the moral, temperamental, personal, expressional, of your setting it forth; ... always you beat them on their own ground, and ...your story, through five hundred pages, says more to me than theirs.<sup>22</sup>

A further effect of Wells's preoccupation with ordinary characters, with the 'little men', was the necessity of drawing upon backgrounds which were at least humble, often squalid, if realism were to be retained. This tendency again links Wells with the Naturalist tradition, although he never descended to the depths of squalor portrayed by the French Naturalists. At least one reviewer saw Love and Mr. Lewisham as similar in mood to Gissing's novels of financial distress and struggling, chronically unsuccessful characters. A critic of the Sunday Times decided that its scenes were sordid and mean,<sup>23</sup> while the Saturday Review critic concluded that to read it was to 'wallow in gloom from cover to cover amid a succession of dreary episodes'.<sup>24</sup> Wells however differed markedly from Gissing

<sup>22</sup>Letter from James to Wells, Oct. 18, 1912, published in Henry James and H.G. Wells, ed. L. Edel and G.N. Ray (Urbana, 1958) p. 167.

<sup>23</sup>Sunday Times (June 10, 1900) p. 8

<sup>24</sup>Saturday Review, LXXXIX (June 23, 1900) p. 752

in the attitudes which he ascribed to those characters who were sunk in poverty, and vehemently rejected the idea that happiness was dependent upon wealth, In his article 'The Depressed School', which begins as a critique of Gissing's novel, Eve's Ransom, he wrote:

No doubt Mr. Gissing's spiritual anatomy and physiology are correct, and his perspective is right; but is his colouring true? Is this harsh greyness really representative of life, even the life of the lower middle class?...Or is it that Mr. Gissing is colour-blind, that he has the distinctive fault as well as the distinctive precision of photography? For our own part, we do not believe that any social stratum is so dull as this melancholy world of his. Happiness is, after all, mainly a question of physical constitution....the true Realism, we hold, looks both on the happy and on the unhappy....It [the horror of being hard up] reduces it [Gissing's work] from the level of a faithful presentation of life to genre. It is the genre of nervous exhaustion.<sup>25</sup>

Thus Wells maintained, with some truth, that his 'little men' his lower middle-class characters, were in fact more accurate pictures of reality, more truthfully and objectively drawn, than many characters of the same stratum as depicted by the Naturalist writers. This difference lay less in the material presented than in the interpretation of personality and in the authorial attitude towards the characters. Wells saw clearly that although novelists themselves might find the exigencies of straitened circumstances intolerable and impute their own despair to all who experienced poverty, nevertheless those members of the working class whose demands were less exacting

<sup>25</sup> 'The Depressed School' Saturday Review, LXXIX, (April 27, 1895) p. 531

might genuinely maintain a cheerful disposition which seemed incomprehensible to the literary observer.

We have seen that Wells's stress on characters as units of a society and ultimately of a species, rather than as individuals existing in their own right, led him to introduce several novels with a panoramic sweep of society, even of human history, before coming to concentrate on individual protagonists. The effect of such a procedure is to set the characters very firmly in their social milieu, and indeed this was Wells's intention, for, as each individual in his scheme was primarily a unit in a society, so also he was to be found in a definite position within that society. He believed that few people had either the chance or the inclination to change their station in life and hence remained predictably within the niche which heredity and early environment had carved out for them. Tono-Bungay opens with George Ponderevo's meditation upon this assertion:

Most people in this world seem to live 'in character'; they have a beginning, a middle and an end, and the three are congruous one with another and true to the rules of their type. You can speak of them as being of this sort of people or that. They are, as theatrical people say, no more (and no less) than 'character actors'. They have a class, they have a place, they know what is becoming in them and what is due to them, and their proper size of tomb stone tells at last how properly they have played the part.<sup>26</sup>

Thus, in the majority of Wells's novels there is a definite suggestion of the determinism of circumstances. Dr. Moreau discusses the determinism of heredity. Moreau and Montgomery try unsuccessfully to overcome the genetic inheritance of the Beast People and to alter the biological

<sup>26</sup>Tono-Bungay, Bk. I, Chap. 1, 1, p. 3

type by grafting and education; but always the hybrids revert to type. In most of the novels, however, the determinism is environmental. Wells was meticulous in building up, brick by brick, strong walls of circumstance which virtually imprison the characters. The emporia where Hoopdriver and Kipps are apprenticed, the stifling trivialities of Mr. Polly's domestic arrangements, are made to seem inescapable, and on the whole the majority of Wells's characters are shown as being so shaped by their family and education that few have even the wish to break away from the pattern laid down in their formative years. The War in the Air gives a panoramic view of a world in which the war proceeds with such a terrifying inevitability that neither Bert Smallways nor the leaders of the nations can extricate themselves from it nor turn the tide of events. After the mass destruction has run its course, Bert speaks for mankind:

'You can say what you like', he said, 'it didn't ought ever to 'ave begun'. He said it simply - somebody somewhere ought to have stopped something, but who or how or why were all beyond his ken.<sup>27</sup>

The change in emphasis from heredity to environment as the major deterministic factor in Wells's work mirrors a general trend in the novel during the last decades of the nineteenth century when the success of the scientific method in biology encouraged the belief that science could explain behaviour also. Zola believed that heredity greatly influenced intellectual and emotional states but

<sup>27</sup>War in the Air, Epilogue, p. 379

that it was the environment that determined and completed a man.<sup>28</sup> The French novelists studied this question in the manner of ecologists observing a sample environment - indeed Zola conceived of the novelist as an 'analyser of man in his individual and social relations'.<sup>29</sup> - and Wells, who was temperamentally sympathetic to such an attitude, fell naturally into a similar procedure in his novels.

Yet, powerful as he considered the factors of heredity and environment to be, Wells never admitted to a full belief in determinism. It is the mark of his scientific training that he builds up a clear and detailed picture of a character's environment and advances a lucid **explanation** of the effect of such circumstances but equally it is a measure of his allegiance to a level of practical free-will that he does not believe any environment to be wholly inescapable. Thus, in the character novels, even those which involve the darkest backgrounds, the protagonists are shown as transcending or changing their circumstances, at least temporarily and within the limitations of their potential abilities. Mr. Polly learns that:

When a man has once broken through the paper walls of everyday circumstances that hold so many of us securely prisoned from the cradle to the grave, he has made a discovery. If the world does not please you, you can change it. Determine to alter it at any price and you can change it altogether. You may change it into something sinister and angry, to something appalling, but it may be you will change it to something brighter, to something more agreeable, and at worst, something much more interesting.

<sup>28</sup> Emile Zola, The Experimental Novel, (New York, 1893)  
p. 19

<sup>29</sup> ibid., p. 233

There is only one sort of man who is absolutely to blame for his own misery, and that is the man who finds life dull and dreary. There are no circumstances in the world that determined action cannot alter....And Mr. Polly, lying awake at nights, with a renewed indigestion, with Miriam sleeping sonorously beside him, and with a general air of inevitableness about his situation, saw through it, understood there was no inevitable any more, and escaped his former despair.<sup>30</sup>

Usually, however, those characters who succeed in surmounting their native circumstances, are enabled to do so only because some external force impels them or encourages them to abnormal effort. It is Kipps's unexpected inheritance and the impact of Chitterlow's personality on him, Mr. Polly's 'successful' experiment in arson and Leadford's experience of the euphorious gas, which temporarily galvanize these characters to take some initiative in directing their lives. Essentially, they remain passive. George Ponderevo is lifted out of his former drifting, impecunious existence by his uncle's sudden accession to the ranks of the wealthy through the expanding prospects of Tono-Bungay, and he continues his musings on 'character actors' quoted above:

But there is another kind of life that is not so much living as a miscellaneous tasting of life. One gets hit by some unusual transverse force, one is jerked out of one's stratum and lives crosswise for the rest of time, and, as it were, in a succession of samples. That has been my lot, and that is what has set me at last writing something in the nature of a novel.<sup>31</sup>

Lewisham, on the other hand, fails to change his social circumstances precisely because no external factor jolts him out of them, and his own efforts fail to achieve any significant results other than reconciliation to his lot.

<sup>30</sup>The History of Mr. Polly, Chapter 9, i, p. 212

<sup>31</sup>Tono-Bungay, Bk. I, Chapter 1, i, p. 3

Thus, in Wells's novels, the very occasions on which social determinism appears to have been overcome are themselves instances of a further deterministic element acting upon the characters. The agency which jolts the individual out of his habitual rut and motivates him to surmount his circumstances, is itself unpredictable and apparently arbitrary, and is therefore equally deterministic as far as the individual himself is concerned. Wells called these fortuitous influences the 'continuing idiosyncrasy of every part of the universe' and saw them as wholly consistent with a principle of causality on the grounds that 'there never has been, it seems, exactly the same cause and exactly the same effect.'<sup>32</sup> At the level of practical experience he declared himself a pragmatist:

It may be knowable the next time I come to a cross-roads which I shall take... [but] the fact is I believe that neither I know, nor anybody else who is practically concerned knows, which I shall take. I hesitate, I choose, just as though the thing was unknowable, For me and my conduct there is that much wide practical margin of freedom.<sup>33</sup>

But his desire to understand and record characters with maximum accuracy led Wells to penetrate more deeply in his analysis than the description of mere surface details and hence implied a level of psychological determinism which he was, in theory, far from acknowledging. His analysis of thoughts and motives, heredity and environment is part of his effort to relate each observation to his understanding of the world as a whole, to synthesize each new fact into a consistent world view. This approach

<sup>32</sup> Experiment in Autobiography, Chap. 5, ii, p. 225

<sup>33</sup> First and Last Things, Bk. II, iii, p. 235

is further emphasized by his tendency to introduce his characters didactically, explaining them and admonishing the reader in a Thackerian manner, like a demonstrator at the blackboard - in fact, like the young Wells, science master at Henley House School. One feels that he has, perhaps unwittingly, extended into the province of psychology that emphasis on causality which was basic to the success of the scientific romances. The whole conception of the utopias also involves an underlying assumption of psychological conditioning. The utopian policy is continually to perfect environment and education, precisely because these factors are seen as operating to shape character and produce a harmonious society.

Thus it would seem that Wells's scientific aptitude for meticulous background descriptions and for the habit of analytical thought whereby he endeavoured to explain the behaviour of his characters as far as possible in terms of their environment induced him to show operating on his characters a level of determinism which he elsewhere explicitly disavowed.

This same preoccupation with external details and descriptions has led to the frequently levelled charge that Wells omitted all spiritual and religious values from his characters' makeup. Whereas Julian Huxley wrote of Wells that

his intensely human nature and broadly humanist interests kept him from any narrowness of scientific or intellectual approach<sup>34</sup>

critics with a humanities background were less tolerant.

R.C.K. Ensor, reviewing Wells's autobiography, described him as a 'child of his education' and speculated upon what

<sup>34</sup>J.S. Huxley, 'H.G. Wells', The Spectator, CLXXVII (Aug. 16, 1946) 161

his development might have been if only:

In addition to a year's biology under Huxley he had done two years' philosophy at Oxford or Glasgow under Nettleship or Edward Caird, and had had the experience of reading Kant at an average pace of less than a page an hour, mentally threshing out all its implications....It might, merely as discipline, have been extraordinarily good for him; besides giving him what he has never acquired, a real comprehension of what is, as distinct from the physical, the metaphysical outlook on the universe.<sup>35</sup>

Odette Keun blamed the influence of Huxley upon an impressionable student:

What I mean is that the rationalistic basis and atmosphere of the new philosophy destroyed in him utterly all spiritual and mystical values. He never recovered them. There was not a religious principle left. There were no religious inhibitions left. But there was also no kind of sustained moral discipline left. In the fierce repudiation of his anthropomorphic god was included the equally fierce repudiation of any ascetic ideal. I do not know of any mind today which has such a maniacal hatred of spiritual and mystical values....

By removing so totally these values, the system of thought Wells adopted wholesale did him a profound disservice...for he was blocking out of his conception of human life and evolution an overwhelming voice, nurture, tradition and fact. ...The summary denial of what he constitutionally detested, weakened in him the scientific spirit.<sup>36</sup>

However, the limitations imputed to Wells's work consequent upon his religious scepticism have surely been exaggerated. The absence of orthodox religious forms from any one novel is frequently made to appear more heinous by the observation that a large number of his other novels are similarly deficient in religious awareness, even though, within the confines of each individual novel this may not be an un-

<sup>35</sup>R.C.K. Ensor, 'Experiment in Autobiography - a review' *The Spectator*, CLIII (Oct. 12, 1934) 529

<sup>36</sup>Odette Keun, 'H.G. Wells - The Player', *Time and Tide* XV, (Oct. 13, 1934), 1250.

realistic omission. Raknem has maintained that:

As a novelist...Wells was concerned with the people of his own generation and he portrayed his characters as English citizens. To the majority of these God and religion were the most serious facts in life. Wells's great mistake was that he disregarded these facts. His novels give a false picture of the age they are supposed to reflect because his characters are devoid of any spiritual life.<sup>37</sup>

but this assessment is questionable. The same comment might be made with more truth of Jane Austen's novels, for Wells wrote in and of an age when formal religion was frequently treated with indifference if not with disdain. The religious turmoils which followed the publication of The Origin of Species had subsided and, for many, questioning had given way to a tacit agnosticism, a word coined, significantly, in the latter half of the nineteenth century, for that attitude symptomatic of a generation which found that both orthodoxy and atheism involved a level of commitment it was unwilling to profess. If Wells chose to portray characters who did not undergo the spiritual struggles of the previous generation, or suffer mental tortures for their defiance of orthodoxy, his sample is not necessarily atypical. It has been noted that, in the interests of realism and accuracy, Wells declined to depict characters whose lives he did not understand from his own experience and his autobiography indicates that he counted amongst his friends and close acquaintances almost no one whose religious attitudes were likely to impress him as contributing significantly to a life more abundant.

Moreover, it is not valid to assume that because Wells showed little but contempt or indifference towards orthodox

<sup>37</sup>I. Raknem, op. cit., p. 208

religious attitudes he was therefore totally lacking in spiritual or even religious awareness. For him, as for many of his contemporaries, a social conscience was replacing religion as the arbiter of morality. Whereas many traditional values came to be considered redundant by him, particularly the sanctions governing sexual relations, he viewed other elements of the moral code with increasing stringency, notably the often hypocritical attitudes of Victorian and Edwardian society towards frankness and fairness in business dealings and responsibility for the well-being of the community. In general Wells appealed to men to act according to their own conscience in personal and private conduct rather than to be scrupulous merely in those affairs which were the object of common knowledge and in which social reputation functioned as an external conscience.

Again, the faith to which Wells confessed with all the fervour of a mystic in First and Last Things and of which The Open Conspiracy is his rational Summa, had many of the attributes of a religion. It demanded, at least in theory, complete devotion to a rigorous, even ascetic code of behaviour which, being based on altruistic principles, was to inspire selflessness and a spirit of evangelism in its followers. Consequently the social reformers in the novels and utopias of Wells's middle period, before his work became explicitly didactic, display some or all of these virtues or are prevented from a more devoted pursuit of this ideal only by the blindness of a society which will not permit them the freedom necessary to further their cause. Remington enters upon his political career

as an idealist whose views Wells describes in religious terms. Trafford pursues his researches into crystals with a similar devotion and his account of his work to Marjorie is close to the ecstasy of mysticism:

The sense one has of exquisite and wonderful rhythms - just beyond sight and sound! And there's a haunting suggestion of its being all there, displayed and confessed, if one were only quick enough to see it...It takes me like music ....Is there anything else so rich and beautiful in the whole world? ...a different scheme of harmonies - ...as if the whole world was fire and crystal and a-quiver - with some sort of cotton wrappers thrown over it.<sup>38</sup>

while George Ponderevo, finally undertaking a life of pure research, sees it in religious terms, as an ultimate reality:

Sometimes I call this reality Science, sometimes I call it Truth. But it is something we draw by pain and effort out of the heart of life, that we disentangle and make clear.<sup>39</sup>

Thus we might expect Wells to appear as a deeply religious writer, at least in the broad Tolstoyan sense of religion as devotion to Life. But in fact, although they are not devoid of religious symbolism, his novels are not deeply religious in any accepted sense of that word. I believe that the major reason for Wells's failure to realise artistically his intellectual belief in a metaphysical dimension of experience is at least partly attributable to his scientific training, although not as directly as Odette Keun and others have assumed. There are several other contributory reasons involved, and they are worth discussing briefly.

<sup>38</sup> Marriage, Bk. I, Chap. 3, vi, p. 149

<sup>39</sup> Tono-Bungay, Bk. IV, Chap. 3, iii, p. 529

In theory, Wells supported and developed a Weltanschauung which was genuinely religious in his own sense and he consistently attempted, in his work, to trace the ramifications of such a belief both for the individual and for society. His failure to make real this religious dimension in his novels pivots partly on his preoccupation with the passage of time and the sense of urgency which this involved. His characters live and move in a world of limited time; they hasten to press forward their ideas or to implement their plans before it is too late; the awful warning of the dying world of 'The Time Machine' seems to hang over them. There is no backdrop of eternity to impart calm and depth to this spectacle of busy creatures hastening to reform their society. H. Davies has perceptively defined the religious novel as follows:

By giving the human scene the eschatological backdrop of Heaven and Hell, the religious writer sees that apparently trivial actions of men and women have abiding consequences unperceived by the humanist....Unless a novel includes these dimensions of sin and grace, time and eternity, it cannot be considered a religious novel of any significance.<sup>40</sup>

Judged by these criteria, Wells's work lacks any religious dimension.

Again, like the majority of his contemporaries, Wells was brought up in a home where lip-service at least was paid to religious orthodoxy, and along with many of his generation, he trod the well-worn path from Evangelical fundamentalism to pantheistic rationalism; but whereas for Hale White, Edmund Gosse and countless other searching souls represented by the fictional Robert Elsmere, the experience was a traumatic one involving deep heart-search-

<sup>40</sup>H. Davies, A Mirror of the Ministry in Modern Novels, (New York, 1959) p. 178

ing, for Wells the transition appeared so natural as to be barely worth recording. His position is close to the final state of mind of those, who, having discarded their faith in revealed religion, found a viable substitute in social activism, but by omitting the intermediate stages of the struggle, he leaves us with semi-autobiographical characters who appear over-confident, free from self-doubt, and consequently flat. Moreover, although his plans for social reform were often more explicit, detailed and coherent than those proclaimed by the ardent protagonists of Kingsley, Mrs. Humphry Ward and their followers, Wells fails to convince us of either his own or his characters' total commitment to them. The proposed reforms remain a theory, carefully evolved and clearly set out, but a theory nonetheless, and his characters seem, in this respect, tainted with the 'academic' vice of non-commitment. For all his alleged adoption of a social mission, Trafford impresses us as being emotionally more aligned with Ernest Pontifex's position of carefree non-involvement than with the zeal of the reformer.

However, the major reason for the failure of Wells's characters to suggest any religious dimension in their lives resides, I believe, in the very clarity of their delineation. Basically they lack a religious dimension not because they fail to embrace an orthodox faith but because they appear too stark, too complete without it. Wells tacitly professes to know all about them, to have dissected and analysed them into their component parts with the utmost precision and finality. While it is not necessary that a character should be overtly religious

in order to convey the sense of a religious dimension, it is necessary that the possibility of this should not be precluded by exhaustive analysis into other components which exclude this one. What is needed is a certain lack of definition in the sketch to suggest, if not to assert, a potential religious dimension.

Wells's preoccupation with external details and the background of his characters has issued in a further and more widespread criticism - namely the deficiency of psychological interest in his work. Compared with the characters of the major twentieth-century novelists, Wells's protagonists seem lacking in any suggestion of an inner life as surely as they lack a religious dimension. Even contemporary critics minced no words in their disapproval:

He cannot find his way to the inside of any type of consciousness but his own... the moment he begins to 'psychologise' he writes autobiography.<sup>41</sup>

Virginia Woolf whose own novels gave additional force to this particular criticism, berated the Edwardian novelists generally for their concentration on the material details surrounding their characters, particularly on property, at the expense of their inner selves. She maintained that if asked to describe a character, they would

Begin by saying that her father kept a shop in Harrowgate. Ascertain the rent. Ascertain the wages of shop assistants in the year 1878. Discover what her mother died of. Describe cancer. Describe calico. Describe -. <sup>42</sup>

<sup>41</sup>Nature (New York) CV (Oct 11, 1917) 402

<sup>42</sup>V. Woolf, 'Mr. Bennett and Mrs. Brown', The Captain's Death Bed (London, 1950) p. 105

Applied to Wells's work in particular this is too harsh an indictment, although the later critic, Joseph Warren Beach is equally uncompromising:

Wells is really no good in characterization except in a superficial way. He has a knack of hitting off types ... but he does not get into the characters. Indeed, he does not seem to realize the importance of getting into them. He does not seem to have envisaged this as something involved in his own undertaking as a writer of fiction. He takes seriously his business of entertaining the reader, but he does not take seriously the art of characterization which is three-fourths of fiction.<sup>43</sup>

Some few critics have dissented from this view and have praised Wells's understanding of psychology. As early as 1917 Wilfred Lay wrote two enthusiastic articles on this theme:

I would describe H.G. Wells as the novelist who, though lacking therein nothing of charm and artistry, writes like a psychoanalyst....I am convinced that Wells is in possession of detailed knowledge of the European working out of the psychoanalytic theories of Freud and Jung and their several followers.<sup>44</sup>

Much of Lay's admiration is lavished upon chance phrases and gestures in the novels which seem, by mid-twentieth century standards of expectation, almost too obvious for comment, but since a contemporary of Wells read such depths of profundity into his work it is appropriate to realise that while the major novelists of the nineteenth century had, through their own acute observation, displayed at

<sup>43</sup> J.W. Beach, The Twentieth Century Novel, (New York, 1932)

p. 73

<sup>44</sup> W. Lay 'The Marriage Ideas of H.G. Wells' Bookman (New York) XLV No. 6 (Aug., 1917) 606

least comparable insights into human nature, Wells may have been one of the first novelists consciously to mould his characters to fit current psychological theories. However, because critics have been almost universally agreed that Wells's greatness resides in the scientific romances, where psychological insight was in general unnecessary, perhaps even a liability, rather than in the later novels where its alleged absence would constitute a major flaw, it seems useful to enquire more exactly how far Wells was aware of the growing understanding of psychology at the time when he was writing, and then to examine his novels briefly for some reflection of these movements. If they fail to appear, or are present in only a partial or distorted form, it becomes necessary to ask what motives led him to write as though in ignorance at a period when the foundations of modern psychology as a science in its own right were being laid apace.

Wells had become interested in psychology while at South Kensington even though it was not at that time regarded as an independent science, but comprised only fragmented sub-sections of philosophy, physiology, psychiatry and biology. The few psychological questions treated in his early writings are drawn chiefly from the work of Darwin<sup>45</sup> and Galton<sup>46</sup>, and thus his approach at this stage was more biological and deterministic than it was later to become after he was attracted to the behaviourist school of psychology. While Havelock Ellis<sup>47</sup> had

<sup>45</sup> Mankind in the Making, pp. 16, 47, 334; A Modern Utopia, p. 7

<sup>46</sup> Mankind in the Making, pp. 37, 41-51, 152, 294

<sup>47</sup> See e.g. A Modern Utopia, Chap. 6, v, p. 181, (note) which refers to Havelock Ellis's Man and Woman.

apparently introduced Wells to the comparative psychology of the sexes, and he later became interested in the work of Jung, the major influence on his view of psychology was exerted by William James, whose Principles of Psychology he described as 'that most wonderful book'.<sup>48</sup> The attractions of James's approach to psychology for a young science graduate of the 1890's are manifest. James stressed the alternating processes of analysis and synthesis as the key to understanding the workings of the mind, and these were the very processes which Wells, in the scientific romances, had considered basic in devising an ordered explanation of the apparently arbitrary passage of events and actions.

Not only did Wells himself come to portray his characters in terms of analysis and synthesis, but his more intellectual and articulate protagonists pursue a similar method in attempting to analyse their surroundings and fellow characters. George Ponderevo is prone to analyse his uncle at frequent intervals and his system of 'social anatomy' whereby he endeavours to explain London, and indeed England, by analogy with the Bladesover hierarchy, involves both analysis into component units and a boldly synthetic plan of sociological prediction. Again, Wells's conscious attempts at psychoanalysis are frequently reducible to either physiological considerations of 'dietary and secretions'<sup>49</sup> or to a study of socio-economic factors. Wells clearly believed in the validity of this

<sup>48</sup>Anticipations, ch. 7, p. 206

<sup>49</sup>One of Wells's criticisms of Grant Allen's novel, The Woman Who Did is that: 'real women do not have spotless souls and a physical beauty that is invariably overpowering. Real women are things of dietary and secretions.' - Experiment in Autobiography, Chap. 8, ii, p. 550

latter approach for in his outline of the psychology to be practised in Utopia he writes:

Many problems that we should regard as economic come within the scope of Utopian psychology. My Utopians make two divisions of the science of psychology, first the general psychology of individuals, a sort of mental psychology, separated by no definite line from psychology proper, and secondly the psychology of the relation between individuals. This second is an exhaustive study of the reactions of people upon each other and of all possible relationships.<sup>50</sup>

and in The World Set Free he speaks, albeit somewhat vaguely, of what is now seen as the potentially deterministic rôle of psychology in society:

The next science to yield great harvests now will be psychology...Psychologists are learning how to mould minds, to reduce and remove bad complexes of thought and motive, to relieve pressures and broaden ideas.<sup>51</sup>

Apart from these more socially-oriented areas of psychology, there is much evidence to suggest that Wells was aware of most of the fundamentals of psychoanalytic theory. As a contemporary of Freud he must inevitably have imbibed many of the same germinal ideas and current modes of thinking which inspired Freud, and on some points Wells's own expression of psychoanalytical principles predates Freud's formulations. Because of his background Wells inevitably approached psychoanalysis from a biological viewpoint, his earliest appreciation of the potential developments of the science being formulated in the essay "The Limits of Individual Plasticity":

<sup>50</sup> A Modern Utopia, ch. 3, iii, p. 75

<sup>51</sup> The World Set Free, Ch. 5, viii, pp. 242-244

In our growing science of hypnotism we find promise of a possibility of replacing old inherent instincts by new suggestions, grafting upon or replacing the inherent fixed ideas. Very much indeed of what we call moral education is such an artificial modification and perversion of instinct; pugnacity is trained into courageous self-sacrifice, and suppressed sexuality into pseudo-religious emotion.<sup>52</sup>

This brief outline not only accords hypnotism the dignity of treating it as a science, a relatively new conception,<sup>53</sup> but it shows also a familiarity with the concepts of sublimation and psychotherapy. In 'Human Evolution, an Artificial Process', published the following year, Wells made suggestions which almost explicitly anticipated Jung's theory of the civilizing process and its effects upon the 'persona' and the 'shadow' of personality, while in his autobiography, published twenty-three years after Jung's work, Wells attempted to analyse himself in specifically Jungian terms.<sup>54</sup> In his early work, when he was far less confident in his understanding of the unconscious (which, at this period, he called 'the back of the mind'), Wells was tentative about ascribing glimmerings of subconscious thought to the humble Hoopdriver:

<sup>52</sup> 'The Limits of Individual Plasticity,' Saturday Review LIX (Jan 11, 1895) 89.

<sup>53</sup> In the '80's and '90's, it was still widely regarded with suspicion as a quasi-magic art, practised by charlatans. Freud studied hypnotism as a means of psychotherapy in cases of hysteria under Charcot in Paris, 1885, but on his return to Vienna found that his reports of these techniques met only with ridicule and rebuffs from his colleagues R.S. Woodworth, Contemporary Schools of Psychology (London, 1965) Chap. 9, p. 255

<sup>54</sup> Experiment in Autobiography, Chap. 1, ii, pp. 24-5

Many men have never seen their own profiles or the backs of their own heads, and for the back of your own mind no mirror has yet been invented. ...to return from this general vivisection to Mr. Hoopdriver's imaginings. You see now how external our view has been; we have had but the slightest transitory glimpses of the drama within, of how things looked in the magic mirror of Mr. Hoopdriver's mind.<sup>55</sup>

but by the time of writing Kipps he was well aware of the importance of the unconscious, even in this allegedly 'simple soul'. After his engagement to Helen Walshingham, Kipps:

...conversed, as it were, out of his superficial personality, and his inner self lay stunned in unsuspected depths within.<sup>56</sup>

Later, after Kipps has discovered his proper milieu, the simple but fulfilling life of his marriage with Ann, his 'inner life' reasserts itself, impinging briefly and inarticulately, upon his conscious self:

[Kipps] had ceased from rowing and rested on his oars, and suddenly he was touched by the wonder of life - the strangeness that is a presence stood again by his side.

Out of the darkness beneath the shallow weedy stream of his being, rose a question, a question that looked up dimly and never reached the surface. It was the question of the wonder, of the beauty, the purposeless inconsecutive beauty, that falls so strangely among the happenings and memories of life. It never reached the surface of his mind, it never took to itself substance or form; it looked up merely as the phantom of a face might look, out of deep waters, and sank again into nothingness.<sup>57</sup>

In The New Machiavelli, Remington also muses upon his inner self as distinct from the ostensible self:

In the ostensible self who glowed under the approbation of Altiora Bailey, and was envied and discussed, praised and depreciated in the

<sup>55</sup>The Wheels of Chance, Chap. 6, pp. 52-3

<sup>56</sup>Kipps, Bk. II, Chap. 3, iii, p. 217

<sup>57</sup>Kipps, Bk. III, Chap. 3, viii, pp. 449-450

House and in smoking room gossip, you really have as much of a man as usually figures in a novel or an obituary notice. But I am tremendously impressed now, in retrospect, by the realization of how little that frontage represented me, and just how little such frontages do represent the complexities of the intelligent contemporary. Behind it, yet struggling to disorganize and alter it altogether, was a far more essential reality, a selfless personal, less individualized and broader in its references....it had an altogether different system of demands and satisfactions....I see this mental and spiritual hinterland vary enormously in the people about me, between a type which seems to keep, as people say, all its goods in the window, to others who, like myself, come to regard the ostensible existence more and more as a mere experimental feeder and agent for that greater personality behind. And this back-self has its history and phases, its crises and happy accidents and irrevocable conclusions, more or less distinct from the adventures and achievements of the ostensible self....In the life of the individual it takes the rôle that the growth of philosophy, science and creative literature may play in the development of mankind.<sup>58</sup>

Early in the novel Marriage, Marjorie is shown as being aware of a seething turmoil of subconscious thoughts which do not reach the level of conscious formulation:

Poor Marjorie! She was doing her best to be sensible and she felt herself adrift above a clamorous abyss of feared and forbidden thoughts.<sup>59</sup>

while later in the novel, Trafford accumulates in his subconscious mind a reservoir of resentments against her:

If Trafford was a faithful husband he was no longer a happy and confident one. There grew up in him a vast hinterland of thoughts and feelings, an accumulation of unspoken and largely unformulated things in which his wife had no share. And it was in that hinterland that his essential self had its abiding place....At first he perceived only that he reserved himself, then there came the intimation of the question was she also perhaps, in such another hinterland as his, keeping herself from him?<sup>60</sup>

<sup>58</sup> The New Machiavelli, Bk. III, Chap. 11, pp. 311-2

<sup>59</sup> Marriage, Bk. I, chap. 2, i, p. 57

<sup>60</sup> ibid., Bk. III, Chap. 1, v, p. 419

Stephen Stratton also is assailed by his inner self as he communes with the silence after his enforced parting from Mary Justin, but here the unconscious is identified with a wider consciousness which appears to be almost synonymous with Wells's 'Mind of the Race' since it urges him from his personal, individual problems to a wider, international involvement in life:

You are not only Stephen Stratton who fell into adultery; in these silences he is a little thing and far away; here and with me you are Man - Everyman - in this round world in which your lot has fallen....Go about the world, embrace yourself with life, make use of that confusedly striving brain that I have lifted so painfully out of the deadness of matter....

'But who are you?' I cried out suddenly to the night. 'Who are you?...This is just some odd corner of my brain', I said...Yet - How did I come to have this odd corner in my brain? What is this lucid stillness?...<sup>61</sup>

It should be noted here that whereas the unconscious or subconscious self which Freud and his followers were defining was characteristically less 'noble', less laudable by current social standards, than the persona of the conscious, civilized self, the 'inner self' of Wells's characters is almost invariably seen by him as being more elevated, more worthy of emulation, more morally sound than the conscious self. This relationship with an inner self which is intrinsically 'better' is given physical form in A Modern Utopia where the narrator encounters an idealised alter ego:

The idea of an encounter with my double, which came at first as if it were a witticism, as something verbal and surprising, begins to take substance. The idea grows in my mind that after all this is the 'someone' I am seeking, this Utopian self of mine...between us there will be a strange link of essential identity, a sympathy, an understanding....

<sup>61</sup>The Passionate Friends, Chap. 7, v, p. 221-2

That I have come to Utopia is the lesser thing now; the greater is that I have come to meet myself.<sup>62</sup>

Apart from this general cognizance of an inner self, a subconscious level of experience, Wells was certainly also aware of the fundamental characteristics of the unconscious as they were known to Freud and his contemporaries. Although he did not refer to them in technical terms, he was conversant with several important aspects of psychoanalytic theory and with the close interconnections between them - with the dynamic aspect of the unconscious, reaction-formation, sublimation, symbolism, repression, hysterical conversion, parent complexes, inferiority complex and compensation, and the significance of dreams - for at times he portrayed them in his characters with the clarity of case-histories.<sup>63</sup> Because of the many derogatory criticisms centring on Wells's supposed ignorance of psychology it is worth examining briefly instances of each of these factors in order to assess the extent of Wells's psychological knowledge and particularly his treatment of psychology as a science in its own right, before considering how well this understanding of the principles of psychology is embodied in his actual characters.

Certainly, Wells was fully aware of the dynamic nature of the unconscious for he referred to the multiform, kaleidoscopic patterns and juxtapositions of subconscious thought and motive as 'mental landslides'. Trafford, one of his most articulate protagonists, describes this

<sup>62</sup>A *Modern Utopia*, Chap. 7, iii, p. 204

<sup>63</sup>Of course, none of these factors are unique to Wells's work, but taken together they argue for an awareness and intelligent understanding of current progress in psychology.

vividly as:

a new set of riddles filling my mind. Now thought swings about thought, ...now the waves of motive and conviction sweep through the crowd, and all the little drifting crystallizations of spirit with spirit, and all the repulsions and eddies and difficulties that one can catch in that turbulent confusion.<sup>64</sup>

Like Lawrence, Wells had no belief in the 'old stable ego' of character, and his awareness of a perpetual state of flux at the unconscious level of personality was certainly contributory to this, although the influence of Darwinism with its emphasis on non-static forms and continual development and change must not be discounted. The excitement of living in a growing, ever-changing world is a parabolic externalization of Wells's belief in a fluid, unconscious level of experiences.

Reaction Formation, the process whereby the energy of an impulse which is unacceptable either to the individual or to his society, is utilized in emphasising its opposite, may be seen most clearly in Wells's female characters. Ann Veronica wishes to envisage herself as a modern, emancipated woman, and hence her behaviour is flagrantly aggressive, not only towards her father, against whom she is consciously rebelling, but also towards Manning and Ramage, the suitors whom she does not wish to marry. However, when she finally commits herself to Capes, it becomes apparent that her real nature is, by contrast, clinging and submissive, and she shows a strong desire to be dominated. On admitting her love for Capes she meditates explicitly upon this volte-face:

A woman wants a proper alliance with a man, a man who is better stuff than herself. She wants that and needs it more than anything else in the world - she wants to be

<sup>64</sup> Marriage, Bk. III, Chap. 4, xiv, p. 547-8

legally and economically free, so as not to be subject to the wrong man; but only God, who made the world, can alter things to prevent her being a slave to the right one.<sup>65</sup>

Later, when Capes also is fully committed to their relationship, there is an extraordinarily revealing scene between them:

She slid her cheek down the tweed sleeve of his coat. 'Nice sleeve', she said, and came to his hand and kissed it. 'I say,' he cried, 'Look here'. Aren't you going a little too far? This - this is degradation - making a fuss with sleeves. You mustn't do things like that.' 'Why not?' 'Free woman - and equal'. 'I do it - of my own free will', said Ann Veronica, kissing his hand again, 'It's nothing to what I will do!' <sup>66</sup>

and an equally significant remark about their alpine-climbing holiday:

One of the things that most surprised him in her was her capacity for blind obedience. She loved to be told to do things.<sup>67</sup>

There are brief glimpses of a similar ambivalence in several of Wells's major characters - in Marjorie Pope, in Mr. Polly's mixed feelings after his proposal to Miriam:

For the life of him Mr. Polly could not tell whether he was fullest of tender anticipations or regretful panic.<sup>68</sup>

and again, during the wedding ceremony, when

his eyes, first fell upon the bride; the sight of her filled him with a curious stir of emotions. Alarm, desire, affection, respect - and a queer element of reluctant dislike, all played their part in that complex eddy.<sup>69</sup>

Examples of such apparently contradictory emotions are frequent in Wells's work, often expressed in understatement or epigrammatic form. George Ponderevo leaves Marion

<sup>65</sup> Ann Veronica, Chap. 11, iv, p. 274

<sup>66</sup> Ibid., Chap. 16, v, p. 367

<sup>67</sup> Ibid., Chap. 16, vi, p. 368

<sup>68</sup> The History of Mr. Polly, Chap. 6, ii, p. 122

<sup>69</sup> Ibid., Chap. 6, iv, p. 133

after breaking their engagement:

'That's over', I said to myself in the road,  
and was full of a desolating sense of relief.<sup>70</sup>

There is also, in Tono-Bungay, a humorous but none-the-less penetrating discourse by Ewart on what is now often cited as the classic case of such reaction formation - excessive prudery produced by strong but suppressed sexual desires. Ewart gleefully expounds in detail and with variations, his theory that Mrs. Grundy does not exist:

She's merely an instrument, Ponderevo.  
She's borne the blame. Grundy's a man.  
Grundy unmasked. Rather lean and out  
of sorts. Early middle age....Been  
good so far, and it's fretting him!  
Moods! ...There's Grundy in a state of  
sexual panic, for example, - 'For God's  
sake, cover it up! ...It's too exciting!  
...They must be kept apart!' Starts out for  
an absolute obliteration of everything. -  
absolute separations. One side of the road  
for men, and the other for women, and a hoard-  
ing, - without posters - between them....Music  
abolished, calico garments for the lower  
animals! Sparrows to be suppressed - ab-  
so-lutely. ...'Excuse me! There's something  
up behind that locked door! Keyhole! In  
the interests of public morality - yes sir, as  
a pure, good man - I insist - I'll look -  
it won't hurt me - I insist on looking - my  
duty - M,m,m - the keyhole.'<sup>71</sup>

Sublimation, the directing of primitive impulses into socially acceptable and useful expressions, may also be seen as operating in many of Wells's major characters, although with various degrees of success. Thus Stephen Stratton finally channels the energy of his passion for Lady Mary Justin into literary and publishing ventures, Benham strives to sublimate his unconscious desire for a perfect wife, patterned on his mother, in his 'research magnificent', and Trafford attempts unsuccessfully to redirect his passion for pure research towards the world of business before achieving a satisfying compromise in the

<sup>70</sup>Tono-Bungay, Bk. II, Chap. 4, ii, p. 226

<sup>71</sup>Tono-Bungay, Bk. II, Chap. 4, iii, pp. 228-230

pursuit of sociology. George Ponderevo expresses his pent-up drives, generated at least in part by his unsatisfied desire for Beatrice, in the building of flying machines and torpedo boats. Remington's attempts to suppress his love for Isabel are perhaps the most conspicuously doomed to failure, for Remington, like Wells, is not convinced that sublimation is always either desirable or possible. The very concept implies to him an inadequacy either in the individual or, more probably, in the society which denies him free expression of his instincts. Thus in The New Machiavelli authorial condemnation falls as much on the society which rejects Remington's alleged political gifts because of his moral non-conformity, as on the lovers themselves. Wells had already expressed a similar ambiguity of attitude in his early article, 'Human Evolution, An Artificial Process':

What we call morality becomes the padding of suggested emotional habits necessary to keep the round Paleolithic savage in the square hole of the civilized state. And sin is the conflict of the two factors - as I have tried to convey in my Island of Dr. Moreau.<sup>72</sup>

and there is no clear evidence in his work that he reached any final decision on this matter. While, in principle, he resists the moulding by society of an individual's basic instincts, particularly his sexual drives, he is also forced to realize the need for such energies to be channelled towards the evolution and further development of society. Hence in the Utopias he avoids the issue; in these ideal societies of the future,

<sup>72</sup> 'Human Evolution, an Artificial Process', Fortnightly Review, LXVI, (1896) 594

sublimation is rendered anachronistic, both because all individuals have been 'educated'<sup>73</sup> to wish to serve their society and because the community has been educated to approve of certain necessary outlets for its members' instincts.

Symbolism, also, in Wells's work is frequently used to convey a subconscious psychological meaning. William Lay wrote that in Wells's novels such symbolism denotes 'voices from that vast hinterland which reveal, to him who sees below the surface in human character, the workings of the subliminal Psyche.'<sup>74</sup> There are many examples of such symbolism, often referring to relations between the sexes, in particular the marriage relationship. Thus in Marriage Magnet, the undesirable suitor, makes two attempts to propose marriage to Marjorie, both occasions being associated with artificial settings - once near the stylised lily-pond at Lady Petchworth's pretentious garden party, and once in the artfully planned excursion to the church tower during the elaborate picnic to Friston Hanger. By contrast, Trafford's encounters with Marjorie are uncontrived, at least on his part. Once he drops, literally, from the sky, while their second encounter, again outdoors and hence in a 'natural' setting, is associated with donkey carts. This latter occasion imports a second reinforcing element of symbolism - the interlocked wheels:

<sup>73</sup>Although this term could be read as satirical, it apparently carries Wells's approval (as distinct from such words as 'suppression' or 'perversion' which connote disapproval).

<sup>74</sup>W. Lay, 'H.G. Wells and His Mental Hinterland' The Bookman (New York) XLV No. 5, (July, 1917) p. 464

Both drivers did wonderful things with wheels and reins [to avoid an oil van] and found themselves alone in the road again, with their wheels locked and an indefinite future.<sup>75</sup>

The attempted proposal in Lady Petchworth's garden entails further significant symbolism in Magnet's suggestion that he and Marjorie should go to look at the aviary, for Magnet thinks of Marjorie as a beautiful bird to be ensnared, and preserved by the cage of wedlock for his entertainment, while Marjorie's disinclination for such a view of marriage is emphasized by her reply that she hates to see birds in cages.<sup>76</sup>

Ann Veronica, too, symbolises her ambivalence about her formal engagement to Manning and her as yet unconscious desire to give herself to Capes, when she takes off Manning's ring and hands it to Capes to examine.<sup>77</sup> The most striking example of such symbolism occurs in Tono-Bungay. George is practice-flying when Beatrice's horse gallops directly in the path of the low-flying plane, just as Beatrice herself had deliberately forced her presence upon him. In this emergency George decides to soar over her, and the imagery which ensues is startlingly reminiscent of the Leda myth, with all the reinforcement of the final Yeatsian phrase:

She had almost got her horse in hand when I came up to her. Her woman's body lay along his neck, and she glanced up as I, with wings aspread, and every nerve in a state of tension, swept over her.

Then I had landed, and was going back to where her horse stood still and trembling. We exchanged no greetings. She slid from her saddle into my arms, and for one instant I held her. 'Those great wings', she said, and that was all.<sup>78</sup>

<sup>75</sup> Marriage, Bk. I, Chap. 3, vi, p. 144

<sup>76</sup> ibid., Bk. I, Chap. 2, ii, p. 65

<sup>77</sup> Ann Veronica, Chap. 12, vii, p. 294

<sup>78</sup> Tono-Bungay Bk. III, Chap. 3, v, p. 402  
c.f. W.B. Yeats, 'Leda and the Swan'.

The psychological state of repression is closely related to reaction formation and also to sublimation, but insofar as it may be considered separately there are several distinct examples of this condition in Wells's work. Again the most obvious and sustained treatments are to be found in the realm of sexual relationships, for, like Freud and the analysts of his school, Wells regarded sexual relations as exerting the greatest effect upon the individual's personality. In The Passionate Friends Lady Mary and Stephen, though both married to other partners, are nevertheless in their thoughts, committed to each other. This deeper, primary union, which survives from their youth, has been heavily repressed by the social pressures and moral requirements of their separate marriages, but it continues to erupt spasmodically, and finally with such force that it leads to Lady Mary's suicide. A similar repression is described as operating in the case of Lady Harman, whose early unconscious cravings are almost totally suppressed, even from girlhood. Her whole married life is a spiritual imprisonment because she can never escape from conventional restrictions to discover a personal fulfilment.

In a less extreme form, Miss Miniver in Ann Veronica evinces a strongly repressed attitude towards men, whom, at the conscious level, she despises and avoids, on the rationalisation that she has never yet found a man intellectually worthy of her. The inevitable tension produced by this conscious behaviour and her unconscious physical drives, is clearly evident both in her evasions of the subject and in her final outburst at Ann Veronica's

tentative enquiries about 'love and the facts of love':

Miss Miniver was highly unsatisfactory. She repeated phrases of Mrs. Goopes's: 'Advanced people,' she said, with an air of great elucidation, 'tend to generalize love. "He prayeth best who loveth best - all creatures great and small". For my own part I go about loving.' 'Yes, but men' said Ann Veronica, plunging; 'don't you want the love of men?' ... Miss Miniver looked over her glasses at her friend almost balefully. 'No!' she said at last, with something in her voice that reminded Ann Veronica of a sprung tennis racket. 'I've been through all that,' she went on after a pause... 'I have never yet met a man whose intellect I could respect. ...And think, think' - her voice sank - 'of the horrible coarseness ....Bodies! Bodies! Horrible things! We are souls. Love lies on a higher plane. We are not animals.' <sup>79</sup>

A more humorous, though no less valid, example of repression is to be found in Kipps's awkwardness at table, culminating in his desire to avoid teacups and all afternoon tea gatherings. This phobia clearly derives from the scenes of his childhood humiliation when his aunt and uncle repeatedly criticised his table-manners if he did not 'eat properly'<sup>80</sup> and, although repressed, the fear erupts at critical points throughout his life.

One of the possible results of extreme repression is hysterical conversion, a state in which severe mental conflict induces symptoms of physical disorder not traceable to any underlying organic disease. Wells shows an understanding of this comparatively rare form of repression in his description of Aunt Plessington's loss of voice. Although subconsciously aware that her Movement, in which she has so totally immersed herself, is ultimately futile and that her frantic activity is useful chiefly in compensating for her fruitless marriage, she persuades herself on

<sup>79</sup>Ann Veronica, Chap. 8, v, pp. 191-2

<sup>80</sup>Kipps, Bk. I, Chap. 1, pp. 5-6

the conscious level of the importance of her work. Subsequently she loses her voice at the strategic moment when the success of her Movement appears to be in danger.<sup>81</sup> Unconsciously, she is tired of it and wishes it to fail, thus freeing her from her obligations to it; however, she can satisfy her self-enforced sense of moral justice and duty only if it fails for some reason apparently beyond her control. Her loss of voice provides just such an excuse since it is beyond her conscious control but is under the influence of her unconscious, which thus releases her without loss of self-esteem.

It is interesting that, although apparently aware of this phenomenon of conversion, Wells may not have known the technical term to describe it, for in Kipps he explicitly designates as psychological conversion an experience of mood change which is in fact entirely different from the technical meaning of the term and more akin to the colloquial use of the word. Kipps, dining at the Royal Grand Hotel has been suffering agonies of humiliation at supposed snubs; suddenly he becomes aware that

the band, by an unfortunate accident, was playing truculent military music. The mental change Kipps underwent was, in its way, what psychologists call a conversion. In a few moments all Kipps's ideals were changed ....<sup>82</sup>

Wells was also acutely aware of the far-reaching effects of parent complexes, one of the major preoccupations of the early psychoanalysts. Some form of parent complex occurs in nearly all Wells's novels, although he denied the existence of any such emotional relationship in his own life. In his autobiography he wrote:

<sup>81</sup> Marriage, Bk. III Chap. 2, v. p. 448.

<sup>82</sup> Kipps, Bk. II, Chap. 7, vi, p. 324

I cannot detect any mother fixation, any Oedipus complex or any of that stuff in my make up. My mother's kisses were significant acts, expressions not caresses. As a small boy I found no more sexual significance in my always decent and seemly mother than I did about the chairs and sofa in our parlour.<sup>83</sup>

However, apart from sheer economic dependence upon parents, Wells describes a whole range of dependent and rebellious relations between parent and child. Ann Veronica suffers from an over-bearing father whose authoritativeness she strongly resents, but even when she has rebelled physically and socially against this by leaving her parental home, there remains a strong bond of self-imposed moral obligation which renders her, in a very real sense, dependent upon his approval. At the end of the novel, after she and Capes have married and achieved worldly success, she is still deeply affected and emotionally tense about the first visit from her father and aunt since her elopement. The following passage records the beginning of her real independence

It occurred to her that she had never seen her father dining out before, never watched him critically as an equal...It was as if she had grown right past her father into something older and of infinitely wider outlook, as if he had always been unsuspectedly a flattened figure, and now she had discovered him from the other side.<sup>84</sup>

Later, when Ann Veronica and Capes discuss the visit in retrospect, she becomes, for the first time, free to see her father and aunt objectively:

'They seem changed....They seem smaller, you know, even physically smaller', she said.

<sup>83</sup>Experiment in Autobiography, Chap. 2,v, p.79

<sup>84</sup>Ann Veronica, Chap. 17, ii, p. 385

'You've grown out of them...'...  
 Then she went on: 'To think that is my father!  
 Oh, my dear! He stood over me like a cliff;  
 the very thought of him nearly turned me  
 aside from everything we have done. He was  
 the social order; he was law and wisdom.  
 And they come here, and they look at our  
 furniture to see if it is good; and they are  
 not glad, it does not stir them, that at last,  
 at last, we can dare to have children!'<sup>85</sup>

A similar situation obtains in the Pope household, where Marjorie, her mother and sisters wait anxiously upon the irascible Mr. Pope whose whims must be respected absolutely lest the entire family be rendered wretched. Genuine communication between him and his children is unknown.

Capes voices Wells's theory of the major difficulties inherent in parent-child relationships:

'It's a perpetual trouble', he said... 'There's a sort of instinct of rebellion...it's a sort of home-leaving instinct.'  
 ...'There's another instinct, too', he went on, 'in a state of suppression, unless I'm very much mistaken; a child-expelling instinct.... I wonder....There's no family-uniting instinct, anyhow; it's habit and sentiment and material convenience hold families together after adolescence. There's always friction, conflict, unwilling concessions. Always! I don't believe there is any strong natural affection at all between parents and growing-up children. There wasn't, I know, between myself and my father....I bored him. I hated him. I suppose that shocks one's ideas....It's true....There are sentimental and traditional deferences and reverences, I know, between father and son; but that's just exactly what prevents the development of an easy friendship. Father-worshipping sons are abnormal - and they're no good. No good at all. One's got to be a better man than one's father or what is the good of successive generations? Life is rebellion or nothing.'<sup>86</sup>

<sup>85</sup> *ibid.*, Chap. 17, iii, pp. 387, 389

<sup>86</sup> *ibid.*, Chap. 16, i, pp. 357-8

However, Wells is not wholly pessimistic. As distinct from these uneasy relationships fraught with complexes, The New Machiavelli contains an account of the easy camaraderie between Remington and his father, while The Passionate Friends is written in the form of an explanatory autobiography from father to son. Stephen addresses the book to his son, as yet a child:

To one person in particular do I wish to think I am writing, and that is to you, my only son.....A day will come when you will... want to know how life has gone with me, and then it may be altogether too late for me to answer your enquiries. ...Why is it, I thought, that when a son has come to manhood he cannot take his father for a friend....Why must we all repeat things done, and come again very bitterly to wisdom our fathers have achieved before us?... Surely the time is coming...when a new private literature will exist, and fathers and mothers behind their rôles of rulers, protectors and supporters, will prepare frank and intimate records of their thought and their feelings, told as one tells things to equals, without authority or reserves or discretions, so that, they being dead, their children may rediscover them as contemporaries and friends.<sup>87</sup>

Such a parental relationship obviously carries Wells's approval also.

Wilbur Cross commented of Wells's 'small souls' that 'Some of them had acquired an inferiority complex years before amateur psychologists had picked up the phrase.'<sup>88</sup> Hoopdriver, Bert Smallways, Uncle Ponderevo and Mr. Polly all display, at some stage, diverse symptoms of an inferiority complex - indeed Kipps, Uncle Ponderevo and Polly might almost serve as case studies of such a condition.

Hoopdriver, the simplest character sketch of the timid 'little man', provides an outline for the more elaborate studies of Kipps and Polly which followed, and of all Wells's

<sup>87</sup>The Passionate Friends, Chap. 1, i, pp. 3,5,7-8

<sup>88</sup>W. Cross, 'The Mind of H.G. Wells' Yale Review, XVI (Jan, 1927) 315

apprentices Hoopdriver is certainly the most conditioned to his station and employment - his shop gestures and phrases have become so deeply ingrained in his nature that he uses them unawares. His 'Good morning, Madam' accompanied by a bow and the rubbing of hands, and followed by a knowledgeable fingering of the napery to assess its quality, would have betrayed him instantly to anyone more worldly than Jessie. Yet Hoopdriver too has his dreams and aspirations to attain respect, and spins a highly-coloured tale of his supposed South African exploits to compensate for his servility and the deeply-felt humiliation at being

just another man's hand, as I am. To have to wear what clothes you are told, and go to church to please customers and work - there's no other kind of men stand such hours. A drunken bricklayer's a king to it.<sup>89</sup>

Kipps also, through his limited education and his apprenticeship, has had a sense of humility deeply ingrained upon his native exuberance:

By the nature of his training he was indistinct in his speech, confused in his mind and retreating in his manners.... [He was taught] to repeat such phrases as 'What can I have the pleasure -?', 'No trouble, I assure you', and the like; to block, fold and measure materials, of all sorts, to lift his hat from his head when he passed Mr. Shalford abroad, and to practise a servile obedience to a large number of people.<sup>90</sup>

When, in an effort at self-improvement, Kipps attends evening classes in wood-carving, his fellow students and instructress

...impressed Kipps with a sense of inferiority that in the case of Miss Walshingham became

<sup>89</sup>

*The Wheels of Chance*, Chap. 35, p. 195

<sup>90</sup> *Kipps*, Bk. I, Chap. 2, i, p. 34; Bk. I, Chap. 2, ii, p. 42

positively abysmal. The ideas and knowledge they appeared to have, their personal capacity and freedom, opened a new world to his imagination. These people came and went with a sense of absolute assurance....He knew nothing about it at all, nothing whatever; he was a creature of outer darkness blinking in an unsuspected light. ...an inexcusable intruder in an altitudinous world. When an epigram happened, he first of all smiled to pretend he understood, and instantly suppressed the smile to show he did not listen. Then he became extremely hot and uncomfortable, though nobody had noticed either phase.

Wells describes many such agonies endured by his socially inept characters - situations which, though insignificant to others, become magnified into enormous public trials for those possessed by an inferiority complex. Kipps suffers a similar though more prolonged agony of humiliation when staying at the Royal Grand Hotel and endeavouring to obtain a meal. The whole episode, beneath its humour, is a subtle and fine study of those diverse interpretations given to each small incident by Kipps and by those whose confidence come from familiarity with their circumstances. The sequence culminates in Kipps's dinner at the Royal Grand when his stream of thoughts and sense impressions runs as follows:

His waiter went and spoke to two other waiters no doubt jeering at him. He became very fierce suddenly....the entire party on his right, the party of the ladies in advanced evening dress, looked at him....He felt that one was watching him and making fun of him, and the injustice of this angered him. After all, they had had every advantage he hadn't. And then, when they got him there, doing his best, what must they do but glance and sneer and nudge one another. He tried to catch them at it, and then took refuge in a second glass of wine....Nice lot of people these were to laugh at anyone! Women half undressed - It was that made him so beastly uncomfortable. Yes, they might look. He resolved, if they looked at him again, he would ask one of the

<sup>91</sup>ibid., Bk. I, Chap., 3, ii, pp. 66-7

men who he was staring at....<sup>92</sup>

Mr. Polly indulges in the escapist daydreams characteristic of the introvert suffering from a deep sense of inferiority, but they are more subtly rendered and all-pervasive than Hoopdriver's hasty attempts to conceal his identity on the spur of the moment. Incapable of adapting to the world about him because, in that world, he can never, with his muddled thinking and ineffectual actions, hold any position of importance, Polly lives increasingly in dream worlds where his daring, knowledge and wit mark him as a leader among men. Raknem calls Polly

A new and distinct creation in literature. His peculiarity consists in being utterly adaptable, in his having no conscience and, what is most important, in his response to beauty and literature. He is probably the first character in fiction whose flair for beauty and literature comes so completely to nothing.<sup>93</sup>

His response to literature is ~~that~~ of a starving man to food, for it furnishes him with the raw materials for his escapist daydreams and provides virtually the only sources of beauty available in the squalid drabness of the village-shop situation. Later at the Potwell Inn where natural beauty abounds, Polly's sense of inferiority vanishes, and, significantly, his escapist daydreams give place to an acceptance of this happier reality.

Uncle Ponderevo provides the extrovert equivalent of Mr. Polly. Lacking Polly's essential idealism and inarticulate response to beauty, he has the extra drive necessary to convert his dreams to reality until the odds against him become too immense. His escapism is basically

<sup>92</sup>Kipps, Bk. II, Chap. 7, vi, pp. 323-4

<sup>93</sup>I. Raknem, op. cit., pp. 171-2

a moral one, for having once deluded himself about the merits of Tono-Bungay, he has no scruples about promoting it to all possible lengths.

As an extrovert, Uncle Ponderevo repeatedly parades his would-be social superiority, one manifestation of an inferiority-complex, in his appurtenances. As the well-worn carpet-slippers had proclaimed his more humble station, so the first indication of his new social position, his silk hat, is partly a status symbol, partly a prop to compensate for his short stature. The hat symbol recurs throughout the days of success in the Tono-Bungay venture until it is finally replaced, in the last hours of ignominious flight, by a humble tweed cap.<sup>94</sup>

Uncle Ponderevo is repeatedly compared to that more famous historical extrovert who also allegedly suffered from short stature and an inferiority complex, Napoleon, partly because the comparison has become part of his own thinking about himself. Thus, when his dubious business transactions begin to recoil upon him, he tells George as he reaches for a drug:

'Stomach, George!' he said. 'I been fighting on that. Every man fights on something - gives way somewhere....Napoleon did at last. All through the Waterloo campaign, his stomach - it wasn't a stomach! Worse than mine, no end.' The mood of depression passed as the drug worked in him. His eyes brightened. He began to talk big. He began to dress up the situation for my eyes, to recover what he had admitted to me. He put it as a retreat from Russia. There were still the chances of Leipzig.<sup>95</sup>

This explicit identification of Uncle Ponderevo with Napoleon both emphasises his comparative smallness, hence rendering the more ridiculous his attempts to emulate his hero, and also, by implication, demonstrates his psycho-

<sup>94</sup> Tono-Bungay, Bk. IV Chap. 1, iv, p. 477

<sup>95</sup> ibid., Bk. IV, Chap. li, p. 465

logical sense of inferiority by the very fact that a grown man should need such identification.

Ponderevo's most grandiose declaration of his would-be superiority is the vast, ugly and useless mansion which he insists upon building at fantastic expense, and which is named, significantly, 'Crest Hill', with its 'marble staircase and my aunt's golden bed, the bed that was facsimiled from Fontainebleau.'<sup>96</sup> The Napoleon image is several times coupled with the Crest Hill motif and reinforces it. George writes of his uncle:

I found him there one day, most Napoleonic, on a little Elba of dirt....he also enraged her [Aunt Susan] by giving each bedroom the name of some favourite hero - Clive, Napoleon, Caesar, and so forth - and having it painted on the door in gilt letters on a black label.<sup>97</sup>

Uncle Ponderevo is Wells's most sustained and vivid portrait of a character seeking compensation for an inferiority complex, but even amongst his minor characters there are instances of a similar psychological state. Ann Veronica's father, Mr. Stanley, and Marjorie Pope's father are not merely stylised, irate father-figures, but are shown in retrospect as essentially 'small men' assuming an air of exaggerated authority in order to convince themselves and others of their importance as individuals. Mr. Stanley, in particular, is finally won over to accept his daughter's marriage through the Achilles' heel of his social vanity. His eagerness to profess himself a critic of modern drama and to patronize successful playwrights leads him unawares to flatter his son-in-law

<sup>96</sup> *ibid.*, Bk. III, Chap. 2, i, p. 311

<sup>97</sup> *ibid.*, Bk. III, Chap. 2, i, p. 313

who has assumed a *nom-de-plume*, while his essentially materialistic small-mindedness renders him readily susceptible to the now-wealthy and socially-competent Capes.<sup>98</sup>

Perhaps the most important example of inferiority compensation in Wells's work is that of Mr. Preemby in Christina Alberta's Father. His story is almost a classic case history of a small personality seeking grandeur in the belief that he is a reincarnation of Sargon, the King of Kings; indeed Jung himself considered Wells's portrayal of Mr. Preemby as a scrupulously accurate treatment of such a condition.<sup>99</sup>

In the nineteenth-century novel the use of dreams as a revelation of character was already known before the publication of Freud's work, The Interpretation of Dreams, although usually the interpretation was left vague and implicit, a technique appropriate to both a realistic approach and the generation of an effective element of mystery. Charles Kingsley, not generally noted for deep psychological insights, put the dream sequence in Alton Locke to considerably effective and novel use, for Alton's feverish dream serves three purposes in its context.<sup>100</sup> It is used basically to analyse the subconscious motives beneath Alton's actions and emotional entanglements, and this in turn acts as a therapeutic experience, bringing him to full realization and acceptance of the darkest places of his inner self; but it also serves as a prophetic pointer towards the

<sup>98</sup> Ann Veronica, Chap. 17, i, pp. 380-1; Chap. 17, ii, p. 385

<sup>99</sup> C.G. Jung, Collected Works, Volume VII, pp. 173, 178-9

<sup>100</sup> C. Kingsley, Alton Locke, (London, 1889) Chap. 36

deliberately didactic 'answer' which Kingsley wishes to put forward in the novel. A similar, though less extended use of the feverish dream is to be found in Great Expectations.<sup>101</sup>

Wells, however, made comparatively little use of the dream motif either as an instrument of psychological exploration or as a means of describing subconscious motives, although he can scarcely have been unfamiliar with Freud's essay which appeared in English translation in 1900. In The Wheels of Chance, Hoopdriver's dream shows that Wells was already aware of the power of the unconscious in dreams to reconsider and deal with material from sense impressions which have already been forgotten, ignored or suppressed by the conscious mind. Bechamel's behaviour towards Jessie, which Hoopdriver's own embarrassment at the encounter had obscured in his conscious thought, reasserts itself in his dream, is reconsidered, and finally leads to the conclusion, still within the framework of the dream, that Bechamel is not in fact the brother of 'The Young Lady in Grey', as had been declared, but is abducting her. On waking, Hoopdriver forgets the details of this dream

but the curious dream conviction that the girl was not really the man's sister, would not let itself be forgotten.<sup>102</sup>

The extravagant Marjorie Pope's dream following her engagement to wealthy Mr. Magnet and her newly aroused

<sup>101</sup> Charles Dickens, Great Expectations, Chap. 57

<sup>102</sup> The Wheels of Chance, Chap. 13, p. 62

feelings for Trafford, indicates that Wells was fully aware of the main postulates of this area of Freud's work - indeed the dream symbolism is rather too obvious:

In the night time, Marjorie had a dream that she was flying around the world in a monoplane with Mr. Trafford as a passenger.

Then Mr. Trafford disappeared and she was flying about alone....And then, she wasn't clear how, the engine refused to work until her bills were paid and she began to fall and fall and fall towards Mr. Magnet. She tried frantically to pay her bills. She was falling down the fronts of skyscrapers and precipices - and Mr. Magnet was waiting for her below with a quiet kindly smile that grew wider and wider and wider...<sup>103</sup>

It would seem, however, that if Wells was fully conversant with current progress in the study of dreams, he nevertheless remained somewhat sceptical of its validity. In The Food of the Gods he shows subconscious states which the waking person suppresses, becoming dominant in dreams, and simultaneously pokes gentle fun at the excesses of dream interpretation.

The night after his conversation with Redwood, Mr. Bensington could sleep scarcely a wink. He did seem once to get into a sort of a doze, but it was only for a moment, and then he dreamt he had dug a deep hole into the earth and poured in tons and tons of the food of the gods and the earth was swelling and swelling ...

That, of course was a ridiculous dream, but it shows the state of mental excitement into which Mr. Bensington got and the real value he attached to his idea, much better than any of the things he said or did when he was awake and on his guard. Or I should not have mentioned it, because as a general rule it is not, I think, at all interesting for people to tell each other about their dreams.

By a singular coincidence, Redwood also had a dream that night, and his dream was this:-

<sup>103</sup> Marriage, Bk. I, Chap. 3, p. 141

...Ridiculous of course, but that too shows - That either dream is to be regarded as in any way significant or prophetic beyond what I have categorically said, I do not for one moment suggest.<sup>104</sup>

But this digression adds virtually nothing to the characterization of either Bensington or Redwood; it is used rather as a humorous interlude in the story and as an illustration of the extent to which the two eminent scientists are immersed in their research.

A more interesting use of the dream is that which besets the obsessed Hapley. He believes that the moth which torments him, alike in his waking hours and in his dreams, is the ghost of Pawkins, once his competitor in entomological research, so that 'while he was awake he longed for sleep, and from sleep he awoke screaming'.<sup>105</sup> Wells seems to have been more intrigued by dreams resulting from unusual psychic experiences than by the dreams of 'ordinary' people. In 'The Stolen Body' Mr. Vincy has co-operated in an experiment of psychic research involving his friend, Bessel's attempts to project an apparition of himself through space to Vincy's apartment by sheer force of will. Vincy later dreams twice, in rapid succession, that Bessel is in great distress and is trying to contact him.<sup>106</sup> This premonition is found to have been justified and hence the dream is seen as having conveyed a genuine psychical message. Again, in 'Under the Knife', the narrator, on the eve of a major operation, dreams of Regent's Park as a cemetery on the day of Resurrection:

<sup>104</sup> The Food of the Gods, Bk. I, Chap. 1, iv, p. 14

<sup>105</sup> 'The Moth', Short Stories, p. 378

<sup>106</sup> 'The Stolen Body', Short Stories, p. 1069

I had dozed into a dream, and the tide of my thoughts washed up a vision of the resurrection. <sup>107</sup>

The most original of the dreams in Wells's fiction is the magnificent sweep of the same narrator's dream experience under the chloroform of his operation. This vision of a disembodied soul journeying forth through the solar system to the 'Outer Universe' and beyond, is as powerful in its impact as the vision of the dying world in 'The Time Machine'. Indeed, in its cosmic scope and philosophical overtones it is more reminiscent of the *Palinode* to Chaucer's *Troilus and Cryseyde* or of Dante than of anything in modern literature. Moreover, even within the immense sweep of such a sequence, Wells succeeds in keeping the dream integrally related to the narrator's state of mind prior to his operation, so that the whole experience impresses us as being fundamentally 'true'. The protagonist's first thought on being told of the need for an operation was that few of his acquaintances would regret his death or consider it as more than an inconvenience. He has long felt remote from, and emotionally uncommitted to, the few friends remaining from his youth:

I suppose I had been cold-blooded or undemonstrative - one perhaps implies the other. It may be that even the capacity for friendship is a question of physique.... as I walked home that afternoon the emotional side of my imagination was dormant. I could not pity myself, nor feel sorry for my friends, nor conceive of them as grieving for me. <sup>108</sup>

<sup>107</sup> 'Under the Knife' *Short Stories*, p. 405

<sup>108</sup> *ibid.*, p. 403

The 'dream' under the chloroform echoes and expands upon this theme on a cosmic scale, for throughout his vast journey, as the earth and all recognizable places fade and become insignificant in the immensities of space, the feeling that assails and chills him is that of his isolation from any social intercourse - the terrible loneliness of his position:

Suddenly feeling came back to me - feeling in the shape of overwhelming terror: such a dread of those dark vastitudes as no words can describe. Were there no other souls, invisible to me as I to them, about me in the blackness? or was I indeed, even as I felt, alone? Had I passed out of being into something that was neither being nor non-being?<sup>109</sup>

This is the most intricate dream sequence in Wells's writing which actually elucidates the subconscious levels of the character involved, and, unlike the other examples, it also involves a therapeutic element, for the dream experience of terrifying solitude removes the emotional block which has hitherto held the narrator back from commitment to personal relationships. On returning to consciousness after his operation, he relates:

I perceived suddenly that the dull melancholy of half a year was lifted from my mind.<sup>110</sup>

Apart from his treatment of the general aspects of the science of psychology, as outlined above, Wells was certainly deeply interested in theories of sexual conduct and here too his approach is not merely that of the diletante, or even of the close observer, but that of the

<sup>109</sup> ibid., p. 419

<sup>110</sup> ibid., p. 422

scientist eager to observe, to propound a general theory from his observations and predict future behavioural patterns at both the personal and the social level. Freud's work had led him to place very great, even, many believed, a disproportionate emphasis on sex as the primary motivating force in determining behaviour, but although Freud's germinal work on the subject, Three Contributions to the Theory of Sex, was first published in German in 1905, and translated into English in 1910, it was long before its influence on the English novel was seen directly. Peter Coveney has traced its effect on the novel of childhood<sup>111</sup> where the acceptance of sexuality as a dominant motive was perhaps slowest, but the implications of Freud's theories concerning the extent of adult sexuality, met initially with scarcely less resistance. Wells's writings show a progressive awareness of sex as a primary motivating force, but it would seem from his autobiography, that the increasing preoccupation with sexual problems in his novels was less the result of a conversion to Freudian psychology than the reflection of his own personal relationships which he was beginning to analyse with much interest. Looking back on his life, he wrote:

The second main system of motivation other than the intellectual in the working out of my personal destiny, has been the sexual system....The sexual complexes constitute the only other great and continuing system. I suspect the sexual system should be at least the second theme when it is not the first, in every autobiography, honestly and fully told. It seizes upon the essential egoism for long periods, it insists upon a prominent rôle in the dramatizations of the persona and it will not be denied.<sup>112</sup>

<sup>111</sup> P. Coveney, The Image of Childhood (Harmondsworth, 1967) Ch. 11

<sup>112</sup> Experiment in Autobiography, Chap. 7, 1, pp. 418-9

and of his writings about sex:

They arose very directly out of my personal difficulties. They were essentially an eversion, a generalization, an attempt to put my case in the character of Everyman. In my earlier writings the topic of sex is conspicuously absent, I felt then that I knew nothing about it that could possibly be communicated.<sup>113</sup>

The scientific romances avoid the subject of sexual relations without too great a sense of sidestepping the issue, but in the early novels, The Wheels of Chance and Love and Mr. Lewisham, the omission of such discussion is noticeable as a deficiency. In the former novel, Hoopdriver's attraction to 'the girl in grey' is as chaste and remote as a mediaeval knight's devotion to a lady seen from afar, and even in his dreams there is no suggestion of suppressed sexual desire. In Love and Mr. Lewisham the major theme is that of the schema and the conflicts arising between a career and social and family pressures. Lewisham's sexual drives are not represented directly or explicitly in the novel, even in authorial commentary.

In The Sea Lady, where there is every opportunity for a discussion of Chatteris's sexual motivation, the attraction of the 'sea lady' is nevertheless couched in abstract terms—'beauty', 'the magic of beauty', 'other dreams'.

In A Modern Utopia Wells again avoided posing sexual problems, this time not by ignoring them altogether but by assuming them to have been already 'solved'. Like Plato he took the purely intellectualist solution, and described a utopia in which sexual attractions are freely accepted and freely gratified, at least between the Samurai, without arousing any personal or social tensions. Wells

<sup>113</sup> ibid., Chap. 7, iv, p. 467

was already aware, at the time of writing A Modern Utopia, of Havelock Ellis's study of the psychology of sex, Man and Woman, to which he explicitly refers.<sup>114</sup> It is therefore surprising that he seems to ignore the problems inherent in group marriages such as those of the Oneida Community - problems of fixation, monopolization, loyalty to a single mate, jealousy and power complexes, all of which Havelock Ellis considers. Indeed, although he later came to realise and to portray many of these complicating factors, Wells still retained the system of free love as a theoretical ideal towards which society might attempt consciously to evolve. He seems to have been unaware at this stage of the energy of motivation generated by ungratified desires and condemned all suppressions and prohibitions as unreasonable, without realizing that they were as much part of man's inheritance from 'the ape and the tiger' as the characteristics he had described in Dr. Moreau. Only gradually did he come to understand the primacy of fixation, possessiveness, dominance and jealousy, not merely as artificially imposed social taboos but as innate instincts in the human psyche. He later wrote:

I set myself to examine the credentials of jealousy. At some time I had read Lang and Atkinson's Human Origins ...and the book illuminated me greatly. I realised the role played by primitive taboos. ...I saw the history of expanding human associations as essentially a successive subjugation of the patriarchal group to wider collective needs, by jealousy-regulating arrangements.... The family, I declared, was the inseparable correlative of private proprietorship. It embodied jealousy in sexual life as private ownership embodied jealousy in economic life.<sup>115</sup>

<sup>114</sup> A Modern Utopia, Chap. 6, v, p. 181, footnote

<sup>115</sup> Experiment in Autobiography, Chap. 7, iv, p. 476

In The Days of the Comet has as its major theme a study of jealousy and the other evil passions it spawns in the lives of individuals and of society, but again Wells knows of no means to overcome it by an act of will. He can only juxtapose the portrait of a cleansed and healed society where such passions no longer exist - a restatement of the utopian situation - where sexual relationships are treated with a sensitive casualness epitomised in the ménage à quatre which is the solution offered to Nettie and Leadford's simultaneous love for each other and for two others.

In Ann Veronica Wells made a more realistic attempt to deal with the sexual situation as it was, rather than merely with an 'ideal society'; this indeed was the reason for the scandal it occasioned amongst Wells's contemporaries for in this novel were portrayed facets of the female character and an awareness of female sexuality not previously considered with such frankness in the English novel. The aspects of Ann's character which caused most offence to contemporary readers and which also indicate the most insight on Wells's part, were, firstly, her frank confession of curiosity about sex itself and, secondly, her rôle as aggressor in the relationship with Capes. Discussing the question with Miss Miniver she professes no false modesty:

'Yes, but men,' said Ann Veronica, plunging; ....Don't we rather humbug about the coarseness? All we women, I mean,' said she.... 'We pretend we never think of everything that makes us what we are....I haven't a scrap of this sort of aversion.'<sup>116</sup>

<sup>116</sup>Ann Veronica, Chap. 8, v, pp. 191-2

Later, Ann Veronica proceeds to declare the attraction which Capes holds for her, even before she has any indication of his feelings towards her, an attraction which, moreover, is triggered at first by frankly physical stimuli:

She looked down at him and saw the sunlight was gleaming from his cheeks and that all over his cheeks was a fine golden down of delicate hairs...She became aware of his presence as she had never been aware of any human being in her life before. She became aware of the modelling of his ear, of the muscles of his neck...She found she was trembling at his nearness and full of a thrilling dread that he might touch her. ... Then he got up and left her. She had a feeling at his departure as of an immense cavity, of something enormously gone; she could not tell whether it was infinite regret or infinite relief....

But now Ann Veronica knew what was the matter with her.<sup>117</sup>

Besides Ann's realisation and acceptance of her physical attraction towards Capes, Wells notes also the ambiguous emotion which such a realisation elicits - 'infinite regret or infinite relief'. More interesting, and almost certainly unique for its time, is Wells's clear indication of the presence of a male principle in his heroine's personality. Immediately after this scene in which she finds herself so attracted by the 'fine golden down of delicate hairs' on Capes's cheeks, and the 'muscles of his neck', there follows a vignette of Ann Veronica both delighting in and wondering at her own physical characteristics, principal among which are 'the soft flow of muscle under her skin' and on 'the back of her arm...the faintest down of hair'.<sup>118</sup> Later, in prison, and genuinely repentant for what she sees as her 'smirched innocence', she admits explicitly to a streak of maleness in her character:

<sup>117</sup> Ann Veronica, Chap. 8, vii, pp. 197-8

<sup>118</sup> ibid., Chap. 8, viii, pp. 198-9

'I'm not a good specimen of a woman. I've got a streak of male. Things happen to women - proper women - and all they have to do is to take them well. They've just got to keep white. But I'm always trying to make things happen. And I get myself dirty...'<sup>119</sup>

Here Wells is certainly formulating the now accepted but then highly unorthodox principle of the combined active and passive, male and female, elements within any individual personality.

The New Machiavelli adds little in terms of insight into sexual relationships and, despite the descriptions of Remington's childhood, ignores any element of infantile sexuality. The novel does reassert strongly, however, the primacy of sex as a motivating force in adult life. In one of her letters to Remington after their separation on grounds of adultery, Margaret describes him as 'not really a civilized man at all'<sup>120</sup> and his sexual passions once aroused fully by Isabel, lead him to forsake his elaborate plans for the Endowment of Motherhood and the introduction of fine thinking into politics. He remains a primordial character, and despite his awareness of the anomaly between these primary urges and his idealism, is never, in practice, prepared to sacrifice the former. Wells also shows in this novel a perceptive realization of the need for social sanction which lies deep in the nature of the sexual drive itself. Before the attraction between Remington and Isabel has become publicly known, they consider the opposing values involved in their relationship:

We wanted quite intensely to live together and have a child, but also we wanted very

<sup>119</sup> ibid., Chap. 11, i. p. 269

<sup>120</sup> The New Machiavelli, Bk. IV, Chap. 3, v, p. 556

many other things that were incompatible with these desires....It wasn't as if we could throw everything aside for our love and have that as we wanted it. Love such as we bore one another isn't altogether, or even chiefly, a thing in itself - it is for the most part a value set upon things. Our love was interwoven with all our other interests; to go out of the world and live in isolation seemed to us like killing the best parts of each other; we loved the sight of each other engaged finely and characteristically, we knew each other best as activities ....we wanted to share a home and not a solitude.<sup>121</sup>

When, eventually, they do decide to ignore the opinions of their society, their defiance emphasizes both the strength of their passion for each other and its subsequent failure, for once forced into premature retirement in Italy they lose their previously dominant concerns and interests, and hence all that held them together intellectually. Their two-level love has been reduced to a one-level relationship. William Lay concludes that this makes The New Machiavelli

...the most tragic of all his novels and makes it the greatest argument for the reconsideration by society of some of its rigid restrictions upon marriage.<sup>122</sup>

Ironically, Remington, earlier in the novel, had already described just such a desecration of love in a youthful affair with Mrs. Larrimer.<sup>123</sup>

The Passionate Friends marks a return to the theme of In the Days of the Comet - sexual jealousy as a destructive element in human relationships as long as these are pontificated upon by society. Lady Mary Justin has married for the same reasons which motivated Nettie in the earlier novel to choose Verrall in preference to Leadford - the attractions of a secure social position and wealth, when these are set against the prospect of hardship and uncertainty.

<sup>121</sup> *ibid.*, Bk. IV, Chap. 2, ii, pp. 488-9

<sup>122</sup> W. Lay, 'The Marriage Ideas of H.G. Wells', Bookman (New York) XLV No. 6 (Aug, 1917) 611

<sup>123</sup> The New Machiavelli, Bk. II, Chap. 2, viii, p. 251

However, the ramifications of this choice and of the jealousy motif are elaborated more subtly and intricately in the later novel, and the Wellsian ideal state is not merely ushered in by a deus ex machina device, but is more realistically hammered out as a theoretical hope in the minds of Stephen and Mary. The novel is virtually a moralistic discussion of the initial assumptions held by Stephen and by his society in general:

It had never occurred to me that there was any other way of living except in these voluntary and involuntary mutual servitudes in which men and women live and die....Far more than Mary I was accepting the conventions of our time. It seemed to me not merely reasonable but necessary that because she loved me she should place her life in my youthful and inexperienced keeping, share my struggles, and the real hardships they would have meant for her, devote herself to my happiness, bear me children, be my inspiration in imaginative moments, my squaw, helper and possession through the whole twenty-four hours of every day...and I was still amazed in the depths of my being that she did not reciprocate this simple and comprehensive intention. I was ready enough, I thought, for equivalent sacrifices.<sup>124</sup>

Stephen is eventually led to realize that a new and better society can evolve only when man has overcome his uncritical acceptance of the fact that 'the servitude of sex and the servitude of labour are the twin conditions upon which human society rests today'.<sup>125</sup> In contrast to this 'servitude of sex', Mary allegedly embodies, despite her apparent subjection to society,

the very prototype of that sister-lover, who must replace the seductive and abject womanhood, owned, mastered and deceiving, who waste the world today.<sup>126</sup>

In The World Set Free, published the following year, Wells suggests that the comparative freedom of the world-

<sup>124</sup>The Passionate Friends, Chap. 4, iii, pp. 84-5; and Chap. 4, vi, p. 99, c.f. also Chap. 4, viii, p. 103

<sup>125</sup>ibid., Chap. 6, vii, p. 162

<sup>126</sup>ibid., Chap. 12, iii, p. 383

state is but a first step in the evolution of a more distant and more ideal future state in which men and women will be freed altogether from the traumas imposed by their sexuality. Karenin, one of the intellectual leaders of the new world-state, expounds this hope to the poet, Kahn, who has been extolling the importance of the sexual emotions:

The power that has brought men to these high places...and which beckons us on towards the immense and awful future of our race, is riper and deeper and greater than any such emotions.... All through my life - it has been a necessary part of my work - I have had to think of this release of sexual love and the riddles that perfect freedom and almost limitless power will put into the soul of our race.... This sexual excitement, this love story, is just a part of growing up and we grow out of it.... We carry an excessive burthen of sex and sexual tradition still, and we have to free ourselves from it...I do not care a rap about your future - as women. I do not care a rap about the future of men - as males. I want to destroy these peculiar features. I care for your future as intelligences, as parts of, and contributions to, the universal mind of the race. Humanity is not only overspecialized in these matters, but all its institutions, its customs, everything exaggerate, intensify this difference. I want to unspecialize women.... I do not want to go as we go on now, emphasising this natural difference; I do not deny it, but I want to reduce it and overcome it....<sup>127</sup> Men and women have to become human beings.<sup>127</sup>

The Wife of Sir Isaac Harman also deals with the theme of jealousy but it is more concerned to present and explain the figure of the suffragette. Wells later remarked that in this novel

I tried to explain to myself and my readers the suppressions and resentments that might lead a gentle woman to smash a plate-glass window.<sup>128</sup>

<sup>127</sup>The World Set Free, Chap. 5, vii, pp. 235-7

<sup>128</sup>Experiment in Autobiography, Chap. 7, iv, p. 485

Thus, although Wells seems to have read little of Freud's work at the time of writing his major novels he apparently arrived independently at many of the ideas held by the Continental psychologists about sexual motivation and behaviour. In his autobiography, written later than any of the novels discussed above, he analyses as objectively as possible his own sexual motivations and, as a result of this self-scrutiny, reaches the following conclusions:

I am disposed to think, on the strength I admit, of my one only personal experience, that for the normally constituted human being there must be two contrasted types of phase, fixation upon an individual as one end of the series and complete promiscuity of attention and interest as the other ....We are not monogamic by nature, or promiscuous by nature, but some of us happen to get fixed for longer or shorter periods....These are matters not within the control of will or foresight, they happen to us before willing begins. That, I think, gives some expression to these alternations of fairly strict loyalty, such as I observed before my marriage, with my subsequent infidelities, which phase again gave place to a second, less powerful fixation and that to a second discursiveness.<sup>129</sup>

Yet although Wells believed this oscillation between fixation and promiscuity to be so central in his own experience, he never succeeded in portraying it vividly in any of his characters - possibly because the novels discussed ~~were~~ all written before his own views were clarified.

With this exception, Wells's novels present sexual relations primarily as he understood or was aware of them from his own personal experiences and direct observation of life, rather than as the direct outcome of his reading of Freudian psychology. It is thus perhaps a measure of his perceptive and scientific approach to the subject

<sup>129</sup> ibid., Chap. 7,ii, p. 425

that the analogues of so many of Freud's ideas may be traced in Wells's work.

Whatever Wells's shortcomings may have been in the portrayal of emotions there is another area of psychological study in which his novels were certainly not deficient - the description of conscious mental and intellectual activity. Raknem, whose opinion of Wells as a psychological novelist is by no means favourable overall, considers that:

If Wells was no psychological novelist in the ordinary sense of the word, he was a great analyst of the mental activities of man. He probably excelled most of his contemporaries in such analyses. He was anxious to dissect and explain the mental activities of his characters.<sup>130</sup>

In the novels, this preoccupation with the conscious self as it develops during intellectual activity is expressed most obviously in the extent to which his characters continually meditate on, soliloquise about, or debate issues. Wells was particularly concerned with the formative effect of problems on characters, and those protagonists who do not debate within themselves or discuss with others, do not grow or develop - indeed, in Wells's opinion, they scarcely live. In his autobiography he explains this concentration on debate as follows:

I was becoming more and more interested in the interior conflict, this controversial matter stewing and fermenting in all our brains, and its ventilation in action. There is no satisfactory device I knew for exhibiting a train of reasoning in a character unless a set of ideas similar to those upon which the character thinks exists already in the reader's mind. Galsworthy's Soames thinks for pages, but he thinks along recognized British lines. He does not grapple with ideas new and difficult both for the reader and for himself. I could not see how, if we were to grapple with new

<sup>130</sup> I. Raknem, op. cit., p. 325

ideas, a sort of argument with the reader, an explanation of the theory that is being exhibited, could be avoided. I began therefore to make my characters indulge in impossibly explicit monologues and duologues.<sup>131</sup>

Ann Veronica develops as a person when she begins to consider problems intellectually - both her own personal situation and wider social issues - and, whatever we may feel about the appropriateness of her over-long soliloquies, it is chiefly through these that we know her as a lovely and developing personality.

Ann Veronica is an educated young woman and hence her extensive periods of cerebration are not incredible, but in portraying his 'little men' Wells had first to solve the problem of presenting the motivations of their conscious self - without exceeding the bounds of realism. In Kipps he did not, I think, reach a fully satisfactory solution, and Kipps is therefore seen too much from the 'outside', almost wholly through his words and actions. Indeed from the outset we are warned that 'by nature of his training he was indistinct in his speech, confused in his mind and retreating in his manners'.<sup>132</sup> Five years later, however, in Mr. Polly, Wells achieved a brilliant and unique presentation of the mental processes of a non-intellectual character. The richness of Polly's thoughts and his intellectual growth to a realization of certain fundamental values in life and character, are vividly depicted, yet rendered entirely credible, by the whimsical invented words and the 'mistakes' in expression which are the legacy of his background. His avidity for reading books of all kinds has

<sup>131</sup> Experiment in Autobiography, Chap. 7, v, p. 498

<sup>132</sup> Kipps, Bk. I, Chap. 2, i, p. 34

endowed him with a varied, if ill-understood, vocabulary and it is through this vehicle that Wells is able to indicate the richness of Polly's mental activity without making him appear unnaturally eloquent. As he passes from a state of agitated dyspepsia to one of tranquil contentment and fulfilment, his thought patterns follow a corresponding path, expressed in the change from near-unintelligible exclamatory outbursts and heated irrelevant interjections to the more meditative and gentle tone of discourse epitomised in his final discussion with the Fat Woman on the subject of sunsets:

...the mind of Mr. Polly, exalted and made tender by this atmosphere, sought gently, but sought, to draw together the varied memories that came drifting, half-submerged, across the circle of his mind.<sup>133</sup>

Many of Wells's later characters are required to voice explicitly their author's views on the importance of the rational process, both for the individual and for the race, and are therefore necessarily represented as being, themselves, intellectuals prone to exposition. Remington pins his hopes for socio-political reform on a return to 'fine thinking' and writes interminable essays whenever he is not verbally expounding his political views. The Traffords spend six months in Labrador discussing their own situation and their potential social rôle, until Trafford finally returns to England to propound his own equivalent of Remington's 'fine thinking':

'It is natural, I suppose, for people to be eager for results, personal and immediate results....But the thing that matters for the race, Marjorie, is a very different thing; it is to get the emerging thought process clear and to keep it clear - and to let those other hungers go.'<sup>134</sup>

<sup>133</sup> The History of Mr. Polly, Chap. 10, iii, p. 277

<sup>134</sup> Marriage, Bk. III, Chap. 4, xvi, p. 561

The Research Magnificent is largely a discussion and monologue by the ostensible writer about Benham's quest; Mr. Britling Sees It Through begins as a factual narrative but ends in dialogue and monologue, while The Soul of a Bishop is even more expository. Joan and Peter lapses into dialogue towards the end, and finally in The Undying Fire, Wells reverts frankly to the form of the Platonic dialogue with characters who are the clearly recognizable counterparts of those in the Book of Job, and who recite their arguments almost liturgically along the pattern laid down by their Hebrew predecessors.

There are several reasons for this apparently undue emphasis on cerebration and exposition in Wells's novels. Partly it would seem that he saw a clear causal link between mental processes and behaviour, the aspect of character in which he was most interested, and therefore he was concerned to trace the lines of thought which resulted in certain actions; but like many of the leading psychologists of his time - those of the Behaviourist school - he was not prepared to dabble extensively in the workings of the unconscious. Despite his acknowledgement of its existence, Wells believed that an undue preoccupation with the subconscious mind could lead only to a stultifying introversion, an opting out of social responsibilities. In The New Machiavelli Remington meditates upon the relative concern which should be accorded the physical activities of life and the motivations of the subconscious or pre-conscious self - the 'mental hinterland':

Everyday affairs, and whatever is made an everyday affair, are transactions of the ostensible self, the being of habits, interests, usage. Temper, vanity, hasty reaction to irritation, personal feelings are their substance. No man can abolish his immediate self and specialize in the depths; if he attempts that he simply turns himself into something a little less than the common man. He may have an immense hinterland, but that does not absolve him from a frontage. That is the essential error of the specialist philosopher, the specialist teacher, the specialist publicist. They repudiate the frontage; claim to be pure hinterland.<sup>135</sup>

In making this criticism, Wells seems to have foreseen in part the effect which a preoccupation with the unconscious would have upon the neo-Georgian novel under the influence of Virginia Woolf, Dorothy Richardson and James Joyce. The concentration of these novelists on the subconscious mental processes of a few characters produced a different kind of novel - one in which the characters were studied in depth as individuals, usually in comparative isolation from their background and from society. Although Wells later became interested in the work of these writers,<sup>136</sup> he would scarcely

<sup>135</sup> The New Machiavelli, Bk. III, Chap. 1, viii, pp. 344

<sup>136</sup> Wells quickly realized that Dorothy Richardson's novels 'mark an epoch in the technical development of the novelist's art, a real and successful thrust towards a new reality and intensity', -(c.f. Experiment in Autobiography) Chap. 8, iii, p. 557.) Wells also appreciated Joyce's work at a time when few others did. Arnold Bennett records that: 'The fame of James Joyce was founded in this country mainly by H.G. Wells, whose praise of A Portrait of the Artist As a Young Man had considerable influence upon the young...Indeed he commanded me to read it and to admire it extremely'. - A. Bennett, Things That Have Interested Me., 2 series, (London, 1923) p. 191.

have considered writing such a novel himself for his aims were utterly contrary to theirs - his stress was upon the role of the individual in society, not in isolation, and on the individual as he might become rather than as he was at present. Insofar as he was concerned with complexes, repressions, and phobias, it was not in order to study them for their own sake but rather to overcome them as speedily as possible. Indeed Wells apparently had no great faith in the progress of psychology, even in its own sphere. Stephen Stratton, also a largely Wellsian spokesman, pronounces upon the limitations of this science in no uncertain manner:

It seems to me one of the most extraordinary aspects of all ~~that~~ literature of speculative attack which is called psychology, that there is no name and no description at all of most of the mental states that make up life. Psychology, like sociology, is still largely in the scholastic stage, it is ignorant and intellectual, a happy refuge for the lazy industry of pedants; instead of experience and accurate description and analysis it begins with the rash assumption of elements and starts out upon ridiculous syntheses. Who, with a sick soul, would dream of going to a psychologist?<sup>137</sup>

In levelling this criticism at psychology, Wells clearly considered that it should be treated as a science, for his condemnation centres precisely on its failure, as he believed, to follow the scientific procedures of the experimental method - accurate description and analysis of empirical results - and its propensity to produce, instead, elaborate theories based on insufficient evidence. Later study has tended to support this verdict, for in the early years of the century, psychology was bedevilled with copious theories which made predictions too vague and too ambiguous to admit of clear experimental proof or disproof.

<sup>137</sup>The Passionate Friends Chap. 7, 11, pp. 210-11

The major reason, however, for the apparent psychological limitation of Wells's characters lies in his confessed propagandist purpose. In his autobiography he admitted:

The general reader to whom I addressed myself cared no more for finish and fundamental veracity about secondary things of behaviour than I. I did not want to sweep under the mat for crumbs of characterization, nor did he want me to do so. What we wanted was a ventilation of the point at issue.<sup>138</sup>

Necessarily then, Wells was concerned primarily to show his characters as thinking their way conclusively to some particular conviction which he himself wished to propound. Like Shaw, the other great literary reformer of his period, Wells was not content merely to describe psychological principles at work in his characters, but was more interested in using such understanding to manipulate and convert his readers to his own particular sociological beliefs. By making his characters think, discuss and actually develop their ideas during the course of the novel, he induced his readers to follow the same intellectual process, often without their realizing or resisting it. Above all, he wanted to stimulate his readers to think, not merely to sweep them along on a surge of emotional response. Inevitably therefore his characters seem often to be correspondingly poor in emotional appeal. If this is a flaw in his art - and indeed it must be partly considered one - it must also be seen within the perspective of his overall intention as expressed in his non-fictional works.

<sup>138</sup> Experiment in Autobiography, Chap. 7, v, p. 497

It would seem, then, that Wells brought to the characterization of his novels a concept of mankind and of individuals which arose directly from his scientific training and which, other things being equal, was such as to militate against the description of an individual's emotions and to concentrate instead on wider social issues. With psychology as a theoretical study, Wells seems to have been as au fait as any novelist of his time, and allusions, either direct or implicit, to many of the concerns of twentieth-century psychology may be found throughout his novels; but in general he fails to realize his characters sympathetically and emotionally because this was neither his intention nor his interest. With few exceptions his characters are subsidiary to his sociological purpose, as he himself freely conceded:

In effect in my hands the Novel proved like a blanket too small for the bed, and when I tried to pull it over to cover my tossing conflict of ideas, I found I had to abandon questions of individuation....I had very many things to say and....if I could say one of them in such a way as to get my point over to the reader I did not worry much about finish.<sup>139</sup>

We may well criticise this purpose as the basis for literature, but within the frame of his avowed intention Wells's characterization is more than adequate and often rises to considerable heights. Almost never are his characters totally flat, even when they are little more than mouth-pieces for Wells's own theories, the reason for this being, in the majority of cases, Wells's scientific background and outlook, which could produce a novel perspective, an added dimension or an unexpected comment and insight into an otherwise predictable passage of propaganda.

<sup>139</sup>Experiment in Autobiography, Chap. 7, v, pp 496-7

## Chapter 9. The Character of the Scientist

Apart from these general aspects of Wells's characterization, there was one class of character whose conception was particularly influenced by Wells's scientific background - the figure of the scientist - and it is worth tracing the portrayal of scientists throughout his work in some detail since, as has been seen in the Introduction, previous studies of the scientist as a figure in literature had, with one exception, been rudimentary.

Wells's early attempts at describing scientists were not entirely successful either. Dr. Nebogipfel of 'The Chronic Argonauts' seems at first to be drawn as an exaggerated alchemist figure, his face that of the sunken-eyed fanatic:

His aquiline nose, thin lips, high cheek-ridges and pointed chin, were all small and mutually well-proportioned; but the bones and muscles of his face were rendered excessively prominent and distinct by his extreme leanness. The same cause contributed to the sunken appearance of the large, eager-looking grey eyes, that gazed forth from under his phenomenally wide and high forehead.... It seemed to be great beyond all preconceived ratio to the rest of his countenance. Dimensions, corrugations, wrinkles, venation, were all alike abnormally exaggerated. Below it his eyes glowed like lights in some cave at a cliff's foot. It so overpowered and suppressed the rest of his face as to give it an inhuman appearance almost to what would otherwise have been an unquestionably handsome profile. The lank black hair that hung unkempt before his eyes served to increase rather than to conceal this effect, by adding to unnatural altitude a suggestion of hydrocephalic projection, and the idea of something ultra human was furthermore accentuated by the temporal arteries that pulsed visibly through his transparent yellow skin.<sup>1</sup>

<sup>1</sup>'The Chronic Argonauts' reprinted in B. Bergonzi, op. cit. Appendix, p. 190.

It seems as though Wells was here drawing heavily on the traditional picture of the alchemist, for Nebogipfel's demeanour is closely related to Frankenstein's; only from Wells's later work do we realize that this description of Dr. Nebogipfel whose name, as Bergonzi points out, means 'Promised Land'<sup>2</sup> - in this case the land or time of the future for he specifically refers to himself as "a man born out of his time" - is really closer to Wells's concept of man of the future than to a figure from the past. In "Man of the Year Million" he describes imaginary, more highly evolved members of the species, the increase in whose brain development has demanded a greater proportion of brow and cranium to house it:

Eyes large, lustrous, beautiful, soulful;  
above them, no longer separated by  
rugged brow ridges, is the top of the  
head, a glistening hairless dome, terete and  
beautiful; no craggy nose rises to disturb  
by its unmeaning shadows the symmetry of  
that calm face, no vestigial ears project;  
the mouth is a small, perfectly round  
aperture, toothless and gumless, jawless,  
unanimal, no futile emotions disturbing its  
roundness as it lies, like the harvest moon,  
or the evening star, in the wide firmament  
of the face.<sup>3</sup>

The mention of the harvest moon is reminder that the same description is not inapplicable to the Grand Lunar, also a more highly evolved species in the Wellsian canon than twentieth century man, or to the Martians of The War of the Worlds.

Apart from his physical appearance, Nebogipfel embodies another traditional characteristic of the scientist - devotion to his research at the expense of physical

<sup>2</sup>B. Bergonzi, op. cit., p. 35

<sup>3</sup>'Of a Book Unwritten', Certain Personal Matters, p. 167. This essay contains a modified description of 'The Man of the Year Million' published in The Pall Mall Budget (16 Nov., 1893)

comfort and social discourse. He is a recluse, like the alchemist in his cave, evoking similar suspicions from his neighbours who believe he is a 'war-lock', and hoards his secret to himself, not, as the alchemists did, for private financial gain, but in order to find in a future age the fulfilment which his benighted contemporaries deny him.

In Wells's later development of 'The Chronic Argonauts' The Time Machine, Nebogipfel is modified almost beyond recognition. The Time Traveller, far from being the exotic figure of the earlier draft, has become the epitome of ordinariness, so much so that he lacks even a name to identify him as an individual, as he shuffles in his carpet slippers around his almost stultifyingly cosy drawing room or devotes himself with relish to his dinner and cigar. There are at least two possible reasons for this change. In the interim between 'The Chronic Argonauts' and 'The Time Machine' Wells had apparently decided that the brief glimpse of a man of the future was worthy of further development, for, two years before 'The Time Machine' he published 'Man of the Year Million'; presumably Wells may have felt that he could not exploit this same theme yet further in 'The Time Machine', though he was to return to it in a varied form in Anticipations (1901). A more important factor, however, in influencing Wells to change his scientist figure between the two versions was probably his realization that one of the most effective methods of creating a sense of realism and thereby inducing a suspension of disbelief in his reader was to people an exotic story with characters of the most conventional kind, and to enclose an improbable happening within an envelope of

the most mundane setting. After "Man of the Year Million", Wells's scientists become closer to the commonplace than those found in almost any earlier writings. In 'The Time Machine' the sense of wonder is reserved for the events which befall the Time Traveller; he himself remains, apart from his having designed the machine itself, almost a passive spectator, provoked to action only in self defence. He is thus predominantly the scientist-as-observer, in the same tradition as Verne's scientists, although even his brief explanatory conversation with his friends expresses his personality to greater effect than do the tedious expositions of Verne's Professor von Hardwigg.

In The Wonderful Visit, Wells's next novel, we have a third picture of a scientist, different from both the mysterious alchemist and the passive observer. Dr. Crump typifies the worst aspects of scientific pretension; indeed he is almost a parody of the bigot, refusing to see whatever does not fit into a preconceived theory, and brutally chopping data to fit into his Procrustean system. The vignette of Crump's confrontation with the angel's wing is a classic example of his obstinate prejudices and preconceptions:

'Spinal curvature?' muttered Dr. Crump....  
'No! abnormal growth....Curious....Redupli-  
cation of the anterior limb - bifid coracoid  
....curious integumentary simulation of  
feathers. Dear me. Almost avian....  
curious malformation this is!'<sup>4</sup>

I think it is clear that Crump cannot have been modelled on Huxley whom Wells continued to admire. What does seem probable is that he embodies Wells's resentment against the two professors who succeeded Huxley as his teachers at

<sup>4</sup> The Wonderful Visit, xiii, pp. 150-1

South Kensington. In his autobiography, comparing Hudd, the professor of geology, with Huxley, Wells writes:

That flame of interrogation which kept Huxley's biological course molten and moving, burnt not at all in the geological course, and except for the bright moments when our own individual curiosity lit up a corner - and went out again, - we were confronted by a great array of dark, cold assorted facts, lifelessly arranged and presented.<sup>5</sup>

Such an attitude is both the cause and effect of Crump's approach.

Between The Wonderful Visit and Dr. Moreau came the volume of short stories The Stolen Bacillus and other Incidents. Most of these stories add little to any developing portrayal of the scientist; the bacteriologist of the title story is an amiable eccentric who turns out to have more presence of mind than seemed at first probable, but he is basically only a variation on the comic figure. The astronomer at the Avu observatory who is attacked, apparently by some unknown species of bat, is even less distinguished, for he is of interest in the story only as the object of the strange creature's attack. His reactions do change credibly from interested curiosity to fear, to the expression of helpless rage and finally to a 'curious sinking sensation' as he regains consciousness, but these potentially interesting experiences are not explored in any psychological depth, and the characterization as a whole remains shallow. 'The Diamond Maker' returns to the idea of a the scientist as a fanatic, disregarding personal comfort, even necessities, and social relationships for the sake of his experiment, but unlike Nebogipfel, his motives are not untainted by avarice, and in the unexpected difficulties which attend his scientific 'success', we have

<sup>6</sup> Experiment in Autobiography, Chap. 5,iii, p. 228

a foretaste of The Invisible Man, published two years later. In 'The Remarkable Case of Davidson's Eyes', also in this volume, there is a brief but interesting juxtaposition of two contrasting attitudes found among scientists. On the one hand is the narrator who has learnt and assimilated a certain systematic view of the universe and refuses to consider anything which seems to conflict with such a picture. This attitude seemed to Wells a wholly unscientific approach for it rejected as superstition any breach in its watertight world view. Contrasted with him is Professor Wade, who is not seen directly but whose views are relayed to us by the disapproving narrator. Wells contrives to play off one attitude against the other and to elicit our sympathy for Wade, despite our inherent impulse to question his assertions. Here, as in the character of Crump, Wells is satirising the supposedly scientific attitude which he believed he had encountered in the rote-learning and water-tight classifications of Professor Judd's geology classes.

Also in this volume of short stories there appeared two attacks on beliefs commonly held in relation to science. Of these, 'The Lord of the Dynamos' is one of Wells's most perfect short stories. Apart from the moral aspects of nineteenth-century industrial society which Wells is emphasising here, the character of Holroyd is interesting in its own right as a brief study of the ruthless, insensitive man who has become almost automatised, if not brutalised, by his machine until he is unable to see past it. 'He doubted the existence of the Deity but accepted Carnot's cycle and he had read Shakespeare and found him

weak in chemistry',<sup>6</sup> and he uses machines as a means of bulldozing others into his way of thinking ('Holroyd liked a nigger help because he would stand kicking - a habit with Holroyd.'<sup>7</sup>). Despite the extreme differences in style 'The Lord of the Dynamos' might almost be seen as a parable relating to Butler's 'Book of the Machines', though it portrays an even more dangerous state of captivity. Holroyd has contrived to enslave not only Azuma-zi's body but his mental and spiritual allegiance as well. The ironical question posed by the story is: whose bondage is the greater - that of Azuma-zi who comes voluntarily and devotedly to serve the machine for reasons which are at least partly aesthetic and almost wholly selfless, or that of Holroyd who has become so mechanised in his outlook that he has involuntarily, and without realizing it, become a slave to his own machinery? His half-sarcastic theological lecture to Azuma-zi - "Look at that!" said Holroyd; "where's your 'eathen idol to match 'im? ...Kill a hundred men. Twelve percent on the ordinary shares," said Holroyd, "and that's something like a Gord."<sup>8</sup> - is not entirely jest; his personal ideals are only too clearly the attributes of the dynamo - power and profit. When Azuma-zi flings him to his death on the live terminals, he performs the literal extension of what Holroyd has already become symbolically - a part of the machine. We have seen that for Wells the machine, or any scientific apparatus, was not an end in itself, as it was for Kipling, but only a useful servant; Holroyd provides the terrible moral illustration of the dangers inherent

<sup>6</sup> 'Lord of the Dynamos' Short Stories, p. 351

<sup>7</sup> ibid., p. 351

<sup>8</sup> ibid., p. 354

in the mechanistic view.

Yet another story in this same collection 'The Moth', satirises in only slightly less macabre fashion, a dangerous trait of the false scientist - the desire for glory, and the concomitant rivalry, extended to the point of obsession between colleagues. However small the rewards of publication and recognition amongst one's co-workers may seem to the uninitiated, to the scientist the desire for such fame can become a ruling passion, directing, and perhaps ruining his life. 'The Moth' is one of the few instances in which Wells explicitly considered the psychological effect of circumstances on his characters. Hapley is motivated not only by his desire for esteem amongst entomologists but, and this is by far his major concern, by hatred of his rival, Pawkins, Science becomes for him a means to his one end of destroying the reputation of Pawkins, and his apparent devotion to research is in fact only his way of providing ammunition for his antipathy.

For twenty years he had worked hard, sometimes far into the night, and seven days a week, with microscope, scalpel, collecting-net and pen, and almost entirely with reference to Pawkins. The European reputation he had won had come as an incident in that great antipathy.<sup>9</sup>

Pawkins's death leaves Hapley's life with a void which nothing can fill - nothing, that is, except Pawkins himself, and in Hapley's deranged mind Pawkins does indeed return to fill the gap. All attempts to divert Hapley's attention by amusement fail dismally, until finally Pawkins assumes for him the guise of a rare, perhaps unique, moth whose capture becomes an obsession, even as he teeters on the

<sup>9</sup> 'The Moth' Short Stories, p. 368

brink of realising, with half his mind, that the moth is an illusion. His awkward reply to the Vicar who, naturally, fails to see 'his' moth is more illuminating than he knows: "The eye of faith is no better than the eye of Science".<sup>10</sup> Wells seems to have been deeply aware of the danger to the mind when science, or indeed anything, assumes the status of a fanatical obsession, but in 'The Moth' much of the effect of this potentially important study is lost through the humorous telling which detracts from its seriousness, until one suspects that Wells is virtually only playing with the idea. None of these early portrayals of the scientist has the depth which he was to achieve in his later work, but they hint at the studies of the perverted scientist which followed.

In Dr. Moreau, the picture of a scientist is given in much greater length and depth. This novel has already been discussed with reference to its mythical qualities. We have seen that Moreau is portrayed not only as a man, but also as an allegorical figure, representing in part the process of evolution itself. As a scientist, he displays that devotion to science for its own sake which Wells believed to be the only true scientific attitude and on which he later tried to pattern his ideal societies. Moreau has no thought of financial gain or even of fame; he is motivated solely by the desire to succeed for his own satisfaction in the experiment he has conceived. However he is also the scientist untouched by ethical considerations; his experiment is his religion and his only morality is that dictated by the material he observes; no emotional considerations carry any weight in determining his behaviour.

<sup>10</sup> ibid. p. 373

It is because his ethics have become in fact those of the evolutionary process that he succeeds as a symbol as well as a person; he embodies all the violence and arbitrariness of a "nature red in tooth and claw", "so careful of the type she sees,/so careless of the single life."<sup>11</sup> It is easy to be led into regarding Moreau as the type of the scientist in this novel - and indeed this induced some critics to see the novel as a criticism of Huxley and all biologists - but such an assumption ignores the importance of the contrast which Wells has deliberately arranged within the novel by the juxtaposition of Prendick and Moreau. Prendick is also a scientist, a past student of South Kensington, and it is his quiet observation of the scenes on the island which balances the excesses of Moreau and Montgomery. Prendick is the type of the earnest, self-effacing research worker whose original ideas are few and limited, who in fact may fail to grasp a new concept at first, but who considers it and weighs it, not merely in isolation but in relation to the rest of life - to morality and humanity and the dictates of social conscience. Moreau, on the other hand, is still the scientist-as-alchemist, not only in his physical appearance, which is reminiscent of Nebogipfel, but also in his secretiveness and retiring habits. He thus embodies the attitude which Wells was later to denounce explicitly as being most detrimental to science and to world co-operation.

Before leaving this succession of 'bad' scientists, Wells portrayed one more example. Griffin, the invisible man, is his most complete study of the pretensions of

<sup>11</sup> Alfred Tennyson, In Memoriam, lv.

'false science'. Like Moreau, Griffin is larger than life both as a character, and in his allegorical role. He is a modern Faustus, whose career he follows in some detail, and in his invisibility he also partakes of the aura of folk story and myth, standing as a whimsical inversion of 'The Emperor's New Clothes' fable, in that his clothes are visible but he is not. Like Faustus, Griffin apparently began as an honest student, but soon desired too eagerly the material benefits which he believed his researches would bestow. The language in which he relates these aspirations to Kemp is characteristically Marlovian:

'To do such a thing [become invisible] would be to transcend magic. And I beheld, unclouded by doubt, a magnificent vision of all that invisibility might mean to a man - the mystery, the power, the freedom'.<sup>12</sup>

Almost immediately these aspirations beget a selfishness, a bourgeois mania for financial gain which degrades the would-be transcendent scientist. Already he has ceased to serve science and wants it to serve him; his common humanity has become deadened by a megalomaniac desire for power and profit:

'I robbed the old man - I robbed my father. ...the money was not his and he shot himself....I went to bury him, My mind was still on this research and I did not lift a finger to save his character....I did not feel a bit sorry for my father. He seemed to me to be a victim of his own foolish sentimentality.'<sup>13</sup>

Like Faustus, Griffin fails to realize that his supposed superiority has begun to diminish him by humanitarian standards, just as, believing that his desire for power is justified because the lives of common people are purposeless, he fails to see the barrenness of his own life.

<sup>12</sup>The Invisible Man, Chap. 19, p. 124

<sup>13</sup>ibid. Chap. 19, p. 125, Chap. 20, p. 127

Contempt becomes his habitual attitude towards others, and what he regards as their stupidity provokes his rage yet further:

"By Heaven, Kemp, you don't know what rage is!...to get some fumbling, purblind idiot messing across your course. Every conceivable sort of silly creature that has ever been created has been sent to cross me."<sup>14</sup>

Again like Faustus, his unspecified but grandiose plans for exploiting his invisibility give way to cheap conjuring tricks; the scene with Marvel resembles nothing so much as that of Faustus at the Pope's banquet. He promises Marvel, "I will do great things for you. An invisible man is a man of power." but he is soon reduced to gloating over petty theft:

"I could take my money where I found it. I decided to treat myself to a sumptuous feast and then put up at a good hotel and accumulate a new outfit of property. I felt amazingly confident."<sup>15</sup>

When these proposed triumphs fail to eventuate, his rage becomes a mania. As with Faustus, the ~~/~~corruption of the best in him (his genius) gives way to the worst, and he becomes a ruthless and virtually inhuman madman, whose only goal is to institute a reign of terror. However, unlike Marlowe, Wells does not trust to a supernatural scheme of punishment; Griffin's nemesis springs inevitably from his own actions and attitudes. The things he reaches for recede before his Tantalus-like grasp; cold, hungry, pursued, and in dire danger of being run over, he remains unrepentant even at death. But Wells wreaks a further and perhaps more severe punishment on Griffin, one which Faustus was not forced to endure. Unlike Moreau, Griffin is, from the first, presented as faintly absurd,

<sup>14</sup> ibid., Chap. 23, p. 166

<sup>15</sup> ibid., Chap. 23, p. 164

and the suspicion of this is never fully overcome even in the scenes of his 'reign of terror' and the final brutal chase. It is not easy to be sure how far this was intended by Wells as a further level of meaning in the story and how far it resulted from his exuberant inability to pass by an opportunity for the vivacious situational humour which the particular circumstances of this story offered, but it seems not a strained interpretation to see it as an extension of the warning already inherent in 'The Moth' - the insanity to which obsession with an evil motive potentially leads. To condemn Griffin out of his own mouth is damning enough, but to render him, as well, a semi-comic figure is a greater and more humiliating indictment. In this story, too, as in Dr. Moreau there is a foil to Griffin. Dr. Kemp is the counterpart of Prendick - though he carries more authorial approbation. He is the capable man of science, alert, open-minded, and conceding that his moral and social responsibilities are primary considerations. His cunning and what, in other circumstances might seem rank brutality - the decision to spread powdered glass on the roads in order to catch the bare-footed Griffin - is tempered, within the context of the story, by the urgency of the situation, and made to appear justified.

Up to this point in his work, Wells's scientist-protagonists, with the exception of the Time Traveller, who, as we have seen, is not fully individualised, have been increasingly reprehensible characters. Griffin stands as the nadir of any concept of a scientist and it would seem therefore that the young Wells had scant respect for the profession. One might question how sincere was

his admiration for Huxley when he repeatedly portrayed scientists as immoral, inhuman sadists who are ultimately seen to be as mean and foolish as the most petty of mortals. However it must also be realized that in all these cases where scientists are reviled, Wells's condemnation is aroused precisely because they are not acting as 'true' scientists, but are prostituting their scientific knowledge for other purposes. They act from greed, from hatred or from a desire for self-aggrandisement but never in the selfless pursuit of truth within the framework of social responsibility, and certainly never in the attitude which Huxley advocated - that of sitting down humbly before the facts like a little child.<sup>16</sup>

Having thus castigated the false practitioners, Wells turned to the glorification of the true scientist; but first there came two intermediate studies, interesting because of their ambiguity.

In one sense Mr. Lewisham can barely be considered a scientist at all since he never attains to the heights of research or even to his first degree, but he is the first of Wells's science students, modelled on his own days at South Kensington, and as such he was hailed in Nature.<sup>17</sup> Lewisham's story resembles Wells's own experiences in several details, apart from the basic setting of his student years - the conflict between his studies and an incipient romantic entanglement, membership of a student

debating society, and the attractions apparently offered

<sup>16</sup> h. Huxley (ed.) The Life and Letters of Thomas Henry Huxley (New York, 1901) I, p. 239.

<sup>17</sup> 'In one of his latest works, Love and Mr. Lewisham, Mr. Wells has...for the first time given the Royal College of Science the dignity of literary recognition.' E.R. Lankester, Nature, LXV (No. 1689) Supplement (March 13, 1902) iii c.f. Experiment in Autobiography, Chap. 5, iii, pp. 232-3

by the humanities to truant science students who frequented the Dyce and Foster Reading Rooms instead of attending practical classes.<sup>18</sup> Lewisham is interesting here, in a discussion of Wells's scientists, chiefly in a negative sense; he supplies the type, not of the evil scientist, but of the student who lacks the necessary drive and single-mindedness to qualify. His most outstanding characteristic is his unmitigated ordinariness and thus his early aspirations, embodied in the Schema, are, from the beginning rendered powerless by the commonplace elements of his personality. His succumbing to the first diversion which offers any real interest, his inability to cope in encounters with attractive members of the opposite sex, are ill omens for the years of more serious temptations at university and he duly falls before them. However, the surprising and hence the most interesting feature of the novel is Wells's ambivalence about Lewisham's final situation. Having eventually relinquished all ambitions for a career in research, he has come to see his mission in life in terms of his child-to-be, his contribution to the future of the race. As he weighs the alternatives:

His eyes came back to the Schema. His hands shifted to the opposite corners and he hesitated. The vision of that arranged Career, that ordered sequence of work and successes, distinction and yet further distinctions, rose brightly from the symbol. Then he compressed his lips and tore the yellow sheet in half, tearing very deliberately. He doubled the halves and tore again, doubled again very carefully and neatly until the Schema was torn into numberless little pieces. With it he seemed to be tearing his past self. 'Play', he whispered after a long silence. 'It is the end of my adolescence,' he said, 'the end of my empty dreams'....<sup>19</sup>

<sup>18</sup> cf. *Experiment in Autobiography*, Chap. 5, iii, pp. 232-3.

<sup>19</sup> *Love and Mr. Lewisham*, Chap. 32, p. 517

This final decision by Lewisham is recorded without authorial comment and the question therefore arises as to how far Wells endorsed his character's decision. On the one hand it seems an abrogation of any belief in the validity of a scientific career. Yet the chapter is entitled decisively 'The Crowning Victory', and in fact we have never been led to believe very strongly in Lewisham's aspirations. Does Wells reject a career in science for Lewisham because of Lewisham's own deficiencies in intellect and character, or because he has deeper doubts about the benefits of such a career per se? After the series of novels and short stories in which the scientist figure is never portrayed in a wholly favourable light, and often in quite the reverse, we might well suspect that we are intended not only to endorse Lewisham's decision but even to feel that he may be too noble for such a dubious profession. Yet later in his career Wells came to regard scientists as being almost the only hope for the future of an otherwise benighted mankind.

The anomaly is continued in Wells's next novel, The First Men in the Moon. One of the most successful scientific romances, it anticipates many of the hopes and fears of the space age. The study of Cavor, the man who discovers how to make and use the revolutionary substance, cavorite, would seem to imply an ambiguous attitude, still common in our own day, towards the scientist and his rôle in society. As a character, Cavor partakes of nearly all the positive qualities of the scientist - devotion to his work for its own sake (Cavor, one of the first 'absent-minded professors' in literature, is, to Bedford's comic disgust,

untainted by any desire for financial gain), sacrifice of time, money and bodily comfort, even to the ultimate sacrifice of his life, for his research. Yet although this cheerful Cavor, with his apparently harmless eccentricities of behaviour, seems far removed from the sinister Moreau or the vicious Griffin, he is potentially more dangerous to society than they, for, unsuspected behind this naïve façade, there lurks an attitude quite as ruthless as theirs. Cavor is prepared to sacrifice not only himself but others too, if necessary, for the success of his experiment. After the explosion at his house during the first attempts to produce cavorite, he merely remarks of his assistants, presumed dead:

'My three assistants may or may not have perished. That is a detail. If they have, it is no great loss; they were more zealous than able, and this premature event may be largely due to their joint neglect of the furnace.'<sup>20</sup>

Later in the novel, the irresponsible and moneyseeking Bedford betrays a similar attitude towards the unfortunate boy who has disappeared in the cavorite sphere. The parallelism of the two incidents cannot be accidental. A moral question is being posed: Is Cavor's callousness, which arises from his single-minded devotion to the pursuit of science, any less reprehensible on that account than the obviously immoral and financially-motivated Bedford's, and if not, what are we to think of a science which apparently encourages, if it does not directly induce, such a frame of mind in Cavor?

Cavor also epitomises the trained scientific observer, recording accurately and without emotional bias. Even when he is being hunted by the Selenites he does not cease

<sup>20</sup> The First Men in the Moon, Chap. 2, p. 31

to record with a stub of pencil on a fragment of paper:  
 '...a different sort of Selenite altogether....They have  
 larger brain cases - much larger....'<sup>21</sup> Such an attitude,  
 which is presented as an integral part of Cavor's scientific  
 training, seems at first wholly admirable, but concerning  
 this trait too Wells raises an unanswered query. Cavor  
 observes the social organization of the Selenites and reports  
 on the methods whereby the young Selenites are conditioned  
 so subtly and completely for their pre-ordained careers  
 as to be completely unaware of the fact. Yet his only  
 apparent emotion while describing this system, which cannot  
 but seem abhorrent to the reader, is the most naïve wonder  
 at its ingenuity and efficiency:

So also he [the conditioned] Selenite loves his work  
 and discharges in perfect happiness the duty that justifies  
 his being. And so it is with all sorts and conditions of  
 Selenites - each is a perfect unit in a world machine.<sup>22</sup>

Wells can hardly be endorsing an attitude which extends  
 tolerance and lack of bias to the point where no moral  
 judgments at all seem appropriate, for this was Moreau's  
 position; yet when Cavor does admit to some instinctive  
 distaste at the sight of the conditioning process as  
 practised amongst the Selenites, he immediately apologises  
 for this lapse from scientific objectivity and expresses a  
 hope that he will learn in due course to appreciate these  
 methods.<sup>23</sup> Thus Cavor may be seen in one sense as Wells's  
 most subtle and complete attack on the scientist, for while  
 few scientists would willingly identify themselves with  
 Moreau or Griffin, many might fail to detect in Cavor any-

<sup>21</sup> *ibid.*, Chap. 18, p. 181

<sup>22</sup> *ibid.*, Chap. 23, p. 237

<sup>23</sup> *ibid.*, Chap. 23, p. 241

thing other than a wholly admirable scientific approach to life.

Wells's next novel to include a study of a scientist was The Food of the Gods, and it is also the first to suggest whole-hearted approval of such a figure. Bensington and Redwood, the two scientists who stumble upon the secret of Herakleophobia, retain, for much of the novel, the initial impression we have of them as faintly ridiculous little men, the epitome of ordinariness, who have had greatness thrust upon them because of their esoteric research into apparently irrelevant topics. Despite their research ability, they are accurately and succinctly assessed by Cossar as:

'Clever chaps...but no initiative whatever. I shall have to spend the whole night seeing they do what they know perfectly well they ought to have done all along. I wonder if it's research that makes 'em like that?'<sup>24</sup>

On the other hand, Cossar himself, an engineer who stands for the practical as opposed to the purely theoretical scientist, is wholly endorsed throughout. It is he who sees the potential of the 'food' and, while fully aware of its possible dangers, refuses to yield to the small-minded reactionaries who wish to prevent its production and to enslave the giant children. Nevertheless it is Redwood and his son who, at the end, are permitted the vision of a better world under the leadership of the young giants, and such a vision is granted only to those whom Wells considered the pure in heart, the trusted prophets of the future. The final view of Redwood is clearly intended to elicit our approbation. Young Cossar, the

<sup>24</sup> The Food of the Gods, Bk. I, Chap. 3, iii, p. 69

leader of the giants, acknowledges his wisdom:

'We are here, Brothers, to what end? To serve the spirit and the purpose that has been breathed into our lives. We fight not for ourselves - for we are but the momentary hands and the eyes of the World. So you, Father Redwood, taught us.'<sup>25</sup>

In The Days of the Comet contains only a brief mention of Parload, Leadford's scientist friend who was apparently modelled on Wells's fellow student, Richard Gregory, in physical appearance and in other particulars; but three years later Wells published Tono-Bungay where, for the first time, a scientist becomes the protagonist of a full-length realistic novel and is treated in detail as the developing character of a serious Bildungsroman. Although the novel has been valued chiefly for its commentary on the social and intellectual climate of late Victorian and Edwardian England, the treatment of George himself marks a new event in the growth of the novel - the inclusion of science and the scientist as the central subject of literature.

It is interesting that, for most of the novel, George does not function as a scientist at all, and this may partly justify the apparently chaotic conglomeration of material in the novel; yet, at the end, he is held up to us as the dedicated pursuer of scientific Truth. Where and why does the change take place and does it reflect a corresponding change in George's character? As a student, George resembles Wells himself in his somewhat dilettante approach to study once the first flush of enthusiasm has died down. Like Wells he lacks the earnestness and application to endure sheer routine, and casts around for other interests. However, after a period of immersion

<sup>25</sup> ibid., Bk. III, Chap. 5, iii, p. 305

in his uncle's financial exploits, he turns to research in physics and aeronautics in order to understand and perfect his glider. The reason for this renewed interest in science is not that George has changed, but rather that the subject is now sufficiently interesting to him to hold his attention and secure his disciplined dedication in a way that the abstract syllabus of his student days had failed to do. George's career thus follows a familiar pattern - the diligent fervour of the young, adolescent student, striving to attain university entrance, the slackening of self-discipline when the new freedom and varied interests of a university environment are encountered, the subsequent falling away from his studies and the belated return of the mature man who can summon self-discipline at will, since, having tasted most possible diversions he can forsake them without difficulty. Wells himself trod the same path; Lewisham had followed it but failed to take the final step and Wells had seemed not to criticize his apparent shortcomings; George's penultimate stage is almost identical with Lewisham's university career:

...London took hold of me and Science which had been the universe, shrank back to the dimensions of tiresome little formulae compacted in a book.<sup>26</sup>

Yet even at this stage George begins to realize that the faults of the system lie in the teaching methods rather than in the subject.

If I had been trained in research - that ridiculous contradiction in terms - should I have done more than produce additions to the existing store of little papers with blunted conclusions, of which there are already too many?<sup>27</sup>

<sup>26</sup> Tono-Bungay, Bk. II, Chap. 1, ii, p. 136

<sup>27</sup> Ibid., Bk. II, Chap. 1, vi, p. 165

When he returns to scientific research, he brings with him something of the spontaneity and zest for work which are his uncle's chief assets. Science is no longer merely a disciplined curbing of all other interests and a dogged attention to duty, but a highly desirable 'mistress' to be pursued with passionate devotion and eagerness. George develops this simile at length, in terms reminiscent of the classical invocation of the Muses:

Scientific truth is the remotest of mistresses. She hides in strange places, she is attained by tortuous and laborious roads, but she is always there! Win her and she will not fail you; she is yours and mankind's for ever. She is reality, the one reality I have found in this strange disorder of existence.... Things grow under your hands when you serve her, things that are permanent as nothing else is permanent in the whole life of man. That, I think, is the peculiar satisfaction of science and its enduring reward.<sup>28</sup>

This passage is almost certainly intended as a prelude to that in the last chapter where George contrasts the ephemeral material world with the enduring reality which he identifies with science:

Sometimes I call this reality Science, sometimes I call it Truth. But it is something we draw by pain and effort out of the heart of life, that we disentangle and make clear... I see it always as austerity, as beauty. This thing we make clear is the heart of life. It is the one enduring thing. Men and nations, epochs and civilizations, pass, each making its contribution. I do not know what it is, this something, except that it is supreme.<sup>29</sup>

This assertion seems at first wholly sincere - Wells's unreserved admiration for the values of science thus conceived; surely here at least there can be no ambiguity. Yet there is also a cold shaft of irony at the heart of the passage, for the symbol of this penetrating drive is wholly inhuman,

<sup>28</sup> *ibid.*, Bk. III, Chap. 3, i, pp. 373-4

<sup>29</sup> *ibid.*, Bk. IV, Chap. 3, iii, p. 539

bereft of any moral consideration - it is George's destroyer, 'stark and swift, irrelevant to most human interests.' George's own description of its passage through the water is fraught with ambivalence. While seeming wholeheartedly to approve, he simultaneously sows seeds of doubt and condemnation: 'Through the confusion something drives, something that is at once human achievement and the most inhuman of all existing things.'<sup>30</sup> Nor should we ignore the stress on the very name, 'destroyer'; it is not merely a battleship, or a submarine, but quite definitely a destroyer and Wells was clearly aware of the symbolism, for Marion, who had virtually destroyed George's early career, was of the family Ramboat.

Wells's next qualified scientist is Capes in Ann Veronica, but Capes never becomes a major figure in the novel, and what we do know of him bears little relation to his career as an F.R.S. Eventually Wells, perhaps unable to visualize in sufficient detail how the life of a research biologist might significantly contribute to his society, causes Capes to shrug off his scientific career, apparently without regret, and follow in Wells's own steps to discover a literary vocation.

Wells's next and last major novel to portray a scientist as protagonist is Marriage. Here he explores the problems of Trafford, one of his most idealized scientists, at a thoroughly human level - problems which had not previously been considered in any detail in literature except in George Eliot's fine portrait of Lydgate. Whereas George Ponderevo had remained basically a detached figure, Trafford is a warm personality, involved in

<sup>30</sup>ibid., p. 539

close relationships, enjoying friendships and devoted to his family. His difficulties arise not from any incompetence or boredom with his research, but from the conflict between his work and his social obligations which he fully acknowledges. At the beginning of the novel he is already more mature than Lewisham or George Ponderevo, and finds his research fascinating and fulfilling. If, after the birth of his first daughter, he seems to waver in his career and wonders whether he has deprived Marjorie unduly of his time, this doubt arises from a wave of tenderness which Wells fully endorses as evidence of his deep humanitarianism, and not from any disenchantment with his research. Wells describes in considerable detail the ways in which tensions build up between Trafford, dedicated to his work, and his wife Marjorie, who fails to understand why the demands of his research should not be always subsidiary to her claims upon his time. Her amazement when Trafford first returns late to her from the laboratory is vividly and perceptively described.<sup>31</sup> A sequence of such scenes and tensions begins to strain Trafford's formerly placid nature:

It is only in romantic fiction that a man can work strenuously to the limit of his power and come home to be sweet, sunny and entertaining. Trafford's preoccupation involved a certain negligence of Marjorie, a certain indisposition to be amused or interested by trifling things, a certain irritability....But while Marjorie shrank to the dimensions of reality, research remained still a luminous and commanding dream. In love one fails or one wins home, but the lure of research is for ever beyond the hills. Every victory is a new desire. Science has inexhaustibly fresh worlds to conquer.<sup>32</sup>

<sup>31</sup>Marriage, Bk. II, Chap. 2, iii, pp. 285-7

<sup>32</sup>ibid., Bk. II, Chap. 3, i, p. 300

When Trafford is finally forced by the financial pressures of marriage and Marjorie's extravagance to abandon his research in crystallography for industrial investigation, it is a genuine sacrifice on his part, engendering a feeling of resentment against Marjorie, and leaving a void in his life which, only after long consideration of his social responsibilities is he enabled to fill:

The conflict of aims that had at last brought Trafford from scientific investigation into business, had left a little scar of hostility. He felt his sacrifice. He felt he had given something for her that she had no right to exact....Unconsciously he had become a slightly jealous husband. He resented inattentions and absences. He felt she ought to be with him and orient all her proceedings towards him.<sup>33</sup>

...His former life of research became invested with an effect of immense dignity and of a steadfast singleness of purpose.<sup>34</sup>

Thus even Trafford, one of Wells's most mature scientists, is not permitted to find ultimate fulfilment in scientific research. Yet both before and after this novel, Wells continued to produce sociological works, often flagrantly propagandist in their intensity, advocating the innovation of a world state, under the leadership and guidance, at least initially, of scientists.

This apparent anomaly is best resolved by reference to Wells's three-phase time-scale of past, present and future man. Trafford and George Ponderevo represent perhaps the farthest<sup>t</sup> development of present man qua scientist, capable and efficiently idealistic, but unable to resolve the inherent conflict between research and personal relationships, between a pursuit which is essentially oriented

<sup>33</sup> ibid., Book III, Chap. I, v, p. 417

<sup>34</sup> ibid., vi, pp. 421-2

towards the future, and the claims of present-day society with all its instinctive resistance to change and progress. Like Remington in the political sphere, they are not permitted to achieve their full development in isolation from their society. So, too, the brief portrait of Holstein in The World Set Free depicts a man torn between his belief in the validity of his research and his awareness of the inadequacy of his society to cope with the new knowledge he has gained. Holstein is the prototype of many scientists in modern fiction - the scientist-hero returned to the novel as an ordinary man but infinitely enriched morally as he struggles to save his society even against its own will. Only in the moral and social utopia of the future will this conflict disappear, for then all men will have been educated to appreciate and foster the development of research concurrently with, and not in opposition to, their obligations to society as a whole and to the individuals within it. Nor, in this future utopia, will there be any division of interest between man the thinker and man the father, the biological contributor to his race - the division which torments Lewisham and Trafford. All members of Wells's future society will gladly contribute whatever talents they possess to the Mind of the Race, which is both a physical and a cultural concept.

From this chronological survey of the scientist figure as portrayed in his novels, it would seem that the young Wells, fresh from three years at South Kensington, but embittered by the failures of his last two years there, and resentful of the teachers whom he blamed for these

failures, was all too aware of the imperfections of scientists, and only too ready to mistrust the established scientific pundits whom he saw as typifying the closed mind and the water-tight system, intolerant of any opposing views. He was at this stage prepared to approve of science and its principles, but not to applaud its practitioners. However, with the widespread acclaim accorded his scientific romances, he himself began to enjoy a reputation as an authority in scientific matters, and his portraits of scientists become correspondingly more sympathetic, with special emphasis on the problems facing the young science student, and the difficulties of reconciling pure research and personal relationships. (Wells was perhaps attempting to explain away his own early failures and to account for his present incapacity to undertake serious scientific research). The study of sociological questions, with which Wells was himself preoccupied, is represented as being more important than pure research in this present, imperfect world, because it will usher in the day when such research will not conflict with the highest humanitarian aims. Thus in the utopian novels of the future, Wells was able to project an idealized picture of his own newly-won scientific respectability and to gloss over the intermediate problems which, perhaps unwittingly, he had uncovered in his scientists of the present. Whatever the reason for his changing attitude to scientists, however, his treatment of Lewisham and of George Ponderevo, and particularly of Trafford, paved the way for the entry of the scientist into the realistic novel, no longer as the alchemist figure,

but as a fully human personality.

Nevertheless it must be admitted that in his novels Wells failed to imagine in significant detail, or to speculate with sufficient confidence, what a life of research would actually entail. His scientists are therefore shown only fleetingly at work. What really interests Wells, and thus what his characters discuss and think about at great length, is the application of science to society, and hence those scientists who are treated in detail, soon follow their author and leave their laboratories to become advocates of social reform. Capes becomes a controversial playwright and Trafford returns from Labrador with the express intention of producing journalistic essays on social questions. Their situation is parallel to that of Remington whose interests are channelled towards the writing of autobiography when Wells finds himself unable to sustain sufficient knowledge or enthusiasm for a wholly political career.

There is another group of Wells's characters who, having had a scientific education, fail to pursue it, and they are certainly the first of their kind in English literature - Wells's modern young women. In a very real sense, the development of the new science made the emergence of the 'new woman' a necessity. The beginnings of this process are seen as early as Elizabeth Gaskell's Wives and Daughters; Molly Gibson clearly has to be 'educated' by Roger Hamley if she is to become a suitable wife for him and hence he prepares her for her future by lending her scientific articles to read even before there is any hint of their betrothal. Lydgate's marriage, on the other hand, fails largely because Rosamond, despite her social accom-

plishments, has no awareness or appreciation of her husband's work and interests.

The majority of Wells's new women are said to have studied science although only Ann Veronica is actually seen in the laboratory. In the first section of the novel, her values and method of thinking are alleged to be those of science - objectivity, a desire for the experimental approach and for precise deliberation. She quickly classifies others according to these criteria and dismisses her instructress at the Tredgold College as being 'hopelessly wrong and foggy - it was the test of a good anatomist - upon the skull.'<sup>35</sup> Her surroundings as well as her speech are studded with the symbols of science - her room is decorated with a pig's skull and her refusal of Mr. Manning's proposal is couched in terms of a botanical simile:

'I feel...as though I was being shut in from the light of life, and, as they say in botany, etioliated...'<sup>36</sup>

Later, her courtship with Capes is conducted in a setting of methylated spirits, scalpels and microscope sections, while their garden of romance is the Zoological Gardens where they study critically the chimpanzees, wart-hogs and toucans.<sup>37</sup> Ann Veronica's values, and to a lesser extent Capes's, are aggressively those which constitute the strongest bond with other members of the animal kingdom. Thus, at the Zoological Gardens, they particularly admire the chimpanzees for 'the gentle humanity of their eyes - "so much more human than human beings" - ...'.<sup>38</sup> Capes

<sup>35</sup> *Ann Veronica*, Chap. 1, ii, p. 9

<sup>36</sup> *ibid.*, Chap. 5, v, p. 117

<sup>37</sup> *ibid.*, Chap. 13, i,

<sup>38</sup> *ibid.*, p. 297

considers himself as a 'mixture of beast and uncle', while Ann Veronica regards the down on the back of her arm with some satisfaction as 'etherialised monkey'.<sup>39</sup> Further, she believes it a valid implication of her scientific creed that she should assert her right to love aggressively, not merely receptively, and to seek out the mate of her choice. This postulate, however, has been disputed in the light of modern psychology by those who claim that such behaviour does not in fact link her with the rest of the animal kingdom, where the rôle of the female is in the majority of cases a passive one, but is essentially artificial rather than instinctive.<sup>40</sup>

Besides this questionable article of her creed, there are other aspects of Ann Veronica's character which seem, on closer examination, to be ill-matched with a scientific training in clear, logical thought. Her actions are, for the most part, singularly devoid of foresight or of calculation as to their consequences - this is particularly so in the episodes with Ramage, with Manning, and with the Suffragettes. Moreover, although Wells clearly conceived of Ann Veronica as being in revolt against the traditional attributes associated with the figure of womanhood, he came, in his turn, to romanticise her schismatic values, asserting them repeatedly as self-evident without any attempt to justify them, and finally clothing them in all the trappings of a romantic ideal. Ann Veronica and Capes spend their honeymoon in the rarified air of the Alps and experience emotions close to the Keatsian mood of

<sup>39</sup> *ibid.*, Chap. 8, viii, p. 198

<sup>40</sup> See e.g. Helène Deutsch, *The Psychology of Women* (New York, 1944) Vol. I, p. 288, and R.A. Scott-James's review of *Ann Veronica*, *The Daily News* (Oct 4, 1909) 3

being 'half in love with easeful death', when Capes, semi-jestingly, contemplates a united suicide from the summit of their delight. In the final chapter, describing their married life, Ann Veronica, having abdicated without any apparent regret from a career in biology, finds her ultimate fulfilment in entertaining as Capes's wife and in bearing his child - a capitulation to almost Victorian domestic sentimentality.

Marjorie Pope, too, has studied science, at Oxbridge, and when the novel begins has impressed Trafford with her understanding of his subject - crystallography; but her interest was apparently somewhat dilettante - she has also dabbled in political theory - since the chief legacy from her student days seems to be a sheaf of bills. Once married and involved in a career of entertaining and interior decorating, she spares no further thought for the pursuit of science or indeed of any serious intellectual activity, and is unable to comprehend why Trafford should need to spend long hours away from her, engaged in his research, or alternatively, why the hours of such research should not be subsidiary to her claims on his time and attention. Her first sympathy with Trafford's eagerness and love of his work<sup>41</sup>, a sympathy which contributed in no small measure to their immediate rapprochement, evaporates quickly after their marriage, and it is at this point that Marjorie ceases to be a credible character, the natural product of her background experiences; she becomes, instead, a foil for Trafford, a deliberately placed obstacle to his research and the type of the foolish, shallow woman with insufficient to occupy her time. Wherever

<sup>41</sup>Marriage, book I, Chap. 3, vi, pp. 148-151

she is contrasted with other women she emerges as credible and clear-headed again - Trafford is relieved to hear her reactions to the ill-conceived outpourings of a gaggle of militant suffragettes, for she sees at once that the agitation for female suffrage is merely a symbol:

To her the advancement of science, the progress of civilization and the emancipation of womanhood were nearly synonymous terms for different phases of one thing.<sup>42</sup>

But as soon as she is alone with Trafford again she reverts to being an embodiment of the wholly emotional, clinging female. When Trafford endeavours to reason with her, to make her understand why he feels it necessary to go away completely from London to Labrador, her instinctive response is to hold out her arms to him, so that he is moved to exclaim:

'My dear...my dear! Why do you always want to turn love into - into touches? ....Stand up there and let me talk to you as one man to another. If we let this occasion slide to embraces ...'.<sup>43</sup>

Thus Marjorie, although she has allegedly had a scientific training, joins the ranks of Wells's modern women who fail to find a viable outlet for their intellectual energies and become submerged in, or frustrated by social inanities. Margaret Remington accepts this role with a sense of duty, but Lady Mary Justin writes bitterly of her sex that:

'Men invent, create, do miracles with the world, and we translate it all into shopping, into a glitter of dresses and households, into an immense parade of pride and excitement, We excite men, we stir them to get us and keep us. Men turn from their ideas of brotherhood to elaborate our separate cages.'<sup>44</sup>

<sup>42</sup> *ibid.*, Bk. II, Chap. 3, iii, p. 320-1

<sup>43</sup> *ibid.*, Bk. III, Chap. 2, vii, p. 467

<sup>44</sup> *The Passionate Friends*, Chap. 10, iv, p. 324

Wells seems to have been unable to formulate any clear, positive conception of what his ideal women should be. In Men Like Gods they are equal co-workers with men in scientific progress - Arden and Greenlake, the scientists who experiment in the F-dimension are not differentiated in the novel, though one is a woman. In A Modern Utopia Wells formulated the prototype of his scheme for the endowment of motherhood which was to free women from their position of financial dependence on men and which was also to become Dick Remington's political platform. Ironically, Wells had himself criticized Grant Allen's similar proposal to abolish the family and provide support for women, who might then have children at the expense of the State. In a review of The Woman Who Did, Wells claimed:

Now Mr. Grant Allen must know perfectly well that amorous desires and the desire to bear children are anything but overpowering impulses in many of the very noblest women. The women who would inevitably have numerous children under the conditions that he hopes for, would be the hysterically erotic, the sexually incontinent.<sup>45</sup>

Yet Ann Veronica's impulses are very little different, and in Isabel's cry for the right to bear children Wells voiced them explicitly, lengthily and with apparent approbation.<sup>46</sup>

Thus it would seem that although Wells overtly believed a scientific education to be the mark, perhaps even the sine qua non of the truly modern woman, he seems to have been as unable to realize fully what this would entail in his female characters as he was to sustain the characterization of a male scientist devoted to his research through the full length of a novel. There are two possible reasons for such a failure in the work of a writer who genuinely

<sup>45</sup> Experiment in Autobiography, Chap. 8, ii, p. 551

<sup>46</sup> The New Machiavelli, Bk. IV, Chap. 2, i, pp. 486-8

believed in the validity of the scientists' rôle in society. One is his own lack of experience in scientific research. Wells's first degree and later his doctorate in sociology, the science which was perhaps the least technically specialized of its time, were such as to fit him for an appreciation of the rôle in science in general without giving him the actual experience of sustained autonomous research, and thus his descriptions of such a pursuit are brief and obviously second-hand. Moreover, his second wife, although a science student at the time of her marriage and later a graduate, found her vocation in assisting Wells in his writing, in managing his business affairs and in bearing children. She is in this respect, perhaps, the prototype of Ann Veronica.

Theoretically, a second possible reason for Wells's failure to make real in a novel the figure of the scientist at work for a prolonged period might well be a general inability to write about science for the layman since this is widely acknowledged to be an extremely difficult task and one in which only a small minority of writers have succeeded. It therefore seems relevant to discuss and assess the general means whereby Wells attempted to make scientific data and theories, and in particular the concerns of scientists, real and comprehensible to readers who had little or no knowledge of the science of their time.

Section IV. The Influence of Wells's Scientific  
Training on his Techniques and his Concept of Art.

Chapter 10. Techniques of Persuasion and Presentation

The increasing difficulty of communication between scientist and lay-man has been realized, perhaps with undue emphasis, in a generation familiar with the concept of 'two cultures' and, despite the growing popularity of science fiction as a genre in its own right, the number of scientific writers who can communicate with a general audience remains remarkably small. Hence it is not surprising that the majority of science fiction readers are those who have had some scientific training. Kingsley Amis writes that:

Science fiction interests do not coincide with those of ordinary fiction, though on occasion the two sets will overlap very considerably. The sense of curiosity involved, for instance, is different in each case; Science Fiction's is more intellectual...and it will not always appeal to, though it need not actually deny, the human warmth which we are right to look for in ordinary literature.<sup>1</sup>

Despite the fact that the vast majority of Wells's readers had no scientific training his books were so immensely popular that it becomes important to ask how he contrived to make his scientific romances interesting, even fascinating, to the general reader at a time when the average level of background knowledge about science was in fact lower than it is today. If we compare 'The Time Machine' or even 'The Plattner Story' with the pedestrian geometry of Hinton's contemporary Scientific Romances and the Fourth Dimension it is easy to see not only how much better Wells understood the concept of a fourth dimension, but also how superior was his ability to make his readers envisage such a concept with him. All Hinton's technicolor plates of

<sup>1</sup> K. Amis, New Maps of Hell, (London, 1961) pp. 147-8

solid figures, and his pages of explanatory geometry fail to make his ideas concrete realizations, while in two pages of 'The Time Machine' Wells had swept the most sceptical reader along with him in his chain of causality.

Many of the techniques which Wells employed have since become standard devices in the genre but at the turn of the century they were for the most part innovatory. We have seen that earlier writers had tended to omit technical details, largely through their own ignorance, but partly perhaps because they believed that their inclusion would destroy rapport with the non-scientific reader. Wells, however, realised that there were only two major pre-requisites necessary in order to interest his reading public - first the need to 'domesticate the impossible', making it appear feasible, and secondly the need to render scientific data and explanations, or pseudo-explanations, both comprehensible and palatable to the lay-reader. The techniques whereby these requirements were met are interesting both in their own right and in their implications for the rôle of literature in general, and hence deserve some detailed consideration.

It has been assumed by several critics that in the scientific romances Wells was writing about events which were clearly impossible, but as has been seen in Chapter 1 this was often because they did not understand the scope of reality upon which Wells was drawing. Thus in his explorations of the fourth dimension and its implications there were few of his contemporaries capable of keeping pace with his thinking. A closer examination reveals that although Wells often dealt with the improbable, and sometimes added details that were frankly impossible, he

never, in his use of scientific principles, stepped outside the limits of the theoretically possible. His most usual focus of interest was the borderline between the improbable and the impossible, partly because he was fascinated with the potential for extrapolating from known facts into a penumbral region where others had been unwilling to go. This was one aspect of Wells's emphasis on the adventure of the mind, the spirit epitomized in his men of the future who 'reach out their hands towards the stars'. Partly also he was concerned to awaken people, to open their eyes to a whole world beyond their present blinkered gaze but within their reach. In The World Set Free this awareness is symbolized as power which may be had for the seeking:

Could anything be more emphatic than the appeal of electricity for attention? It thundered at man's ears, it signalled to him in blinding flashes; occasionally it killed him, and he could not see it as a thing that concerned him enough to merit study. It came into the house with the cat on any dry day, and crackled insinuatingly whenever he stroked her fur. It rotted his metals whenever he put them together.... [yet] there is no single record that anyone questioned why the cat's fur crackles or why hair is so unruly to brush on a frosty day, before the sixteenth century. For endless years man seems to have done his very successful best not to think about it at all; until this new spirit of the Seeker turned itself to these things. How often things must have been seen and dismissed as unimportant before the speculative eye and the moment of vision came.<sup>2</sup>

In choosing this penumbral region as his subject matter, Wells greatly increased the scope and variety of his stories, but rarely overstepped the boundary into the realm of pure fantasy. He maintained his grip on apparent reality chiefly by means of a meticulous attention to the laws of causality operating within the situation described.

<sup>2</sup> The World Set Free, Prelude, v, pp. 15-16

His usual procedure is to take a broad generalization and then to describe a set of supporting circumstances, several of which may in isolation strain credulity, but which, taken together present a consistent argument for acceptance. Then, having done his utmost to induce a suspension of disbelief in the reader, he attempts to work out the consequences in as logical a manner as possible, so that although the assertions may become progressively less credible to the reader, it is difficult for him to find a point where he may validly reject the argument. Here, as Wells himself explained, the technique is to trick the reader

... into an unwary concession to some plausible assumption and get on with his story while the illusion holds. ... [and then] as soon as the magic trick has been done the whole business of the fantasy writer is to keep everything else human and real.<sup>3</sup>

This device is highly effective in The Invisible Man and The First Men in the Moon at the end of which Wells has Bedford say:

I would like to see the man who could invent the story that would hold together like this one.<sup>4</sup>

but it is no less operative in 'The Land Iron Clads' (which, it must be remembered, centred on a postulate startlingly new in Wells's day and which seemed in the eyes of his contemporaries to verge on the impossible) in 'The Country of the Blind', 'The Diamond-Maker', 'The Remarkable Case of Davidson's Eyes', 'The Plattner Story'. 'The Truth about Pyecraft', 'The Man Who Could Work Miracles' and in 'The New Accelerator'. The last two are especially

<sup>3</sup> The Scientific Romances of H.G. Wells, Preface to the Gollancz edition (London, 1933) p. viii

<sup>4</sup> The First Men in the Moon, Chap. 20, p. 209

fine examples of this technique; they show Wells at his light-hearted best, over-turning the presuppositions of those who think that an extraneous event may be introduced into a closed natural system without throwing the whole system into disbalance. When Mr. Fotheringay, the 'man who could work miracles', in blithe unthinking imitation of Joshua, orders the earth to 'jest stop rotating, will you', he is completely unaware of the full sum of the consequences; but Wells is not. Having described the resultant chaos with great vivacity, he condescends to explain to the benighted reader the logical chain of events involved:

You see, when Mr. Fotheringay had arrested the rotation of the solid globe, he had made no stipulation concerning the trifling movables upon its surface. And the earth spins so fast that the surface at its equator is travelling at rather more than a thousand miles an hour, and in these latitudes at more than half that pace. So that the village, and Mr. Maydig, and Mr. Fotheringay and everybody and everything had been jerked violently forward at about nine miles per second - that is to say, much more violently than if they had been fired out of a cannon. And every human being, every living creature, every house and every tree - all the world as we know it - had been so jerked and smashed and utterly destroyed. That was all. These things Mr. Fotheringay did not, of course, fully appreciate.<sup>5</sup>

In 'Under the Knife' there occurs a brilliant use of this strict attention to causality in the description of the narrator's soul released from its material body. Wells has taken the familiar Platonic doctrine and described what would in fact ensue from such a separation of soul from body. The result is both wholly surprising and yet, once the explanation is given, logically irrefutable.

This fidelity to severe and logical inevitability, becomes, in Wells's hands, not a liability but a unique and integral part of his plot. So far from neglecting or

<sup>5</sup> 'The Man Who Could Work Miracles' Short Stories, p. 373

slurring over any awkward consequences of his original thesis, he incorporates these consequences into the very material of his story. The traditional writer of the marvellous tale dilated upon the adventures and advantages which invisibility rendered possible, and even if he bothered to consider the disadvantages, ignored them as inconveniences irrelevant to his plot. Wells, on the other hand, makes his story, The Invisible Man, out of these very disadvantages.

The conclusion of The War of the Worlds, perhaps Wells's most masterly ending, is both wholly unexpected at first reading and yet completely prepared for during the story. The ending may not have been Wells's own invention for a similar situation occurs in Percy Greg's Across the Zodiac,<sup>6</sup> but if Wells did borrow the idea, he integrated it superbly into his novel. We are told, early in the novel, that the Martians have eliminated disease on their own planet, and later that they feed on injections of human blood; the ending follows with grim inevitability and stark simplicity.

Besides this stress on strict causality in the scientific romances, Wells frequently relied for an atmosphere of credibility on the character of his narrators. He was seldom content merely to narrate a short story in propria persona and usually created a narrator whose reliability is vouched for, either by some external authority or by a direct appeal of the narrator himself. Nearly half the short stories end with such a tag asserting them to be

6. Here rose cuttings, taken to Mars by the traveller, carry infecting bacteria to which the Martians have no resistance and Eunane, one of the narrator's wives, subsequently dies from the 'Turkish disease'.

genuine experiences or true observations - 'A Deal in Ostriches', 'The Temptation of Harringay', 'The Story of the Late Mr. Elvisham', 'The Magic Shop', and 'The Jilting of Jane' amongst others - while in the scientific romances there is frequently some reference to an external source, a journal, a newspaper article or some allegedly authoritative person ready to support the narrator's claims.

Besides being a guarantee of fidelity, the character of the narrator may become important as an excuse for omitting details which would make the fiction difficult to sustain. Thus in The First Men in the Moon, Wells is at pains to show, from the start, both the absent-mindedness of Cavor and the irresponsible nature of Bedford who is incapable of concentrating his attention on anything for more than a few minutes. After this introduction it is scarcely surprising, we are made to feel, if some of the essential details concerning the construction of the cavorite sphere are lost or glossed over in the resultant report; Wells has sufficiently exonerated himself, and indeed Bedford continues to remind us to the end that 'my scientific attainments, I must admit, are not great, but....'<sup>7</sup> The narrator of 'The Plattner Story' also alleges his ignorance of any details whereby he might be required to explain his claims.

A variation on this device is that of the sceptical narrator who professes to disbelieve some unimportant detail of the events he has described, or to doubt the interpretation of them. This tends to reassure the reader by implying that the narrator is a clear-thinking sceptic and not a gullible dreamer who might have imagined the

<sup>7</sup> The First Men in the Moon, Chap. 21, p. 213

marvellous events he records. Thus the narrator of 'The Remarkable Case of Davidson's Eyes' declares himself from the beginning a somewhat reluctant recorder of the events of which he was an eyewitness:

I was the immediate witness of Davidson's seizure, and so it falls naturally to me to put the story on paper.<sup>8</sup>

and concludes with a claim to disbelieve the 'explanation' of Professor Wade, while reaffirming the truth of the actual events he has described:

The whole of his theory seems fantastic to me. The facts concerning Davidson stand on an altogether different footing, and I can testify personally to the accuracy of every detail I have given.<sup>9</sup>

This device has the effect of supporting Wade's theory since its strongest opponent can offer no alternative explanation.

On the other hand, the narrator may doubt his own experiences, or fear that others will, as in 'The Story of the late Mr. Elvesham' and 'The Time Machine'. The Time Traveller, after his penultimate journey, says to his audience:

Treat my assertion of its [the narrative's] truth as a mere stroke of art to enhance its interest. And taking it as a story, what do you think of it?<sup>10</sup>

The Editor, in this group, is duly sceptical: 'What a pity you're not a writer of stories!', and even the Time Traveller himself concedes: 'To tell you the truth....I hardly believe it myself....And yet.'<sup>11</sup>

<sup>8</sup> 'The Remarkable Case of Davidson's Eyes', Short Stories p. 337

<sup>9</sup> ibid., p. 350

<sup>10</sup> 'The Time Machine' Short Stories, p. 112

<sup>11</sup> ibid., p. 113

This effort to underbid the reader's scepticism and hence to gain his sympathy, by an avowal of near-disbelief from the narrator occurs in several of the stories. Bedford ends his narrative thus:

So the story closes as finally and completely as a dream....Indeed, there are moments when I do more than half believe myself that the whole thing was a dream.<sup>12</sup>

and the narrator of 'The Plattner Story' confesses:

Frankly I believe there is something crooked about this business of Gottfried Plattner; but what that crooked factor is, I will admit as frankly, I do not know.<sup>13</sup>

Clearly a narrator who is forced to believe virtually against his own will gains more credence than one who indiscriminately accepts everything told to him. It is therefore necessary to provide some incontrovertible evidence in order to convince these honest sceptics. Such evidence is usually of a tangible nature in the tradition of Gulliver's Lilliputian souvenirs - Bedford's gold, the Time Traveller's flowers of a hitherto unknown species, Plattner's transposed anatomy as attested by the before-and-after photographs and the Aepyornis bones.

If a suspension of disbelief is to be achieved from the outset and maintained to the end, both the beginning and the conclusion of the story must be made particularly credible. Wells took considerable pains with these and used several devices to avoid the more obvious objections to his fantasies. In the shorter scientific romances where there is little time for a leisurely development of the plot, he concentrates all his powers of persuasion in the first chapters to induce a receptive attitude in his readers. One technique frequently used is that of the story within the story. Here

<sup>12</sup>The First Men in the Moon, Chap. 20, p. 210

<sup>13</sup>'The Plattner Story', Short Stories, p. 423

the strongly realistic, even mundane atmosphere of the outer envelope acts as a partial guarantee of the veracity of the inner story. Moreover the reader is thereby removed by one or two degrees from direct confrontation with the strange phenomenon, and this automatically tempers his disbelief since he is able to partially identify with those demonstrably ordinary characters who encounter it and are forced, apparently against their will, to believe. The story may be found as a manuscript by the narrator as in Dr. Moreau, but more commonly Wells recreates in detail the atmosphere and the setting in which it is asserted that the events of the story occurred. Wells explained the superiority of 'The Time Machine' over 'The Chronic Argonauts' partly in these terms:

I had realised that the more impossible the story I had to tell, the more ordinary must be the setting, and the circumstances in which I now set the Time Traveller were all that I could imagine of solid, upper-middle-class comfort.<sup>14</sup>

The conclusion of a scientific romance is perhaps the most difficult area in which to maintain credibility. Ideally, there should be some tangible evidence, rather than mere rumour, of the events recorded, but equally important, unless the scientific romance is set in the distant future, is the need to disguise the whereabouts of these physical evidences, lest they be proved non-existent. Thus the Aepyornis bones are alleged to have been sold to a dealer located vaguely 'near the British Museum'; Cavor's sphere has conveniently flown off beyond recall since a small boy stepped inside and opened the blinds at the top; Cavor himself is also beyond hope of rescue or communication, while

<sup>14</sup>Experiment in Autobiography, Chap. 8, i, p. 516

the Time Traveller has utterly disappeared, together with his machine; Griffin's journals containing the formulae for achieving invisibility have been hidden by the tramp, Marvel, who cannot understand their contents yet will not allow anyone else to inspect them; Graham, the Sleeper, has long outlived the reader, while Moreau and Montgomery have died without trace on an island whose whereabouts can be only guessed.

Another concise and most effective conclusion occurs in the humorous tale, 'The Man Who Could Work Miracles', for in the midst of the havoc he has caused, Fotheringay's last miracle, all-embracing in its terms restores the status quo completely and thereby destroys all evidence:

'Let me be back just before the miracle began; let everything be just as it was before that blessed lamp turned up...No more miracles, everything as it was.'...

He opened his eyes....He had a vague sense of some great thing forgotten that instantaneous-ly passed. You see, except for the loss of his miraculous powers, everything was back as it had been; his mind and memory therefore were now just as they had been at the time when this story began. So that he knew absolutely nothing of all that is told here today. And, among other things, of course, he still did not believe in miracles.<sup>15</sup>

This device allows Wells the maximum scope for a panorama of earthly chaos and destruction without technically overstepping the bounds of realism. Obviously to ask why the narrator himself should remember the intervening occurrences destroys the illusion, but within the context of the humorous tale this device functions quite successfully; indeed Wells is quick to see how the very incompleteness of a story, a failure to explain all possible points and difficulties, may assist the illusion by simulating the fragmentary nature

<sup>15</sup>'The Man Who Could Work Miracles' Short Stories, pp. 374-5

of a human document.

Valuable as these techniques are, Wells's major technique in creating a sense of verisimilitude lies in what an early reviewer perceptively defined as 'precision in the unessential and vagueness in the essential.'<sup>16</sup> Another reviewer of the same year explained that:

he tells us just as much as enables us to persuade ourselves that we understand all about it, and when once he has got us into that comfortable state of mind, we are prepared to believe anything. Thus, for instance, in 'The Argonauts of the Air' ...he is content by hints to give us a vague general idea of the flying machine - and so we are satisfied to take the solution of the mechanical difficulties for granted.<sup>17</sup>

The first and perhaps the most effective example of this 'precision in the unessential and vagueness in the essential' occurs in 'The Time Machine' when the narrator, having described with the utmost vagueness the model of the time machine as:

a glittering metallic framework, scarcely larger than a small clock, and very delicately made. There was ivory in it and some transparent crystalline substance.

- a description which tells us nothing at all - proceeds naively:

And now I must be explicit, for this that follows - unless his explanation is to be accepted - is an absolutely unaccountable thing.<sup>18</sup>

But the promised exactitude which follows certainly does not elucidate anything about the time machine. Instead Wells proceeds to describe in minute detail the arrangement of the chairs, tables and candles in the room, and the positions of the spectators relative to the Time Traveller - factors which

<sup>16</sup> 'Review of The Plattner Story and Others', Athenaeum, No. 3635, (June 26, 1897), 837.

<sup>17</sup> 'Review of The Plattner Story and Others', Daily Chronicle, (May 20, 1897) 3

<sup>18</sup> 'The Time Machine', Short Stories, p. 10

impress us as being important at the time but which have no real relevance at all to the demonstration of time-travelling. Indeed, whenever the description of the time machine becomes any more specific than a mention of crystal bars, it becomes correspondingly less credible; it seems least real when endowed with a part as concrete and imaginable as a 'saddle', for this tends to suggest some kind of bicycle and to destroy the necessary air of mystery about the invention.

Wells's vagueness in the essential is often skilfully concealed by the excuse that either the reader or the supposed listener within the story would not understand the technical details or would be bored by a fuller recital of such practicalities. Griffin begins to explain his process for developing invisibility to Kemp, a doctor, who might well be presumed to understand a simplified account but to be ignorant of the finer points of the science of optics; these details are therefore omitted, although allegedly a fuller explanation could be given readily enough. This technique is highly successful in Dr. Moreau where Prendick explains that he was never allowed into the laboratory when Moreau was actually at work on his transformations. Bedford also reminds us that he cannot understand or remember Cavor's instructions for making cavorite: all he recalls is that the process involved helium and required heating. Again, in 'Filmer', the narrator asserts his necessary ignorance of detail:

Much concerning Filmer is, and must remain profoundly obscure...It is quite impossible to say whether this thing really happened.<sup>19</sup>

Related to this technique is Wells's frequent assertion that he is refraining from fuller explanations since

<sup>19</sup> 'Filmer' Short Stories, p. 829

such mundane details would only bore the reader who, it is assumed, is more interested in learning the 'facts' of the story. In 'The Crystal Egg' Wells intrudes upon the narrative to remark:

It would be tedious and unnecessary to state all the phases of Mr. Cave's discovery from this point. Suffice that the effect was this: the crystal, being peered into at an angle of about 137 degrees from the direction of the illuminating ray, gave a clear and consistent picture of a wide and peculiar countryside.<sup>20</sup>

The skill involved in even such a brief interjection as this should not be overlooked. Wells begins with the relatively dull fact of the angle of observation and ends his sentence with the prospect of a 'wide and peculiar countryside', so that we are only too ready to dispense with technical exactitude and proceed to the more interesting reasons why the countryside is peculiar. By such a trick of construction Wells is able to insert a brief and virtually meaningless detail to assert his bona fides, and then pass swiftly on, with the reader's assent, to the purely fantastic crux of his story.

Alternatively there may be some alleged need for secrecy or haste, or some other apparently unavoidable reason why the explanation must be withheld or postponed. The Diamond-maker cannot divulge his procedures lest diamonds flood the market, thereby rendering his discovery worthless.

'You see, it was important that if I really meant to make a pile, people should not know it was an artificial process and capable of turning out diamonds by the ton.'<sup>21</sup>

<sup>20</sup> 'The Crystal Egg' Short Stories, p. 528

<sup>21</sup> 'The Diamond Maker' Short Stories, p. 157

Bedford preserves, throughout his account, the fiction that Cavor's message comes from the moon by his repeated reference to what has been lost in transmission or not reported in full. Griffin promises Kemp that he will describe his invisibility process in more detail later, but subsequent events render this impossible. Similarly, George Ponderevo affirms his intention to explain the technicalities of his plane's construction later in the novel - "But that I will write about later"<sup>22</sup> but conveniently forgets to do so.

Perhaps the most ingenious variation on this technique is that used in Men Like Gods. The citizens of this highly advanced society communicate almost exclusively by telepathy which depends upon the common background of the parties concerned. Therefore the Earthlings can 'hear' only that part of the discourse which they (and we) can understand, that is to say, only that part involving the background knowledge which they already possess. Hence when the Utopian, Serpentine, attempts to describe the technological invention for transmitting bodies through the F dimension, the Earthling visitors cannot receive this explanation, nor can it be formulated in words for the benefit of the reader.<sup>23</sup>

If Wells was thus vague about the essential facts of his marvellous stories, he was scrupulously explicit about the mundane details surrounding them. When Virginia Woolf wrote, in criticism of his social novels, that he would

spend immense skill and immense industry  
making the trivial and the transitory appear  
the true and the enduring.<sup>24</sup>

<sup>22</sup> Tono-Bungay, Bk. III, Chap. 1, ii, p. 289

<sup>23</sup> Men Like Gods, Bk. I, Chap. 4, iii, pp. 48-52

<sup>24</sup> Virginia Woolf, 'Modern Fiction' The Common Reader (London, 1925) p. 187.

she was describing exactly the technique which had ensured the success of the scientific romances. The narrator of 'The New Accelerator' makes no attempt to be explicit about Gibberne's distillation beyond a vague mention of hyperphosphates and a green phial, but he is careful to report that when he encountered Gibberne on the fateful day:

I was going up the Sandgate Hill towards Folkestone - I think I was going to get my hair cut...<sup>25</sup>

An important part of this precision is his painstaking consistency which includes skilful preparation to forestall disbelief. Small, apparently inexplicable facts, early in the narrative, strike the reader almost subliminally; then, when the improbable 'explanation' or the major event is finally revealed, it is gratefully accepted and its improbability appears to be decreased, because it is seen as consistent with the unsettling details noted earlier. Thus in The Sleeper, the improbable fact that Graham should sleep for two centuries is partly prepared for by the preceding descriptions of his nervous exhaustion, his inability to sleep for days on end and his taking of soporifics. To impress this even further on our minds we are told that he finally falls asleep bolt upright in a chair for his 'sleep' is a 'cataleptic rigour'. All this mitigates the stark improbability of a two-hundred-year sleep.

Subsidiary to these techniques, but adding substantially to their plausibility, is Wells's ability to incorporate scientific phrases into his descriptions as a means of tacitly assuring us that we should trust his judgment since his credentials clearly include an extensive background of science. This is particularly useful in supporting his

<sup>25</sup> 'The New Accelerator', Short Stories, p. 440

'precision in the unessential' and he seems to have discovered its usefulness quite early in his writing. It is already present, albeit with less naturalness than he was later to achieve, in 'The Chronic Argonauts', where the alleged author describes the sudden appearance of the time machine thus:

The thing was not square as a machine ought to be, but all awry; it was twisted and seemed falling over, hanging in two directions as these queer crystals called triclinic hang. <sup>26</sup>

The simile of the triclinic crystals tells us virtually nothing about the machine, but it creates an illusion of exactitude about the narrator who thereby seems to merit our trust as a scientifically-trained observer. The young Wells tended to flourish these somewhat self-conscious scientific testimonials, at times ill-advisedly. In 'A Tale of the Twentieth Century' an early essay published the year before 'The Chronic Argonauts', there is an unfortunate taint of the undergraduate determined to impress - as indeed Wells was in 1887. In this story we are informed pompously:

No longer were  $As_2O_3$  and  $SO_2$  to undermine the health of London. Ozone was to abound exceedingly. <sup>27</sup>

However, later works in general show this technique polished to a more sophisticated level so that the phrases fall in naturally with the character of the narrator, and do not jar on the ear. Even Bert Smallways has had sufficient grounding in rudimentary physics to explain credibly why the champagne rushes out of the bottle at high altitudes.

'Atmospheric pressure,' said Bert, finding an application at last for the elementary physiography of his seventh-standard days. <sup>28</sup>

<sup>26</sup> 'The Chronic Argonauts' (Science Schools Journal, 1888) reprinted by Bergonzi *op. cit.* p. 201

<sup>27</sup> 'A Tale of the Twentieth Century' reprinted by Bergonzi *op. cit.* p. 182

<sup>28</sup> The War in the Air, Chap. 3, i., p. 70

In the short story, 'Under the Knife', Wells casually introduces the simile of the galvanometer - not, as most authors would have done to compare the galvanometer to something else, but reducing it to the subsidiary relation within the simile and thus tacitly demonstrating his long familiarity with such an instrument as a normal appliance of life.

When Parload tells Willie Leadford ~~that~~ 'within an hour of the great moment of impact of the comet the first green modification of nitrogen had dissolved and passed away, leaving the air as translucent as ever'<sup>29</sup> we are prepared to accept this, having been told previously that 'Parload is a famous man now; his work upon intersecting radiations has broadened the intellectual horizon of mankind forever'.<sup>30</sup> Again, since in 'The Reconciliation', Temple is trying to prove himself equal to Findlay, an F.R.S. who has attained 'eminence in comparative anatomy' we regard his apparently off-hand mention of the "bulla" of a whale as being entirely in character. A similar scientific pedantry is the very basis for the humorous short story, 'The Truth About Pyecraft' which is at one level a discourse upon the dangers of using terms loosely. Pyecraft uses the common phrase, 'losing weight' when he really means 'losing mass', and like Fotheringay of 'The Man Who Could Work Miracles', discovers the dangers of having a poorly-thought out wish suddenly granted. This sense of familiarity with scientific concepts and phraseology is in evidence throughout Wells's work, not merely in the scientific romances. Describing the moment when Remington and Isabel recognize their mutual passion, Wells has Remington resort naturally to a simile from physics:

<sup>29</sup>

<sup>29</sup> In the Days of the Comet, Bk. II, Chap. 2, i, p. 215

<sup>30</sup> ibid., Bk. I, Chap. 1, iii, p. 36

The quick leap of her mind evoked a flash of joy in mine, like the response of an induction wire.<sup>31</sup>

Allied to this introduction of scientific terms is the recurrent mention of the names of well-known scientists as a supposed guarantee of the truth of the statement to follow. George Ponderevo establishes his credentials in aeronautics by such name-dropping:

I was beginning to get keen upon the soaring experiments I had taken on from the results then to hand of Lilienthal, Pilcher and the Wright Brothers....<sup>32</sup>

and he uses a similar technique to render credible the quap analysis. George remarks casually:

It was before the days of Capern's discovery of the value of canadium and his use of it in the Capern filament, but the cerium and thorium alone were worth the money he extracted from the gas-mantles then in vogue.<sup>33</sup>

a statement sufficiently close to the facts about tungsten filaments to produce a transferred credibility. Later the 'quap' episode is made more concrete by an apparently artless reference to a description of the ore in the Geological Magazine for October, 1905, together with mention of 'pitchblende, rutile, and the like' so that we tend, uncritically, to add quap to the list. It would seem that Wells was deliberately setting himself the most difficult task by insisting on the improbable name, 'quap', and then endeavouring to overcome the reader's natural scepticism. The short story 'The Moth' has well-documented footnote-references to alleged publications by the two protagonists in journals, the titles of which appear to have a rock-like authenticity but are, in fact, fictitious. When, in Tono-Bungay, we are told

<sup>31</sup>The New Machiavelli, Bk. IV, Chap. 1, iv, p. 463

<sup>32</sup>Tono-Bungay, Bk. III, Chap. 1, ii, pp.288-9

<sup>33</sup>Ibid., Bk. III, Chap. 1, iv, p. 304

that Uncle Ponderevo, having tried unsuccessfully to buy the British Medical Journal and the Lancet for a more effective promotion of Tono-bungay, finally acquired The Sacred Grove, a literary magazine, we are almost disposed to believe its title as valid as those actual ones which have just been mentioned. In The Food of the Gods we are told that Bensington is an F.R.S. and Redwood is Professor of Physiology in the Bond Street College of London University, while in 'In the Abyss' it is reported that scientists 'of such eminence as Adams and Jenkins find nothing incredible in' the vertebrated creatures described. 'The New Accelerator' was first published in The Strand Magazine of December, 1905, and Wells unblushingly states on the first page of the story that:

Unless my memory plays me a trick, his portrait at various ages has already appeared in the Strand Magazine - I think late in 1899; but I am unable to look it up because I have lent that volume to someone who has never sent it back. The reader may perhaps recall the high forehead and the singularly long black eyebrows.<sup>34</sup>

There follow more verifying details concerning Gibberne's places of study and field of research, introduced with a tacit apology to those who would be aware of such commonplace knowledge:

...as everyone knows, or at least as all intelligent people know...<sup>35</sup>

We have seen that one of the basic themes of the scientific romances was the onslaught on the world and on traditional assumptions by strange forces, either physical objects like those of 'The Sea Raiders', 'The Empire of the Ants', 'The Star' and The War of the Worlds or strange influences and experiences, as described in 'The Plattner Story' and

<sup>34</sup>'The New Accelerator' Short Stories, pp. 435

<sup>35</sup>ibid., p. 436

'The Remarkable Case of Davidson's Eyes'. Such themes do not, at first sight, seem appropriate material for realistic fiction, yet in all these cases Wells was interested not merely in the opportunity for eerie descriptions, but also, perhaps primarily, in devising a possible explanation for events and always the explanation he favoured was the least occult one. If strange in itself, it is the more likely to be paired with another hypothesis still less scientifically respectable. Wells thus gains more credence for the less mystical explanation by comparison than he would have achieved had it been posited alone. Nearly always his technique is to affirm the truth of the alleged facts or occurrences and then to present alternative explanations between which the narrator, claiming to be a rigorous sceptic, usually declines to choose but nevertheless indicates his bias. This bias may or may not indicate the view which the reader is intended to accept. In 'The Plattner Story' the narrator's view does seem to coincide with Wells's own, and the technique in this case is well illustrated by the use of the apparently sceptical narrator:

On the one hand we have seven witnesses... and one undeniable fact; and on the other we have - what is it? - prejudice, common sense, the inertia of opinion....

One other thing...I must insist upon lest I seem to favour the credulous, superstitious view. Plattner's absence from the world for nine days is, I think, proved. But that does not prove his story. It is quite conceivable that even outside space hallucinations may be possible. That at least the reader must bear in mind.<sup>36</sup>

Here, by pretending to discount the report of Plattner's extra-spatial observations and to suggest that what he 'saw' was hallucinatory, Wells gains credence for the preliminary

<sup>36</sup> 'The Plattner Story, Short Stories, pp. 423, 450

concept of going outside space, a concept at which the narrator does not baulk.

In 'The Remarkable Case of Davidson's Eyes', on the other hand, Wells obviously intends us to accept the suggestion of Professor Wade who, though his theory is startling, tries painstakingly to explain and demonstrate it, while the narrator's position is that of the prejudiced person, forced to acknowledge certain facts but preferring to have no explanation at all rather than one which seems to contradict him limited understanding of physics. Wells contrives to portray the narrator as trying to throw discredit upon Wade's thesis while simultaneously and unwittingly damning himself for he reaffirms the facts of the story while obstinately discounting the only available explanation:

That completes the remarkable case of Davidson's eyes. It is perhaps the best authenticated case in existence of real vision at a distance. Explanation there is none forthcoming, except what Prof. Wade had thrown out. But his explanation involves the fourth dimension and a dissertation on theoretical kinds of space. To talk of there being a 'kink in space' seems mere nonsense to me; it may be because I am no mathematician. When I said that nothing would alter the fact that the place is eight thousand miles away, he answered that two points may be a yard away on a sheet of paper and yet be brought together by bending the paper round. The reader may grasp his argument, but I certainly do not.... But the whole of his theory seems fantastic to me. The facts concerning Davidson stand on an altogether different footing, and I can testify personally to the accuracy of every detail I have given.<sup>37</sup>

Although he always strains towards a non-occult theory, Wells's 'explanations' often seem less than successful to the modern reader because, in general, they are given in terms of the physical sciences, whereas we are more accustomed to seek for explanations of extraordinary personal experiences, such

<sup>37</sup> 'The Remarkable Case of Davidson's Eyes' Short Stories, pp.

as those described in 'The Remarkable Case of Davidson's Eyes', in the realm of psychology. Yet, with the exception of 'The Red Room' and 'The Moth', Wells almost completely ignored the psychological hypothesis, or rather, he contrived to make the story discount it by insisting upon the actuality of certain physical events or evidences.

Clearly, then, Wells mastered several valuable techniques for inducing a suspension of disbelief, not merely in a story of everyday circumstances, but in the relation of events which bordered on the impossible and which would normally evoke frank incredulity. Perhaps more important, however, are the techniques whereby he contrived not merely to persuade the reader of his veracity but to present actual scientific facts in a manner interesting to the lay reader. Wells himself was vitally concerned with this problem, not merely to ensure success in his own stories, but also for the wider education of the general public. One of his earliest articles was an essay in Nature entitled 'Popularising Science' in which he attacked scientists who professed to write for a popular audience of non-scientists but whose labours effected more harm than good and

appear bent upon killing the interest that the generation of writers who are now passing the zenith of their fame created, wounding it with clumsy jests, painting it with patronage and suffocating it under their voluminous and amorphous emissions.<sup>38</sup>

His major attacks are concentrated on those who write exclusively in technical jargon and forget that 'as a general principle, one may say that a book should be written in the language of its readers' while technical jargon, 'from a literary standpoint must be called "slang"'<sup>39</sup>; against those who assume that because the general reader is ignorant

<sup>38</sup> 'Popularising Science' Nature, L no. 1291, (July 26, 1894) 301

<sup>39</sup> ibid., 300

of specialist terminology he is therefore an intellectual inferior in every field and must be 'written down' to; and against those who resort to facetious jests and lumbering wit in a mistaken belief that this makes their subject palatable. Instead, Wells proposes two ways in which scientific facts may be presented honestly and plainly and yet be intrinsically interesting. The first involves the construction of the account and the second the emphasis which, he believed, should rest upon the philosophical end and purpose of the scientific knowledge being put forward, and not on the minutiae of technical procedure which can interest only specialists in the field. It is worth examining in some detail the ways in which Wells used these and other techniques to elicit and maintain his readers' interest.

Wells wrote that:

Very few books and scientific papers appear to be constructed at all. The author simply wanders about his subject....It would not matter a bit if you cut any section of his book or paper out, or shuffled the sections or destroyed most or all of them. This is not simply bad art; it is the trick of boredom. A scientific paper for popular reading may and should have an orderly progression and development. ...The fundamental principles of construction that underlie such stories as Poe's 'Murders in the Rue Morgue' or Conan Doyle's 'Sherlock Holmes' series, are precisely those that should guide a scientific writer. These stories show that the public delights in the ingenious unravelling of evidence....First the problem, then the gradual piecing together of the solution. They cannot get enough of such matter.<sup>40</sup>

Poe and Conan Doyle were Wells's own masters in the art. Like theirs, his short stories are compact, symmetrical in composition and economically written, and the best of the longer romances are of similar expert construction. The Invisible Man and The War of the Worlds present and just exhaust their

<sup>40</sup> ibid., 301

themes without ever overloading them or boring the reader by repetition. In a very real sense Wells's stress on causality, as discussed above, is partly the natural outcome of his appreciation for the detective stories of Poe and Conan Doyle, with the difference that whereas detective stories are intent upon tracing causal relationships backwards, from effect to source, Wells generally traces the results of some commonly-held assumption forward to their logical conclusion. This procedure forms the basis of several of the short stories - 'The Man Who Could Work Miracles', 'The Truth about Pyecraft', 'The New Accelerator', as well as The Invisible Man - and is an important ingredient in the majority of the others. It also underlies his entertaining article, 'The Things that Live on Mars', which is virtually a detective story in a serious scientific vein, and demonstrates the close affinity between the detective story and the inductive method of experimental science. This may readily be seen in one of the few instances where Wells reversed his normal procedure and extrapolated back into the past - 'The Grisly Folk' which is a highly entertaining recreation of the probable antecedents of modern man.

The other point which Wells stressed in his article on popularising science, was the need to concentrate upon the purpose, the metaphysical 'why' of events, rather than merely cataloguing technical facts, for seen in its widest context, any fact becomes interesting, indeed of vital importance, to every reader. Thus Wells tends to examine not scientific principles per se, but their effect on individual characters and their causal implications for society or mankind as a whole. In an interview discussing the

possible distinctions between 'realism' and 'romanticism' in his work Wells maintained that the two could never be separated because:

the scientific episode which I am treating insists upon interesting me, and so I have to write about the effect of it upon the mind of some person.<sup>\*1</sup>

The Invisible Man is not primarily about a person whose only major characteristic is his invisibility; it is about the personality of Griffin, an egotistic, brutal monomaniac. Certainly Wells is fascinated by the detailed physical results of such a concept - the visible footsteps, the visibility of newly eaten and as-yet-undigested food, the fact that dogs sniff at the heels of the invisible man because his scent is still perceptible, the inconvenience of traffic which does not stop for him when he tries to cross the road, the necessity of being naked and unencumbered by parcels, and the order in which visibility returns once the invisible man is dead - but he is also interested in the effect which such a discovery has upon the character of the man himself and on the others whom he encounters. No small part of the novel is concerned with Griffin's desire for power and wealth from his discovery, and the ruthlessness which this arouses in him, but the most vivid picture of cruelty in the novel is the final scene of the townsfolk, honest average citizens, who have come to hate what they fear - the threat of invisibility with which they cannot cope. It is this fear which underlies their brutal hunt-to-the-death and issues in such a scene as this:

Hardly a dozen yards off ran a huge navvy, cursing in fragments and slashing viciously with a spade, and hard behind him came the tram-conductor with his fists clenched. Up the street others followed these two, striking and shouting. ... Kemp grasped the wrists,

<sup>\*1</sup> A.H.L., 'Realism versus Romance', Today, XXV (Sept. 11, 1897)

heard a cry of pain from his assailant, and then the spade of the navvy came whirling through the air above him and struck something with a dull thud. He felt a drop of moisture on his face....He gripped the unseen elbows near the ground. 'I've got him!' screamed Kemp. 'Help! Help hold! He's down! Hold his feet!...' Kemp clung to him in front like a hound to a stag, and a dozen hands gripped, clutched and tore at the Unseen.<sup>42</sup>

In Dr. Moreau, the next of the scientific romances, Wells is less interested in Moreau's experiment than in what it has to teach about the dual nature of man and the impossibility of deriving a valid ethic from the study of evolution. Here too there is a full realization of the character of Moreau himself - not merely as an allegorical figure, but also as the type of the scientist who would carry out such researches. Wells came increasingly to recognize the importance of realistic characters in making an appeal to the general reader, not only in creating the necessary suspension of disbelief in the scientific romances, but also in explaining scientific facts to the reader. The difference which such a realization makes can be clearly seen by comparing Wells's work with Hinton's where there are no characters at all, or with Verne's where the characterization is minimal. Even in The First Men in the Moon, where the characters are still comparatively subsidiary to Wells's interest in exploring the concept of cavorite, and in planning a detailed lunar society, the personalities of Cavor and Bedford are nevertheless realised and contrasted with considerable skill, whereas in Verne's Journey to the Moon the characters are entirely wooden and add almost nothing to the story beyond an excuse for the author to describe the journey. In Wells's later novels the interest in character and the sociological consequences which the pursuit of science may incur, became primary

<sup>42</sup>The Invisible Man, Chap. 28, pp. 198-9

- hence the transition in his work from scientific romance to the utopia (or anti-utopia) of the future. In The World Set Free the connections with experimental science are slight and poorly integrated: science merely provides the bombs which create such a world-wide holocaust that the Wellsian vision of utopia is the only sane way out of the disaster. Again, in In the Days of the Comet, although the approach of the comet is vividly described and certain apparently chance phrases convince us that Wells has carefully thought out the consequences of such a phenomenon<sup>43</sup>, the main interest of the novel lies in the story of Leadford. Indeed, in the later sections of the novel, the references to science are awkwardly introduced and tend to weaken the continuity of the narrative. When Leadford suddenly delivers a discourse on evolution:

I have read somewhere that in our bodies you can find evidence of the lowliest ancestry; that about our inward ears - I think it is - and about our teeth, there remains still something of the fish, that there are bones that recall little - what is it? - marsupial forebears - and a hundred traces of the ape.<sup>44</sup>

we feel that Wells's determination to include scientific details has become a literary gimmick which produces a cumbersome and unreal result. Again, in The World Set Free, Professor Rufus's lecture on the possibilities of radium and radioactivity - a truly prophetic insight on Wells's part - is interesting and evocative but it is ill-related to the war and even less related to the Brissago peace talks and to the concluding chapter, 'The Last Days of Marcus Karenin'.

<sup>43</sup>Leadford realizes how bright the approaching comet has become when he notices that he has two shadows, and the comet appears with a strange, less luminous greener disc upon it that grew with its growth, the umbra of the earth. It shone also with its own light so that this shadow was not hard or black, but it shone phosphorescently and with a diminishing intensity where the stimulus of the sun's rays was withdrawn'. In the Days of the Comet, Bk. I, Chap. 5, pp. 157-8

<sup>44</sup>ibid, Bk. III, Chap. 1, iv, p. 275

Although Wells criticised those writers who 'wrote down' to their readers, he also realized that if the scientific romances were to make their full impact it was necessary that the subtle principles underlying them should not be missed by the reader whose training in science was minimal. He therefore devised several methods of 'explaining' these basic principles to the reader without appearing to do so. His ~~most~~ usual technique was the obvious one of having a non-scientific narrator, such as Mr. Cave in 'The Crystal Egg', who merely describes what he sees in layman's terms to another character who then explains it more accurately in terms of the technical principles involved. In 'The Crystal Egg' Mr. Wace, 'Assistant Demonstrator at St. Catherine's Hospital', fulfils this latter function, writing down what Mr. Cave observes together with explanatory asides. Clearly this is a more satisfactory technique than repeated authorial intrusion. A variation of this device is that of having the narrator encounter other characters who ask or answer the questions which the reader would like to ask. In The Invisible Man Griffin's meeting with the tramp, Marvel, although chiefly the occasion for more tricks, also elicits some necessary explanation, as does his reunion with Kemp. In The Sleeper Graham is at first confused in the world of his awakening, but he (and we) are enabled to fill in the necessary background knowledge when he asks questions of those whom he meets. As the old man he encounters begins to reminisce on his past experiences we are able, without the disruption of authorial intrusion to piece together a sufficiently coherent picture of what has occurred during Graham's sleep.

Only rarely in the scientific romances does Wells interject to explain in propria persona, and even these

interpolations, which might easily have become irritating, pedantic lectures, are effected with considerable artistry. In <sup>The</sup> War in the Air Wells was concerned to show the effect of the war on individuals and therefore he deliberately chose to follow the adventures of a limited individual, Bert Smallways, and to speak, for the most part, with his voice. However, he also wished to expound the causes and results of the war on the scale of world history and therefore from time to time he sketched in the background panorama as an external narrator, these alternations being skilfully effected without effort or irrelevance. Wells is forced to use a similar method in 'The Man Who Could Work Miracles' since the nature of the ending necessarily precludes any character involved in the story from narrating the alleged occurrences.

A further important device whereby Wells is able to explain the laws of physics to his lay readers without appearing to be didactic is his use of humour within the scientific romances. Kingsley Amis has remarked that humour in science fiction is rare, and, when it does appear, is a subordinate effect,<sup>45</sup> but Wells uses it in several important ways. In The First Men on the Moon it functions as part of the characterization of the flippant Bedford and also as an excuse for deficiencies in the forthcoming explanation. When it is necessary to account for the unsuspected hazard of leaving a prepared sheet of cavorite indoors, Cavor explains that fortunately the cavorite was not pegged down so that, as the cavorite levitated violently, the only result was the explosion of Cavor's house; the fact that Cavor, the devoted scientist, sees the loss of his house as being of minor importance is humorous in itself, but the alternative possibility is also explained with a lightness

<sup>45</sup>K. Amis, op. cit., p. 148

of touch and fortuitous phrase which robs it of any effect of didacticism:

If the cavorite itself hadn't been loose... the air would be rushing up and up over that infernal piece of stuff now. ...It would have whipped the air off the world as one peels a banana, and flung it thousands of miles.<sup>46</sup>

When, as occasionally happens, the humour serves no purpose in the story beyond sheer lighthearted entertainment, it is often in danger of disrupting the unity of the construction. This is particularly true of the early work where Wells seems at first not to have realised that there is insufficient time in a short story for a complex interplay of interests to be developed. Thus, in 'The Stolen Bacillus' the comic scenes of the cab drivers and Minnie's pursuit of her husband can only detract from the central theme in a story of less than 3,000 words. However, in many of Wells's best stories the humour is situational, arising naturally and inevitably from the central theme - namely the juxtaposition of a second concept which has long been accepted without question, with a detailed working out of its actual consequences which have not previously been considered. Thus, in 'The Truth about Pyecraft' Wells is objecting to the vague and inaccurate terminology of popular speech as he describes, with strict accuracy, the dire results of 'losing weight' as opposed to 'losing mass' but the humour arising from the consequences mitigates any suggestion of didacticism. In 'The New Accelerator' Wells finds an abundant source of humour in elaborating the unforeseen consequences of running at two or three miles per second - the frictional heat generated which scorches the clothes, the unusually deep impressions of footprints, the description of a wink virtually frozen in time:

<sup>46</sup>The First Men in the Moon, Chap. 2, p. 30

studied with such leisurely elaboration as we could afford, [a wink] is an unattractive thing....one remarks that the winking eyelid does not completely close, that under its dropping lid appears the lower edge of an eyeball and a line of white. 'Heaven give me memory', said I, 'and I will never wink again.'<sup>47</sup>

and the pattering noises in an otherwise silent world - the sounds of everyday life analysed into their component vibrations. 'The Man Who Could Work Miracles' satirizes the popular concept of 'standing still', a theme repeated with minor variations in 'Under the Knife' when the narrator's soul ascends, weightless, while the earth rushes away from it through space.

Apart from this situational humour, there is an element of dark humour to be found in the scientific romances. At one level it exploits the inadequacy of the ordinary individual, both physically and mentally, in the face of circumstances not, as is more usual, for the purposes of pathos, but for irony. Typically, in Wells's work, a limited character is drawn into a world catastrophe and shown to be hopelessly incapable of coping with events, even of comprehending them. Thus the curate of The War of the Worlds embroiled in the chaos of the Martian invasion, can only conclude that God does not appreciate the work he has done in organizing the Sunday Schools, and the only comment which rises to Bert Smallways's lips as he witnesses the destruction of New York is 'Gaw!'

A further level of dark comedy is provided in these same catastrophic scenes by the grim irony of man's pomp and pettiness in the face of overwhelming forces, and of wishful thinking in the face of horrific facts. Prince Karl Albert, marooned on Goat Island and dependent on Bert for his only

<sup>47</sup> 'The New Accelerator' Short Stories, p. 447

means of escape, still struts imperially and demands extravagant gestures of homage. A similar discrepancy exists between Griffin's dreams of world domination and the unsuspected handicaps of invisibility which he painfully discovers.

Wells's other major device for gaining and retaining the interest of the general reader was his ability to use the most current news of scientific and technological discoveries (if, indeed, he did not anticipate them). He thereby gained a sense of immediacy and also exploited both the public interest in current affairs and his readers' background knowledge, however fragmentary, imbibed from the newspapers of the day. Wells displayed an amazing talent for seizing upon such news, realizing at once the implications of the new discoveries and envisaging them as the basis for fiction. Thus in 1893 Schiaparelli propounded the theory of Martian 'canals'; in 1894 Percival Lowell, from his observations in Arizona, posited that the 'canals' were the work of intelligent beings conserving water. In 1898, when such theories had but recently become public knowledge, Wells published The War of the Worlds. Again, in 1905 the Wright Brothers flew thirty-six miles and thereby aeronautics first became a practicable proposition; in 1908, when the prospect of flying had captured the popular imagination, Wells wrote The War in the Air. It is not accidental that in this novel he described the excitement over the great names in the early history of flying; every reader enjoys seeing in fiction the names with which he is already familiar in real life.

Not only did Wells gain popularity by exploiting world news, but his work, in its time, served a genuine

function in educating a wide public to understand the contemporary news and its implications a little more intelligently. This mutual benefit system is, of course, forfeited by the majority of science-fiction writers who disregard the present and insist upon the future as the only milieu capable of providing sufficient scope for invention.

Chapter 11. Art, Science and Structure: the Debate  
with Henry James.

Inevitably Wells's preoccupation with scientific principles as his criteria for judging life had a profound effect on his approach to art and on his literary style.

In scientific research the criteria of any theory are firstly that it should be the closest possible approximation to experimental truth, and secondly, that it should have pragmatic value. Thus it is scarcely surprising that Wells, trained in such a systematic approach to experience, came to propound a materialistic view of art which brought him into sharp conflict with exponents of the established view of aesthetics and literature, and in particular with Henry James. Wells could not accept beauty and art as self-justifying, as ends in themselves; yet in literary circles they were almost universally held to be so. This assumption (and to Wells it was an unwarranted assumption, being beyond demonstration) aroused him to a rebellion which found explicit expression in several of his works. The social criticism of The First Men in the Moon includes a passage of light-hearted mockery at the expense of the artist who is so completely absorbed in himself and his work. Phi-oo, one of Cavor's Selenite mentors, describes for him the lunar equivalent of the artist":

'M'm - M'm - he - if I may say - draw. Eat little - drink little - draw. Love draw. No other thing. Hate all who not draw like him. Angry. Hate all who draw like him better. Hate most people. Hate all who not think all world for to draw. Angry. M'm. All things mean nothing to him - only draw. He like you...if you understand....New thing to draw. Ugly - striking.'<sup>1</sup>

<sup>1</sup>The First Men in the Moon, Chap. 23, p. 234

This mild reproof became, however, more vindictive over the years. In Mankind in the Making Wells speaks of 'the artist who lives angrily in a stuffy little corner of pure technique'<sup>2</sup> and later, Benham too, examines the claims of art as part of his 'Research Magnificent,' and finds them wanting:

Art came to him with a noble assumption of his interest and an intention that presently became unpleasantly obvious to sell him pictures that he did not want to buy and explain away pictures that he did.....He reflected, one lives rather for life and things than for pictures of life and things or pictures arising out of life and things. This Art has an air of saying something, but when one came to grips with it, what had it to say? Unless it was Yah!<sup>3</sup>

Characteristically Wells considered the artistic imagination 'uneducated' (in his own specialised sense of the word) as the product of undisciplined training. In his autobiography he writes of the celebrated literary artists of his day that:

their abundant, luminous impressions were vastly more difficult to subdue to a disciplined, co-ordinating relationship than mine. They remained therefore abundant but uneducated brains. Instead of being based on a central philosophy, they started off at a dozen points; they were impulsive, unco-ordinated, wilful. Conrad, you see, I count uneducated, Stephen Crane, Henry James, the larger part of the world of literary artistry.....They lapsed - though retaining their distinctive scale and quality - towards the inner arbitrariness and unreality of the untrained common man.<sup>4</sup>

Whereas the artist takes the common facts of existence and recreates from them a new entity, Wells was an inveterate respecter of facts and the causal relations between them. Facts might be manipulated for purposes of education, politics or organization, but they were not to be disregarded, passed

<sup>2</sup>Mankind in the Making, Chap. 10, p. 360

<sup>3</sup>The Research Magnificent, Chap. 2, v, pp. 135-6

<sup>4</sup>Experiment in Autobiography, Chap. 8, v, p. 620

over lightly, or imagined as being something else. Again, objects were assessed by Wells strictly in terms of their usefulness, and if they did not qualify on these grounds, then no aura of, or association with, the past, no aesthetic appeal, could prevent his condemnation of them. His other principal criterion was that of consistency with the body of existing knowledge. We have seen in Chapter 1 that Wells's biological studies had stressed the need for a unifying view of life, which, ideally, should synthesise all known phenomena into a mutually explanatory and consistent system of reality. Theories which remained totally irreconcilable with this emerging picture were ipso facto inefficient, disruptive and best discarded since no entities had meaning on their own, but only in relation to the whole. Thus, when Wells came to consider the style and content of literature, his aims were almost exclusively functional. After the turn of the century his increasing preoccupation with plans for sociological and ethical reform led him to subordinate all considerations of form to his aim of propounding his views as pungently as possible, with decreasing regard for characterization, construction or the art of literary expression. For Wells, as for Huxley, writing was an instrument, never an end. It meant the art of clear exposition, of controversy, which he cultivated for the same purposes as the scientist and the philosopher. Consequently James found Wells too naively simple for an artist, while Wells considered James 'too devious and complicated for sense.' Indeed, the opposition between their ideas of literature was almost total. Whereas Wells tended to tailor his subject matter rigorously to his central theme, his style was often loose and haphazard,

while of James the converse was true - he treated his subject discursively while his style was formal and tightly-knit. This divergence was the natural outcome of the relative values ascribed by the two authors to objective and subjective levels of experience, to the realms of science and of art.

The famous and often acrimonious debate between Wells and James began in earnest with James's criticism of Marriage which, together with Wells's reply, are worth considering briefly since they exemplify the diametrically opposed assumptions and criteria of the two authors.

Wells had written Marriage explicitly as a problem-novel in which the incidents preceding Marjorie's marriage are reported only fragmentarily, as a background sketched in for technical completeness. James, however, demanded to know all such details in full - to know, for example, what was said by Marjorie and Trafford during the three hours they spent in the lane with the donkey-carts before their open declaration of love. He insisted that Wells's omission of this material suggested that he did not himself know, and could not envisage, what had passed between them, and that this, in turn, was because he was not fundamentally interested or absorbed in the two characters for their own sake.<sup>5</sup> Wells, in defence, claimed that James's criticism was true but irrelevant:

Henry James was quite right in saying that I had not thought out these two people to the pitch of saturation and that they did not behave unconsciously and naturally. But my defence is that that did not matter, or at least that for the purposes of the book it did not matter very much.<sup>6</sup>

<sup>5</sup>Henry James, letter to H.G. Wells, Oct. 18, 1912, reprinted in Henry James and H.G. Wells, ed., L. Edel and G.N. Ray (London, 1958) pp. 165-8. James later reiterated this criticism in 'The Younger Generation', Times Literary Supplement (19 March, 1914) 134

<sup>6</sup>Experiment in Autobiography, Chap. 7, v, p. 490

Wells is here reiterating one of the claims he had already made emphatically in his manifesto, 'The Contemporary Novel' - the claim that the novel is a means to an end and not an end in itself.

You see now the scope of the claim I am making for the novel; it is to be the social mediator, the vehicle of understanding, the instrument of self-examination, the parade of morals and the exchange of manners, the factory of customs, the criticism of laws and institutions and of social dogmas and ideas. It is to be the home confessional, the initiator of knowledge, the seed of fruitful self-questioning....The novelist is going to be the most potent of artists, because he is going to present conduct, devise beautiful conduct, discuss conduct, analyse conduct, suggest conduct, illuminate it through and through....And this being my view, you will be prepared for the demand I am now about to make for an absolutely free hand for the novelist in his choice of topic and incident and in his method of treatment.

Thus for Wells the novel was basically an ethical and sociological enquiry, on both the individual and the social level, whereas for proponents of the formalistic approach it was primarily a rendering of a system of impressions. Granted his point that the novel had an ethical purpose beyond itself, Wells was little disposed to care about the form in which the story was couched, whereas for James the form was of primary importance. Conrad, who aligned himself with James on this question, further differed from Wells in the intrinsic value which he wished to ascribe to every object, every incident, as a thing in itself. Wells records one such illuminating discussion between himself and Conrad:

I remember a dispute we had one day as we lay on the Sandgate beach and looked out to sea. How, he demanded, would I describe how that boat out there sat or roared or danced or quivered on the water? I said that in nineteen cases out of twenty I would just let the boat be there in the commonest phrases possible. Unless I wanted the boat to be

'The Contemporary Novel', an address to the Times Book Club, 1911, reprinted by L. Edel and G.N. Ray, op. cit., pp. 154-5

important, I would not give it an outstanding phrase, and if I wanted to make it important, then the phrase to use would depend on the angle at which the boat became significant. But it was all against Conrad's over-sensitized receptivity that a boat could ever just be a boat. He wanted to see it with a definite vividness of his own. But I wanted to see it and to see it only in relation to something else - a story, a thesis. And I suppose, if I had been pressed about it, I would have betrayed a disposition to link that story or thesis to something still more extensive and that to something still more extensive and so ultimately to link it up to my philosophy and my world outlook.<sup>8</sup>

This diversity of opinion between Wells and Conrad is clearly the result of the basic differences in outlook between the scientifically trained mind and the artistic imagination - on the one hand the desire for a unified system in which each unit is subordinate to the whole and derives its meaning largely, if not entirely, from its relationship to the whole, and on the other hand the emphasis upon the uniqueness of each entity, its intrinsic importance when seen as far as possible in isolation. Aldous Huxley writes:

For Science in its totality, the ultimate goal is the creation of a monistic system in which - on the symbolic level and in terms of the inferred components of invisible and intangibly fine structure - the world's enormous multiplicity is reduced to something like unity, and the endless succession of unique events of a great many different kinds gets tidied and simplified into a single rational order....The man of letters, when he is being most distinctively literary, accepts the uniqueness of events, accepts the diversity and manifoldness of the world, accepts the radical incomprehensibility on its own level, of raw, unconceptualized existence, and finally accepts the challenge which uniqueness, multifariousness and mystery fling in his face.<sup>9</sup>

Consequent upon this divergence of view point are the two radically different modes of expression of science and literature. Fundamentally the scientist aims to say only one

<sup>8</sup>Experiment in Autobiography, Chap. 8, v, p. 619

<sup>9</sup>A. Huxley, Literature and Science, (London, 1963), iii, pp.

thing at a time, and to state it with the maximum clarity and objectivity. To this end he simplifies and jargonises so that, at its most perfectly pure, scientific language ceases to rely upon a medium as ambiguous as words, and resorts to the symbols of mathematics. The literary artist, on the other hand, purifies language for a different purpose. Rather than attempting to say only one thing at a time, he endeavours to reflect the complexity of human experience which is lived on many levels simultaneously and hence has many, perhaps irreconcilable, meanings. Thus in the former case, the fact, the content, is the all-important element. Scientific wording can be changed, translated, and amended and, provided clarity is not sacrificed, nothing is lost; but if the meaning is rendered obsolete by new facts, new experimental knowledge, the original paper loses all its scientific value and becomes of historical interest only. Of the arts, the converse holds: no change in expression can be made and the thought remain the same, but neither can great art be rendered obsolete by new facts.

For Wells, then, the content was the all-important aspect of the novel, and his impatience with those who attempted to elevate form and pattern to a level of self-sufficiency was concentrated in his retaliation to James's criticisms. In the light of later reflection he wrote of their relationship:

I bothered him and he bothered me. We were at cross-purposes based...on very fundamental differences not only of temperament, but training. He had no idea of the possible use of the novel as a help to conduct. His mind was turned away from any such idea. From his point of view there were not so much 'novels' as *The Novel*, and it was a very high and important achievement. He thought of it as

an Art Form, and of novelists as artists of a very special and exalted type. He was concerned about their greatness and repute....One could not be in a room with him for ten minutes without realising the importance he attached to the dignity of this art of his. I was by nature and education unsympathetic with this mental disposition. But I was disposed to regard a novel as about as much an art form as a market place or a boulevard....That was entirely out of key with James's assumptions.<sup>10</sup>

Such is Wells's statement in retrospect, but during the heat of the debate he resorted to a more vigorous and satirical attack upon James. A Jamesian novel, he wrote in Boon is:

like a church lit, but without a congregation to distract you, and with every light and line focussed on the high altar, and on the altar, very reverently placed, intensely there, is a dead kitten, an eggshell, a bit of string.... Having first made sure that he has scarcely left anything to express, he then sets to work to express it with an industry, a wealth of intellectual stuff that dwarfs Newton....He brings up every device of language to state and define. Bare verbs he rarely tolerates. He splits his infinitives and fills them up with adverbial stuffing. He presses the passing colloquialism into his service. His vast paragraphs sweat and struggle; they could not sweat and elbow and struggle more if God himself was the processional meaning to which they sought to come. And all for tales of nothingness....It is a magnificent but painful hippopotamus resolved at any cost, even at the cost of its dignity, upon picking up a pea which has got into the corner of its den.<sup>11</sup>

This belief that the cultivation of art for its own sake leads eventually to the neglect or denigration of its original raison d'être is given allegorical form in three of Wells's short stories. In 'The Pearl of Love' the subject which originally inspired the devotional art is finally deemed redundant, for it is unable to compete with the lover's preoccupation with that art. 'The Beautiful Suit' and 'The Door in the Wall' express a similar warning of the perils of an ars pro arte ethic.

<sup>10</sup> Experiment in Autobiography, Chap. 7, v, pp. 488-9

<sup>11</sup> Boon, Chap. 4, iii, pp. 455-6

Later, in extenuation of his savage attack in Boon, Wells wrote to James, claiming that they supported two diverse approaches to art, but suggesting that perhaps both were valid:

There is, of course, a real and fundamental difference in our innate and developed attitudes towards life and literature. To you literature like painting is an end, to me literature like architecture is a means, it has a use.<sup>12</sup>

but James, in reply, categorically denied any distinction 'between a form that is (like) painting, and a form that is (like) architecture' and instead reasserted as strongly as possible his former position:

It is art that makes life, makes interest, makes importance, for our consideration and application of these things, and I know of no substitute whatever for the force and beauty of its process.<sup>13</sup>

Indeed Wells's deliberate disregard for style elicited criticism from many who genuinely admired other aspects of his work. Desmond MacCarthy remarked that:

Mr. Wells has always been set on believing that the value of a novel depends upon the amount of good stuff in it; that is a hold-all into which you can cram anything you have ready. Had patience been added to his cluster of extraordinary gifts he would have been among the world's great novelists.<sup>14</sup>

Whereas Wells accused Arnold Bennett of being preoccupied with surface values, Bennett reciprocated by charging Wells with complete disregard for all surface values, because he was intent only on his thesis of the moment, everything else being rendered subsidiary to this:

Like all great reformers you are inhuman, and scornful of everything that doesn't interest you. Hence the complaint of the anti-Wellsites that in your scientific novels there is no individual interest, that the characters don't exist individually, a not unjust complaint. The

<sup>12</sup> H.G. Wells, letter to Henry James, 8th July, 1915, reprinted by Edel, op. cit., p. 264

<sup>13</sup> Letter from James to Wells (July 10, 1915) reprinted by Edel, op. cit., p. 267

<sup>14</sup> D. MacCarthy, a review of The Bulpington of Blup, Sunday Times, (Jan. 22, 1933) p. 8

pity of it is that these persons cannot perceive the 'concerted' effort of your 'scientific' novels. You are not really interested in individual humanity. And when you write a 'non-scientific' novel you always recur to a variation of the same type of hero, and you always will, because your curiosity about individualities won't lead you further.

You won't have anything to do with 'surface values' at all. You don't merely put them in a minor place; you reject them....You will never see it, but in rejecting surface values you are wrong. As a matter of fact they are just as important as other values. But reformers can't perceive this.<sup>15</sup>

On the whole the scientific romances are least open to the criticism of formlessness which applies chiefly to the later novels. In these early short stories and short novels Wells was still the zealous disciple of Poe and Conan Doyle, and in most cases the construction is sufficiently tightly knit to further the theme, although in a few instances the story suffers from too loose a construction for its length. For about one-third of the short story, 'A Slip Under the Microscope', we have no real sense of direction as we follow the sporadic discussions of the students, no confidence as to which aspects of the story are ultimately to be considered important. The most notorious example of apparently disorganized construction is Tono-Bungay. We are presented with a narrator who warns us in the first chapter

This book is going to be something of an agglomeration....I want to make it simply a hotch-potch of anecdotes and experiences with my uncle swimming in the middle as the largest lump in the victual. I'll own that here, with the pen already started, I realize what a fermenting mass of things learnt and emotions experienced and theories formed I've got to deal with, and how, in a sense, hopeless my book must be from the outset. I suppose what

<sup>15</sup>Arnold Bennett, Letter to Wells, 30th Sept., 1905, reprinted in Arnold Bennett and H.G. Wells, ed. H. Wilson, (London, 1960) pp. 124-5

I'm really trying to render is nothing more nor less than Life - as one man found it.<sup>16</sup>

but this transparent excuse for chaos seems scarcely appropriate to the character of George. Had Uncle Ponderevo been the narrator we might be prepared to accept the lack of construction as a further element of characterization, but George is the alleged author, and George is, we are told, a scientist - that is, in the Wellsian canon, the guardian of order against the tide of chaos, undisciplined thinking, and disorderly procedures. It is true that, except in his relationship with Beatrice, George himself does on the whole display the impartiality of the classical scientist figure, non-involved almost to the point of irresponsibility, but this is scarcely sufficient to counter the effect of the novel's seemingly chaotic progress, particularly in the chapters devoted to the quap episode when we lose all sense of direction for the sake, apparently, of a few scientific terms and a digression on the centres of disintegration in nature and in society. Nevertheless, in retrospect, it is possible to argue that this seeming flaw may in fact have been part of Wells's intention, and that if this is so it adds another level of meaning to the novel.

One of Wells's fundamental tenets was that nature is haphazard and chaotic, and that order is only imposed upon it by civilized man. In all his novels about average 'small souls' - Hoopdriver, Kipps, Bert Smallways, Mr. Polly - Wells is committed to a doctrine that man is the pawn of circumstances unless he is sufficiently strong-willed and definite in his own purposes to assert his will upon the world. George reflects, at the end of the novel, that:

One is in a world of accident and nature....

<sup>16</sup>Tono-Bungay, Bk. I, Chap. 1, i, p. 6, and Chap. 1, ii, p. 7

And amidst it all no plan appears, no intention, no comprehensive desire. That is the very key of it all.<sup>17</sup>

Wells himself had claimed that this predicament was a peculiarity of our species which was 'still, as a whole, unawakened to the possibilities which science indicated for the control of environmental chaos.'<sup>18</sup> and for most of his life as described in the novel, George too is unawakened. He merely observes: he does not act with definition and strength, but is swept along by stronger personalities who at least know what they want, however limited their aims may be. The symbol of his groping is his glider which, without a skilful and determined commander to guide it, is tossed at the mercy of every air-current, but if managed with concentration, self-denial and intelligence (it is stressed that George has to train rigorously in all these fields) it soars and flies wherever the pilot dictates. So, too, George's later 'child', his destroyer, cleaves the water because of the perseverance skill and enterprise of her designer. Wells, like many of the great thinkers of his age, was implicitly a will-and-power-philosopher, and this doctrine led him to feel the greatest interest in the will of exceptional individuals, and in the kinds of power which they used or misused in imposing their will on the world. As such, this problem of power recurs in When the Sleeper Awakes, The Food of the Gods, The Shape of Things to Come, and, of course, in The Invisible Man; George, however, is only a novice in recognizing this; virtually the whole of the novel deals with the adolescence of his will, and almost to the end he remains irresolute, thwarted by Beatrice. Thus if Tono-Bungay appears to be

<sup>17</sup>Tono-Bungay, Bk. IV, Chap. 3, ii, p. 526

<sup>18</sup>First and Last Things, Bk. II, viii, p. 250

the worst constructed of all Wells's major novels, this is not necessarily the flaw it has generally been assumed to be.<sup>19</sup> If it seems to weaken the conception of George qua scientist, it nevertheless elaborates the idea of what an aspiring scientist must first overcome before he can design 'the symbol of my destroyer, stark and swift, irrelevant to most human interests'.<sup>20</sup>

This is not to assert, in disregard of Henry James, and Conrad, that Wells was a master of construction. Some of the short stories and a novel such as The World Set Free would instantly negate such a claim; but overall his record is not as black as it has often been painted by critics who failed to see the part which an apparent lack of schema may contribute to the overall meaning of a novel. We cannot claim that Wells was always fully conscious of such a process, for he vigorously denied it in his repeated rejoinder to James and Conrad that he was merely a journalist and proud to be so:

'I am a journalist', I declared, 'I refuse to play the "artist". If sometimes I am an artist it is a freak of the gods. I am a journalist all the time and what I write goes now - and will presently die.'<sup>21</sup>

This however by no means necessarily discounts the literary value of his work. Even if Wells's assertion about the

<sup>19</sup>K.B. Newell finds a unifying metaphor in the rise and fall of the skyrocket which parallels the transformation from illusion to reality while E. McNamara sees as further organic principles making Tono-Bungay more cohesive than is at first apparent the metaphor of the skyrocket and the two betrayals of George by Beatrice. K.B. Newell, 'The Structure of H.G. Wells's Tono-Bungay' English Fiction in Transition, IV, 2 (1961) 1-8; E. McNamara, 'H.G. Wells as a Novelist' University of Windsor Review II, 2, (1967) 21-9.

<sup>20</sup>Tono-Bungay, Bk. IV, Chapter 3, iii, p. 529

<sup>21</sup>Experiment in Autobiography, Chapter 8, v, p. 623

impermanence of his writing were true at the level he intended the remark, nevertheless his future-oriented thought which inspired such a declaration was itself a legacy to literature and to Western thought. This consideration must temper our awareness of his deficiencies in the final assessment of his work.

Conclusion: Wells's Contribution to the English Novel

Because Wells was so much influenced by his understanding of science, there are certain general qualities which characterize his thought, which made him unique in his period and which mark him, in retrospect, as one of the fathers of the essentially modern approach to life. His influence on the young writers of his day was immense, firstly as a model for emulation in their revolution against the establishment, and subsequently, in his turn, as a tradition against whom it seemed obligatory to react. George Orwell, who was by no means uncritical of Wellsian thought, wrote in 1941:

Thinking people who were born about the beginning of the century are in some sense Wells's own creation. How much influence any writer has, and especially a 'popular' writer whose work takes effect quickly, is questionable, but I doubt whether anyone who was writing books between 1900 and 1920, at any rate in the English language, influenced the young so much. The minds of all of us, and therefore the physical world, would be perceptively different if Wells had never existed.<sup>1</sup>

and Scott Fitzgerald recorded the effect on him of the 'gloriously intoxicated efforts of H.G. Wells to fit the key of romantic symmetry into the elusive lock of truth.'<sup>2</sup>

It cannot be doubted that Wells did indeed expand the scope of the novel in several important respects, even if he did not achieve his aim of 'including all life within the novel'. The broadest and ultimately the most far-reaching effect of his writing was the introduction into literature of a new awareness of the future. Necessarily this arose out of Wells's scientific consciousness and particularly out of his interest in evolutionary theory which is essentially

<sup>1</sup> George Orwell, 'Wells, Hitler and the World State', Collected Essays (London, 1961) p. 164

<sup>2</sup> F. Scott Fitzgerald, This Side of Paradise (Harmondsworth 1963) p. 189

forward-looking and glances backwards only for comparison and reference. In this respect, his writing embodied a genuinely new set of assumptions, the literary correlatives of the new attitudes to science emerging early in the twentieth century. Indeed, insofar as Wells was already writing of the new climate of thought and feeling before the turn of the century, he actually anticipated it, and may be said, in the light of his wide reading public, to have fostered it.

It is a familiar statistic that ninety per cent of all those who, since the beginning of recorded history, could be called scientists are still alive, but such a statement implies something fundamental about the general attitudes of a large proportion of educated minds today. The most striking difference between them and the attitudes of the preceding centuries is the vastly decreased reliance on the past, on history, on precedent, as ends in themselves, and a corresponding awareness of the future as the necessary and largely predictable outcome of the present. On the other hand, for the humanist, most things today come after. George Steiner comments that:

Language, musical notation, even the most radical of modern visual forms, carry with them the overburdening luggage of the past. Language, in particular, has its past literature, past achievements, and past dreams. The greatest of our twentieth century artists are masters of the pastiche: Joyce, Picasso, Stravinsky...The statement that there will not be in the English language, ever, a writer as great as Shakespeare is, in terms of the semantics of the future tense, an odd paradox. It is the kind of statement one should have no grounds to make, linguistically, psychologically. Yet in the moment that we do make it, it carries a real weight of conviction.<sup>3</sup>

<sup>3</sup>George Steiner, 'Imagining Science' Listener, LXXXVI No. 2225 (Nov. 18, 1971) 686

Ancient literature had customarily looked back to a Golden Age; and the Romanticism of the early nineteenth century revived and expounded the belief that anything was at its best and purest at the time of its origins, implying that any apparent progress could, by definition, be only a regression, a deterioration. For the scientist on the other hand the future is, by simple definition, in advance of the present; a schoolchild of today uses concepts and arguments which Newton and Gauss could not devise. It is this latter attitude which underlies all Wells's work, even The Outline of History, for, unlike any previous history, it is written not for its own intrinsic interest but for its relevance to the future. Wells, despite his unquestionable literary ability, had imbibed a future-oriented turn of mind rather than the characteristically literary turn of mind which values and absorbs tradition and makes it part of itself. Edward Shanks wrote of Wells in 1923 that 'the past has no native roots in his mind; and it might be said that the future has taken its place.'<sup>4</sup> Wells's 'Discovery of the Future' was indeed a genuine discovery, for both authors and readers, in that, after the publication of Anticipations, prophecy came to be seen as organized and methodical and the future as capable of manipulation by non-magical means.

This belief in the knowableness, the innate 'reasonableness' of the future had several important consequences in Wells's writings. Firstly, there is a sense of courage to live for the future because we need no longer be helpless pawns of circumstance but may confidently embark on a course of action to influence the future for good by fostering the

<sup>4</sup> Edward Shanks, 'The Work of Mr. H.G. Wells,' First Essays in Literature (London, 1923) p. 168

best possible development of society and ultimately of the human race. This spirit of adventuring into the future became contiguous with Wells's aesthetic of the machine age and was, on both these counts, in total opposition to the prevailing spirit of the 'nineties. Pre-eminently in his writings, Wells captured the exhilaration of living in a modern, mechanized world, a sense of ~~delight~~ in change and development free from any sense of hankering for the past.

Again, if Wells succeeded to a long tradition of Utopian literature, he also unwittingly fathered a new trend which repudiated the whole concept of sociological progress, for the major anti-utopias of the twentieth century were conceived either in reaction against Wells's utopias which made full use of technology to free citizens for more creative leisure, or as an extension of his picture of the future in The Sleeper and 'A Story of the Days to Come'. Even these anti-utopias are modelled in considerable detail on Wells's concepts, since they all have in common the description of claustrophobic states where conditioning ensures obedience, where freedom is eliminated, individuality destroyed, and all memories of the past rigorously erased, where men are artificially isolated from 'Nature' and where science and technology are used not to enrich the quality of individual life but to enforce obedience and control its slaves at every level of their conscious and unconscious being. These later works are all continuations of Wells's own imagination.

Hillegas comments:

it is doubtful that without Wells, the anti-utopian phenomenon would ever have taken the shape it has.

and of the 'Time Machine' in particular:

In imaginative qualities it excels the later anti-utopias, such as even, We, Brave New World, being both more successful in domesticating the incredible and more poetic in its conception. Its coherence and power explain why it not only contributed numerous details and images to the twentieth-century anti-utopias, but made available to the literary consciousness a new form (science fiction) and suggested one use for this form (the attack on utopia).<sup>5</sup>

Thus, in a real sense, Wells instigated many of the twentieth-century 'traditions' about the future. Zamyatin's We is set in a superstate of the twenty-sixth century, a giant city roofed with glass and cut off from the surrounding country by a wall of glass which isolates the citizens from nature and provides a completely artificial environment, a condition almost identical with that which Wells described in The Sleeper with its glass-domed roof. The citizens of We wear identical blue-grey uniforms equivalent in every way to the blue canvas of the Labour Exchange Co. in 'A Story of the Days to Come'.

It was Zamyatin who pointed out that Wells's scientific romances are the urban fairy tales of our century, with trees, beasts and the earth being replaced by smoke stacks, automobiles and asphalt roads. Zamyatin considers that these fairy tales attain to the status of myth which is 'always, visibly or invisibly, bound with religion... and the religion of today's city is exact science.'<sup>6</sup> It is in this rôle of myth-maker that Wells becomes important to the development of the novel in yet another sense - that of relating much of modern fiction and particularly science fiction, to the mainstream of literature.

<sup>5</sup> M.R. Hillegas, The Future as Nightmare (New York, 1967) pp. 5, 34.

<sup>6</sup> Zamyatin, E.I. Gerbert Uells (St. Petersburg, 1922) p. 54

It has already been acknowledged that Wells, in several of his scientific romances achieved this by relating his fantasies either metaphorically or allegorically to the real world and frequently elevated his theme quite explicitly to a cosmic plane. Possibly no other writer has matched Wells's grasp of space-time or related it so vividly to the world of immediate experience.

Science fantasy, as perfected by Wells, issued in the proliferation of science fiction in later decades, but already in the 1970's the particular type of writing usually categorized as science fiction is passing into work which is pre-occupied with sociological speculation about contemporary rather than future situations and which thus appears to be approaching a coalescence with the realistic social novel. Interestingly, such a progression follows the sequence of Wells's own writings, as his earlier fantasies gave way to sociological speculation and finally to realistic social novels of contemporary life, and as the character of the scientist in his work passed from the alchemical figure of 'The Chronic Argonauts' into the less exotic character of the realistic novel, a character of moral depth and considerable sociological importance.

Wells's two greatest contributions, then, to the novel were firstly the introduction of several important new components and the re-introduction of at least one other major theme to literature, and secondly his rôle as an integrator of many apparently diverse disciplines and interests. In this latter realm the only other writer of our century who has attempted to combine such a range of concerns is the scientist-theologian, Teilhard de Chardin, who also found

in evolutionary theory a great unifying concept for his thought. Nevertheless, although there are still comparatively few explicit examples of interdisciplinary writing, it cannot be other than a hopeful sign that several of the finest modern European writers have behind their work the strength of a scientific training, or a qualification in at least one branch of science or technology - Nabokov, the entomologist, Solzhenitsyn, the engineer, Borges, the mathematician. Their work points towards the perfection of that unity of interest which Wells believed to be not only possible but essential for the sane development of society. Recently George Steiner has eloquently revived Wells's plea:

The gap between the literary imagination and the centres of feeling and moral debate in the sciences ought to be narrowed....A tide of domestic trivia and erotic pretence has made much of the novel a soggy, routine pastime. At so many points the landscape of the imagination is meaner, more shop-worn than it need be. But the stakes are larger than literary.

More than ever before the scientists themselves are conscious of the need to communicate 'outward', to translate into the common currency of speech and feeling that which is the core of their own existence....Today the points of maximum pressure on individual and social life derive from biology and molecular chemistry. Work in these disciplines will soon alter the essential options for civilization. The scientists are saying: 'Come and meet us at least part-way, try and imagine with us, make some effort to get things right, even if in a simplified form'. The novelist is the eminent translator of the particular into the general: he imagines and senses ahead of us. And even for those who are neither writers nor scientists, the question should be one of simple pride: if we had lived in Florence during the Renaissance, would we not, on occasion, have sought to lunch with the painters?'<sup>7</sup>

<sup>7</sup>George Steiner, op. cit., p. 688

515.

In Wells's work we see both this challenge and the first and most enthusiastic response to such a challenge.

### Bibliography

Except where otherwise indicated the place of publication is London.

#### A. Wells's Writings

Where possible the Atlantic Edition issued in 28 uniform volumes (Unwin, 1924-1927) has been used since the text for this edition was read and revised by Wells who wrote a special preface for each volume. However, the Atlantic edition is not complete and where other editions have been consulted they are indicated. The date of original publication of novels is given in square brackets,

'A Tale of the Twentieth Century', Science Schools Journal I,  
(May, 1887) 187-91.

'The Chronic Argonauts', Science Schools Journal I, (April,  
May, June, 1888) 312, 336, 367.

'The Rediscovery of the Unique', Fortnightly Review L n.s.  
(July, 1891) 106-111.

'Zoological Retrogression', Gentleman's Magazine, CCLXXI  
(September 7, 1891) 246-53.

'On Extinction', Chamber's Journal, X (September 30, 1893)  
623-4.

'Popularizing Science', Nature, L (July 26, 1894) 300-1.

'Fallacies of Heredity', Saturday Review, LXXVIII  
(December 8, 1894) 617-8.

'The Limits of Individual Plasticity', Saturday Review, LXXIX  
(January 11, 1895) 89-90.

'Excelsior', Saturday Review, LXXIX (April 13, 1895) 475.

'The Depressed School', a review of Eve's Ransom, Saturday  
Review, LXXIX No. 2061  
(April 27, 1895) 531.

The Time Machine [1895].

The Wonderful Visit [1895].

The Stolen Bacillus and other Incidents [1895].

'Intelligence on Mars', Saturday Review LXXXI (April 4, 1896)  
345-6.

The Island of Dr Moreau [1896].

The Wheels of Chance [1896].

'Human Evolution. An Artificial Process', Fortnightly Review  
LX (October 1896) 590-5.

The Plattner Story and Others [1897].

The Invisible Man [1897].

'The Novels of Mr George Gissing', Contemporary Review  
LXXII (August 1897) 192-201.

'Realism vs. Romance' (an interview), Today, (September 11,  
1897) 164.

Certain Personal Matters (Lawrence & Bullen), [1897.]

The War of the Worlds [1898].

'What I Believe' (an interview by George Lynch) The Puritan I  
(April 1899) 1-3.

When the Sleeper Wakes [1899].

Tales of Space and Time [1899].

Love and Mr Lewisham [1900].

'Huxley', Royal College of Science Magazine XIII (April, 1901)  
109-11.

The First Men in the Moon [1901].

Anticipations [1901].

'The Discovery of the Future', Nature LXV No. 1684  
(February 6, 1902) 326-331.

The Sea Lady [1902].

'H. G. Wells, Esq. B.Sc.' Royal College of Science Magazine

XV (April, 1903) 221-4.

'Scepticism of the Instrument' (an address to the Oxford

Philosophical Society, November 8,

1903) printed in Mind XIII n.s. No. 51

(July, 1904) 379-393.

Mankind in the Making [1903].

Twelve Stories and a Dream [1903].

The Food of the Gods [1904].

'George Gissing: An Impression', Monthly Review XVI

(August, 1904) 159-172.

A Modern Utopia [1905].

Kipps [1905].

In the Days of the Comet [1906].

The Future in America [1906].

New Worlds for Old [1908].

The War in the Air [1908].

First and Last Things [1908].

'The Things that Live on Mars', Cosmopolitan Magazine XLIV

No. 4 (March 1908), 335-42.

Tono-Bungay [1909].

Ann Veronica [1909].

The History of Mr Polly [1910].

The New Machiavelli [1911].

The Country of the Blind and other Stories [1911].

'Mr Wells Explains Himself', T.P.'s Magazine, (December 1911) 3.

Marriage [1912].

The Passionate Friends [1913].

The World Set Free [1914].

The Wife of Sir Isaac Harman [1914].

Boon [1915].

The Research Magnificent [1915].

Mr Britling Sees It Through [1916].

God the Invisible King [1917].

The Soul of a Bishop [1917].

Joan and Peter [1918].

Natural Science and the Classical System in Education,

(ed. by E.R. Lankester)

(Heinemann), 1918.

Report of the League for the Promotion of Science in Education

1916-1918, (Harrison), 1919.

The Undying Fire [1919].

The Outline of History [1920], (Newnes) 1920.

The Secret Places of the Heart [1922], (Odhams) n.d.

A Short History of the World [1922] (Collins), 1933.

Men Like Gods [1923].

The Dream [1924] (Jonathan Cape), 1926.

Christina Alberta's Father [1925] (Jonathan Cape), 1925.

The World of William Clissold [1926] (Benn), 1926.

The Open Conspiracy [1928] (Hogarth), 1930.

The Science of Life (with J.S. Huxley and G.P. Wells) [1931]

(Cassell) 1938.

The Work, Wealth and Happiness of Mankind [1932] (Heinemann),

1932.

The Shape of Things to Come [1933] (Hutchinson), 1933.

Experiment in Autobiography [1934] (Jonathan Cape) 1969.

The Croquet Player [1936] (Chatto and Windus) 1936.

Star Begotten [1937] (Chatto and Windus) 1937.

World Brain [1938] (Methuen) 1938.

The Fate of Homo Sapiens [1939] (Secker & Warburg) 1939.

All Aboard for Ararat [1940] (Secker and Warburg) 1941.

Guide to the New World [1941] (Gollancz) 1941.

The Outlook for Homo Sapiens [1942] (Secker and Warburg) 1942.

'On the Quality of Illusion in the Continuity of the Individual Life  
in the Higher Metazoa, with Particular  
Reference to the Species Homo Sapiens'.  
Thesis for the Doctor's Degree at  
London University 1944. Published in  
Nature CLIII (April 1, 1944) 395-7.

Phoenix [1942] (Secker and Warburg) 1942.

I Came to a Happy Turning [1945], Tiptree Essex, (H. G. Wells  
Society) 1968.

Mind at the End of its Tether [1945], Tiptree Essex,  
(H. G. Wells Society) 1968.

#### Letters:

Henry James and H. G. Wells, ed. Leon Edel and Gordon N. Ray  
(Hart-Davis) 1958.

Arnold Bennett and H. G. Wells, ed. Harris Wilson (Hart-Davis)  
1960.

George Gissing and H. G. Wells, ed. Royal A. Gettmann  
(Hart-Davis) 1961.

#### Bibliographies:

Bell, I. F. and D. Baird, The English Novel, 1578-1956  
Denver (Swallow) 1958.

H. G. Wells Society, H. G. Wells, A Comprehensive Bibliography  
(Lowe and Brydone) 1968.

Weeks, Robert P., 'Bibliography of Criticism of H. G. Wells',  
English Fiction in Transition I (1957)  
37 ff. and brought up to date in  
subsequent volumes.

B. Biography and Criticism of Wells's Work

- 'A. D. 802, 701' A review of *The Time Machine*, Pall Mall Gazette LXI No. 9504 (September 10, 1895) 4.
- Allen, Walter The English Novel (Phoenix House) 1954.
- Archer, W. God and Mr Wells, (Watts) 1917.
- Bailey, John 'Mr Wells's Pacifist State', The Nation (London) XV (September 26, 1914) 887-8.
- Belgion, M. H. G. Wells, British Council Series Writers and their Work (Longman) 1953.
- Bennett, E. Arnold 'Herbert George Wells and his Work', Cosmopolitan Magazine XXXIII (August 1902) 465-471.
- Beresford, J. D. H. G. Wells (Nisbet) 1915.
- Bergonzi, B. 'Another Early Wells Item', Nineteenth Century Fiction XIII (1958) 72-3.  
The Early H. G. Wells, Manchester (University Press) 1961.
- Brome, V. H. G. Wells, A Biography, (Longmans) 1951.
- Brooks, Van Wyck The World of H. G. Wells, (Unwin) 1915.
- Burke, J. B. 'Mr Wells and Modern Science', Dublin Review CLXIX (October, 1921) 222-36.
- Caudwell, Christopher 'H. G. Wells' in Studies in a Dying Culture (John Lane) 1938 pp. 73-95.
- Chaplin, F. K. H. G. Wells, An Outline (Macmillan) 1961.
- Chesterton, G. K. 'Mr H. G. Wells and the Giants', chapter 5 of Heretics (Lane) 1905.

- Connes, G. Etude sur la Pensee de Wells, Paris (Hachette) 1926.
- Costa, R. H. H. G. Wells, New York, (Twayne) 1967.
- Craufurd, A. H. The Religion of H. G. Wells and Other Essays, (Unwin) 1909.
- Cross, W. 'The Mind of H. G. Wells', Yale Review XVI (January 1927) 298-315.
- Crowley, C. P. 'Failure of Nerve: H. G. Wells', University of Windsor Review II, 2 (Spring, 1967) 1-8.
- Crozier, J. B. 'H. G. W. as a Sociologist', Fortnightly Review LXXVIII (September, 1905) 417-26.
- Dark, Sidney The Outline of H. G. Wells, (Leonard Parsons) 1922.
- Dickson, L. H. G. Wells: His Turbulent Life and Times, (Macmillan) 1969.
- Ensor, R. C. K. 'Experiment in Autobiography', The Spectator CLIII (October 12, 1934) 529.
- 'First Public Conference on Mr H. G. Wells's "Samurai"', New Age I (n. s.) (May 2, 1907) 9-11.
- Garnett, David 'The Scientific Romances of H. G. Wells', New Statesman and Nation V No. 116 (n. s) (May 13, 1933) 602.
- Haight, Gordon 'H. G. Wells's "Man of the Year Million"', Nineteenth-Century Fiction XII (March, 1958) 323-6.
- Harris, J. 'H. G. Wells', T. P's Weekly X (July 12, 1907) 53.

- Huxley, J. S. 'H. G. Wells', The Spectator, CLXXVII (August 16, 1946) 161.
- James, Henry 'The New Novel' in The Art of Fiction and Other Essays, Oxford (University Press) 1948, pp. 181-214.
- 'The Younger Generation', Times Literary Supplement (March 19, 1914) 133-4 and (April 2, 1914) 137-158.
- Kagarlitski, J. The Life and Thought of H. G. Wells (transl. from the Russian by Moura Budberg) (Sidgwick and Jackson) 1966.
- Keith, A. 'Is Darwinism Dead?', Nature CXIX (January 15, 1927) 75-7.
- Keun, Odette 'H. G. Wells - The Player', Time and Tide XV (October 13, 1934) 1249-51; (October 20, 1934) 1307-9; (October 27, 1934) 1346-8.
- Lankester, E. R. 'The Present Judged by the Future', (a review of Anticipations), Nature LXV Supplement (March 13, 1902) iii-v.
- Lawrence, D. H. 'Review of William Clissold', The Calendar III No. 3 (October, 1926) 254-7.
- Lay, W. 'H. G. Wells and his Mental Hinterland', The Bookman (New York) XLV No. 5 (July 1917) 461-8.
- 'The Marriage Ideas of H. G. Wells', The Bookman (New York) XLV No. 6 (August 1917) 606-13.

- Lemire, E. D. 'H. G. Wells and the World of Science Fiction', University of Windsor Review II, No.2 (Spring, 1967) 59-66.
- Levy, H. 'Science in Literature; the Short Stories of H. G. Wells', Nature CXX (October 8, 1927) 503-4.
- Lodge, D. 'Tono-Bungay and the Condition of England', in The Language of Fiction (Routledge) 1966, pp.214-42.  
'Assessing H. G. Wells', Encounter XXVIII No.1 (1967) 54-61.
- 'A Lunar Romance' (review of The First Men in the Moon),  
Nature LXV (January 19, 1902) 218-9.
- MacKenzie, N. and J. The Time Traveller, (Weidenfeld and Nicolson) 1973.
- MacCarthy, D. 'The Bulpington of Blup', Sunday Times (January 22, 1933) 8.
- McNamara, E. 'H. G. Wells as Novelist', University of Windsor Review, II, No.2 (Spring, 1967) 21-30.
- Mellersh, H. L. 'Shaw, Wells and Creative Evolution', Fortnightly Review CXXV (February 1926) 178-188.
- Mitchell, P. Chalmers 'Mr Wells's "Dr Moreau"', Saturday Review LXXXI (April 11, 1896) 368-9.
- 'Mr Wells's War in the Air', Westminster Gazette XXXII (October 24, 1908) 8.
- Newell, K. B. 'The Structure of H. G. Wells's Tono-Bungay', English Fiction in Transition IV, No.2 (1961) 1-8.  
Structure in Four Novels by H. G. Wells  
The Hague (Mouton) 1968.

- Nicholson, N. H. G. Wells, (Arthur Barker) 1950.
- Orwell, G. 'Wells, Hitler and the World State' in Collected Essays, (Mercury) 1961, pp.160 ff.
- Parrinder, Patrick H. G. Wells, Edinburgh (Oliver and Boyd) 1970.
- Philmus, R.M. 'The Time Machine: or the Fourth Dimension as Prophecy' PMLA LXXXIV No.3 (May, 1969) 530-5.
- 'The Plattner Story and Others', Daily Chronicle (May 26, 1897) 3.
- 'The Plattner Story and Others', Athenaeum, No. 3635 (June 26, 1897) 837.
- Pitkin, W.B. 'Time and Pure Activity', Journal of Philosophy, Psychology and Scientific Methods XI (1914) 521-6.
- Poston, L. 'Tono-Bungay, Wells's Unconstructed Tale', College English XXVI (1965) 433-7.
- Pritchett, V.S. 'Mr Wells's Scientific Romances', New Statesman XXVI No.654 (September 4, 1943) 154-5.
- 'All About Ourselves', New Statesman LI No.1315 (May 26, 1956) 601-2.
- 'The Scientific Romances' in The Living Novel, Dublin (Arrow) 1960 pp.122-9.
- Raknem, Ingvald H. G. Wells and His Critics, Oslo (Allen and Unwin) 1962.
- Randall, A.E. 'The Two Machiavellis', New Age VIII No.15 (February 9, 1911) 353-5.

- Ray, Gordon N. 'H. G. Wells Tries to be a Novelist' in Edwardians and Late Victorians, ed. R. Ellmann, New York (Columbia U. P.) 1960 pp.106-159.
- Russell, Bertrand 'H. G. Wells: Liberator of Thought', The Listener, L. (September 10, 1953) 417-8.
- Scheick, W. J. 'The Thing that is and the Speculative If', English Literature in Transition XI No.2 (1968) 67-78.  
'Reality and the Word: the Last Books of H. G. Wells', English Literature in Transition XII No. 3 (1969) 151-4.
- Scott James, R. A. 'Ann Veronica', The Daily News (October 4, 1909) 3.
- Shanks, Edward 'The Work of Mr H. G. Wells' in First Essays in Literature (Collins) 1923 pp.148-171.
- Snow, C. P. 'H. G. Wells' in Variety of Men (Macmillan) 1967 pp.47-64.
- Spencer, S. 'H. G. Wells. Materialist and Mystic', Hibbert Journal XLVI (July 1948) 358-361.
- Steinberg, M. W. 'H. G. Wells as a Social Critic', University of Windsor Review II No.2 (Spring, 1967) 9-20.
- 'The Time Machine' Nature LII (July 18, 1895) 268.
- 'A Tour de Force: Review of The Outline of History' Nature CVI (September 30, 1920) 137-40.
- 'The Transplantation of Living Tissues' - a review of The Island of Dr Moreau, Natural Science VIII (May, 1896) 291.

- Vidler, Alec R. The Church - in An Age of Revolution: 1789 to the Present Day, Harmondsworth (Penguin) 1961.
- Wagar, Warren H. G. Wells: Journalism and Prophecy, 1893-1946 (Bodley Head) 1964.
- The Wellsian The Journal of the H. G. Wells Society.
- West, Anthony 'H. G. Wells' Encounter VIII No. 2 (February, 1957) 52-9.
- 'The Dark World of H. G. Wells', Harper's CCXIV (May, 1957) 68-73.
- West, Geoffrey H. H. G. Wells - A Sketch for a Portrait (Gerald Howe) 1930.
- West, Rebecca The Strange Necessity (Cape) 1928 p. 199.
- Zamiatin, E. I. Gerbert Uells St Petersburg (Epoch) 1922.
- Zangwill, Israel 'Without Prejudice', Pall Mall Magazine VII (September 1895) 153-5.

C. Other Sources of Quotation and Reference

- |                            |  |
|----------------------------|--|
| Allott, K.                 | <u>Jules Verne</u> (Cresset) 1940  |
| Amis, Kingsley             | <u>New Maps of Hell</u> (Gollancz) 1961  |
| Arnold, Matthew            | 'Count Leo Tolstoy' <u>Fortnightly Review</u><br>XLII No. 242 n. s. (1887) 783-99.   |
| Bacon, Francis             | 'New Atlantis' [1623] in <u>Great Books of<br/>the Western World</u> Chicago<br>(Encyclopaedia Britannica) 1952<br>vol. XXX pp. 199-214. |
| Bailey, J. O.              | <u>Pilgrims Through Space and Time</u><br>New York (Argus) 1947.   |
| Baines, Jocelyn            | <u>Joseph Conrad</u> (Weidenfeld and<br>Nicolson) 1959   |
| Barnett, L.                | <u>The Universe and Dr Einstein</u><br>New York (Mentor) 1952.   |
| Batho, E. C. and B. Dobrée | <u>The Victorians and After</u> (Cresset)<br>1962.   |
| Beach, J. Warren           | <u>The Twentieth-Century Novel</u> ,<br>New York (Century) 1932.   |
| Becker, G. J. (ed.)        | <u>Documents of Modern Literary<br/>Realism</u> , Princeton (Princeton<br>University Press) 1963.  |
| Bennett, E. Arnold         | <u>Things That Have Interested Me</u><br>Second Series (Chatto and Windus)<br>1923.  |
| Bergerac, Cyrano de        | <u>Voyages to the Moon and the Sun</u><br>[1659] (Routledge) 1923.   |
| Bernal, J. D.              | <u>Science in History</u> (Watts) 1957   |

- Besant, Walter      The Art of Fiction (Chatto and Windus) (1902)
- Birch, L. Charles      'Concept of Nature', Australian Journal of Science XII No. 6 (June, 1950) 193-8.  
                                  'In the Footsteps of Charles Darwin', Australian Journal of Science XXI No. 2 (August-September 1958) 33-9.  
                                  Nature and God (S. C. M.) 1965
- Blake, William      The Poetry and Prose, ed. G. Keynes (Nonesuch) 1927.
- Blindermann, C. S.      'Huxley and Kingsley', Victorian Newsletter XX (Fall, 1961) 25-8.
- Blyton, W. J.      'Brave New World Planning' Quarterly Review CDXXIV (April, 1940) 263-77.
- Brandes, G. M. C.      'Naturalism in England', Main Currents in Nineteenth-Century Literature Vol. IV (Heinemann) 1905.
- Brierley, J. K. (ed.)      Science in its Context (Heinemann) 1965.
- Buckley, J. H.      The Victorian Temper (Cass) 1966.
- Butler, Samuel      The Works, ed. H. F. Jones and A. T. Bartholomew (Jonathan Cape) 1923-4.
- Campanella, Thomas      City of the Sun [1623] Washington (Dunne) 1901.
- Carlyle, Thomas      Sartor Resartus [1833-4] (Cassell) 1906.
- Carr, H. Wildon      Henri Bergson: The Philosophy of Change (Jack) 1911.

- Cazamian, L. Le Roman Social en Angleterre 1830-1850 Paris (Hachette) 1903
- Cazamian, Madelaine L. Le Roman et les Idées en Angleterre: l'influence de la Science 1860-1890 Strasbourg (Librairie Istra) 1923.
- Chapman, R. The Victorian Debate: English Literature and Society, 1832-1901 (Weidenfeld and Nicolson) 1968.
- Church, Richard British Authors (Longmans) 1948
- Clarke, I. F. Voices Prophesying War, 1763-1984 Oxford (University Press) 1966.
- Cleugh, M. F. Time - And Its Importance in Modern Thought (Methuen) 1937
- Coates, J. B. Ten Modern Prophets (Frederick Muller) 1944.
- Cole, Margaret Beatrice Webb, (Longmans) 1945.
- Collins, A. S. English Literature of the Twentieth Century. (University Tutorial Press) 1962.
- Conquest, Robert 'Science Fiction and Literature' Critical Quarterly V (1963) 355-67.
- Crowther, J. G. The Social Relations of Science (Macmillan) 1941.
- Scientific Types (Barrie and Rockliff) 1968.
- Crozier, J. B. Civilization and Progress (Longmans) 1885.
- Cruse, Amy After the Victorians, Woking (Allen and Unwin) 1938.
- Cudworth, Ralph The True Intellectual System of the Universe [1678] (Tegg) 1845.

- Dangerfeld, George The Strange Death of Liberal England (Constable) 1936.
- Darwin, Charles The Origin of Species [1859] (Murray) 1906.  
The Descent of Man [1871] (Murray) 1913.  
The Autobiography, ed. N. Barlow (Collins) 1958.
- Darwin, Francis The Life and Letters of Charles Darwin (Murray) 1887.
- Decker, C. R. The Victorian Conscience New York (Twayne) 1952.
- Deutsch, Helène The Psychology of Women New York (Grune and Stratton) 1944.
- Dickens, Charles Dombey and Son [1848] New York (Signet) 1964.  
Great Expectations [1860-1] New York (Airmont) 1965.
- du Maurier, Guy The Martian (Harper) 1897
- Dunne, J. W. The Serial Universe (Faber) 1934
- Einstein, Albert 'Über einen die Erzeugung und Verwandling des Lichtes betreffenden heuristischen Gesichtspunkt' Annalen der Physik XVII (1905) 132-148.  
'Über die von der molekularkinetischen Theorie der Wärme geforderte Bewegung von in ruhen den Flüssigkeiten suspendierten Teilchen' Annalen der Physik XVII (1905) 549-560.  
'Zur Elektrodynamik bewegter Körper', Annalen der Physik XVII (1905) 891-921.

- Eliot, George      Middlemarch [1871-2] (Everyman) 1959.
- Ellis, Havelock      Man and Woman [1894] (Heinemann) 1934.
- The Nineteenth Century - a Dialogue in Utopia (Grant Richards) 1900.
- Evans, I. O.      Jules Verne and His Work (Arco) 1965.
- Flammarion, Camille      La Planète Mars et ses Conditions d'Habitabilité Paris (Hachette) 1892.
- Lumen (transl. A. A. M. and R. M.) (Heinemann) 1897.
- Flew, A. G. N.      Evolutionary Ethics (Macmillan) 1967.
- Ford, Ford Madox      The Soul of London (Macmillan) 1905.
- Forster, E. M.      'The Machine Stops' in The Eternal Moment (Sidgwick and Jackson) 1928.
- Frye, Northrop      'Varieties of Literary Utopias' Daedalus XCIV (Spring 1965) 323-347.
- Gaskell, Elizabeth      Wives and Daughters [1864-6] Harmondsworth (Penguin) 1969.
- Gissing, George      Born in Exile [1892] (Gollancz) 1970.
- Gorer, G.      'There is a Happy Land', Encounter XIX (July, 1962) 83-6.
- Gosse, Edmund      Father and Son [1907] Boston (Houghton Mifflin) 1965.
- Green, Martin      Science and the Shabby Curate of Poetry (Longmans) 1964.
- Green, R. L.      Into Other Worlds - Space Flight in Fiction from Lucian to Lewis (Abelard - Schuman) 1957.
- Greg, Percy      Across the Zodiac (Trübner) 1880.

- Gross, J. 'The Road to Utopia', New Statesman LXXVIII n.s. (July 25, 1969) 108-9.
- Hardy, Barbara (ed.) Middlemarch - Critical Approaches to The Novel (Athlone) 1967.
- Hardy, Thomas A Pair of Blue Eyes [1873] (Macmillan) 1920.
- Hillegas, Mark R. The Future as Nightmare Oxford (University Press) 1967.
- Henderson, P. The Novel Today (Bodley Head) 1936.
- Henkin, Leo J. Darwinism in the English Novel 1860-1910 New York (Russell and Russell) 1963.
- Hertzler, J. O. The History of Utopian Thought New York (Macmillan) 1923.
- Hinton, Charles H. Scientific Romances (Swan Sonnenschein) 1886.
- The Fourth Dimension [1904] (Swan Sonnenschein) 1906.
- Hudson, W. H. A Crystal Age (Fisher and Unwin) 1906.
- Huxley, Aldous Brave New World [1932] Harmondsworth (Penguin) 1971.
- Literature and Science (Chatto and Windus) 1963.
- Huxley, Julian S. and Thomas Henry Huxley Evolution and Ethics (Pilot) 1947
- Huxley, Julian S. Evolution in Action, Indianapolis (Indiana University Press) 1953.
- Huxley, Leonard The Life and Letters of Thomas Henry Huxley, New York (Appleton) 1901.

- Huxley, Thomas Henry 'Mr Darwin's Critics' Contemporary Review XVIII (November 1871) 443-76.
- 'On the Hypothesis that Animals are Automata, and Its History' Fortnightly Review XVI n.s. No. XCV (November 1, 1874) 555-580.
- Science and Culture and Other Essays (Macmillan) 1881.
- 'Administrative Nihilism' in Methods and Results New York (Appleton) 1896.
- Science and Education, New York (Appleton) 1897.
- Hynes, S. The Edwardian Turn of Mind Princeton (University Press) 1968.
- Irvine, W. Apes, Angels and Victorians, New York (Meridian) 1955.
- Isaacs, J. An Assessment of Twentieth-Century Literature (Secker and Warburg) 1951.
- James, Henry The Art of Fiction and Other Essays Oxford (University Press) 1948.
- James, William Principles of Psychology, New York (Dover) 1950.
- Jeans, James The New Background of Science Michigan (Ann Arbor) 1959.
- Johnson, E. One Mighty Torrent, New York (Macmillan) 1955.
- Jones, Henry Festing Samuel Butler, Author of Erewhon (Macmillan) 1920.
- Jung, C. G. 'Two Essays on Analytical Psychology' in Collected Works (Routledge and Kegan Paul) 1953.

- Jungk, R. Brighter than a Thousand Suns  
(transl. J. Cleugh) (Gollancz) 1958.
- Kateb, G. Utopia and its Enemies, New York  
(Glencoe) 1963.
- Keith, A. 'Is Darwinism Dead?' Nature CXIX  
(January 15, 1927) 75-7.  
Darwin Revalued (Watts) 1955.
- Kingsley, Charles Alton Locke [1850] (Macmillan) 1889  
Health and Education (Macmillan) 1879  
Sanitary and Social Lectures and Essays  
(Macmillan) 1889.
- Kipling, Rudyard A Choice of Kipling's Prose,  
ed. W. Somerset Maugham (Macmillan)  
1952.
- Knoepfmacher, U. C. Religious Humanism in the Victorian  
Novel Princeton (University Press)  
1965.
- Leavis, F. R. Two Cultures? The Significance of  
C. P. Snow (Chatto and Windus) 1962
- Lemire, C. Jules Verne 1892-1905, Paris  
(Berger Levrault) 1908.
- Lytton, E. Bulwer The Coming Race [1871] (Blackwoods)  
1872.  
Kenelm Chillingly: His Adventures  
and Opinions [1873] (Blackwoods) 1875.
- Maitland, E. By and By: An Historical Romance of  
the Future [1873] (Bentley) 1875.
- Marble, A. R. A Study of the Modern Novel, New York  
(Appleton) 1928.
- Marder, L. Time and the Space Traveller (Allen  
and Unwin) 1971.

- Marx, Leo The Machine in the Garden, Oxford (University Press) 1964.
- Mendilow, A. A. Time and the Novel (Nevill) 1952.
- Mercier, L. S. Memoirs of the Year 2500 [1772] (translated W. Hooper) 1772.
- Moore, Patrick Science and Fiction (Hodder and Stoughton) 1958.
- More, Sir Thomas Utopia 1516 ed. J. Warrington (Everyman) 1965.
- Morton, A. L. The English Utopia (Lawrence and Wishart) 1952.
- Muir, Edwin The Structure of the Novel (Hogarth) 1928.
- Muller, G. 'Versuch einer Zeittheorie' Archiv fur systematische Philosophie XVII (1911) 106.
- Mumford, Lewis Art and Technics, Oxford (University Press) 1952.
- Nelson, William (ed.) The Story of Utopias (Harrap) 1923.
- Nelson, William (ed.) Twentieth Century Interpretations of Utopia, Englewood Cliffs (Prentice Hall) 1968.
- Oppenheimer, J. R. 'On Science and Culture' Encounter XIX (October, 1962) 3-10.
- Orwell, George The Road to Wigan Pier (Secker and Warburg) 1959.
- Ostrogorsky, M. Y. Democracy and the Organization of Political Parties, transl. by F. Clarke (Macmillan) 1902.
- Pease, E. R. History of the Fabian Society (Allen and Unwin) 1924.

- Penzoldt, P. The Supernatural in Fiction (Nevill) 1952.
- Plato The Republic (transl. H. D. P. Lee) Harmondsworth (Penguin) 1956.
- Pledge, H. T. Science since 1500, New York (Harper) 1939.
- Poe, Edgar Allan Tales of Mystery and Imagination (Nelson) 1909.
- Ray, John The Wisdom of God Manifested in the Works of the Creation (Dove) 1827
- Richards, I. A. Science and Poetry (Kegan Paul) 1926.
- Rodwell, G. F. 'On Space of Four Dimensions' Nature VIII (May 1, 1873) 8-9.
- Roppen, G. Evolution and Poetic Belief Oslo (Allen and Unwin) 1956.
- Rose, Hilary and Steven Rose Science and Society, Harmondsworth (Penguin) 1970.
- Routh, H. V. English Literature and Ideas in the Twentieth Century (Methuen) 1946.
- 'S' 'Four-Dimensional Space', Nature XXXI (March 26, 1885) 481.
- Schorer, Mark 'Technique as Discovery' in Critiques and Essays on Modern Fiction, 1920-1951, ed. J. W. Aldridge, New York (Ronald) 1952.
- Shelley, Mary W. Frankenstein or the Modern Prometheus [1818] Oxford (University Press) 1969.
- Silberstein, L. The Theory of Relativity (Macmillan) 1914.
- Snow, Charles P. Science and Government Oxford (University Press) 1961.

- Snow, Charles P. The Two Cultures and the Scientific Revolution, Cambridge (University Press) 1961.
- Steiner, George 'Imagining Science', Listener LXXXVI (November 18, 1971) 686-8.
- Stewart, J. I. M. Eight Modern Writers, Oxford (University Press) 1963.
- Sussman, H. L. Victorians and the Machine, Cambridge Mass. (Harvard University Press) 1968.
- Szilard, Leo 'Reminiscences' Perspectives in American History, II Cambridge Mass. (Harvard University Press) 1968.
- Tillotson, Geoffrey 'Morris and the Machine', Fortnightly Review CXXXV (April, 1934) 464-71.
- Tindall, William York Forces in Modern British Literature 1885-1956, New York (Vintage) 1956.
- Tyndall, J. 'The Belfast Address' in Fragments of Science, New York (Appleton) 1892, Vol. I, pp. 201 ff.
- Verne, Jules Journey to the Centre of the Earth [1864] (translated R. Baldick) Harmondsworth (Penguin) 1970.  
Twenty Thousand Leagues Under the Sea [1870] (translated H. Frith) (Everyman) 1968.  
Hector Servadac [1877] (translated E. E. Frewer) (Bentley) 1878.
- Waddington, C. H. The Scientific Attitude (Hutchinson) 1968.
- Walsh, Chad. From Utopia to Nightmare (Bles) 1962.
- Ward, A. C. Twentieth-Century English Literature 1901-1960 (University Paperback) 1964.

- Webb, Beatrice      Diaries 1912-24 ed. M. Cole  
(Longmans) 1952.  
Diaries 1924-32 ed. M. Cole  
(Longmans) 1956.  
My Apprenticeship (Longmans) 1926.  
Our Partnership (Longmans) 1948.
- Whitehead, A. N.      Science and the Modern World  
Cambridge (University Press) 1926.
- Whitrow, G. J. (ed.)      Einstein: The Man and his Achievement  
(Longmans) 1967.
- Wichler, G.      Charles Darwin: The Founder of the  
Theory of Evolution and Natural  
Selection, Oxford (Pergamon) 1961.
- Wilde, Oscar      'The Canterville Ghost' [1887] in Lord  
Arthur Savile's Crime and Other Prose  
Pieces (Methuen) 1908.
- Willey, Basil      Nineteenth-Century Studies Harmonds-  
worth (Penguin) 1964.
- Wilson, Edmund      The Wound and the Bow, Boston  
(Houghton Mifflin) 1941.
- Woodworth, R. S.      Contemporary Schools of Psychology  
(Methuen) 1965.
- Woolf, Virginia      'Modern Fiction' in The Common Reader  
(Hogarth) 1925 pp. 184-195.  
'Mr Bennett and Mrs Brown' in The  
Captain's Death Bed (Hogarth) 1950  
pp. 99-111.
- Zamiatin, E. I.      We [1920] New York (Dutton) 1952.
- Zola, Emile      The Experimental Novel [1880] New York  
(Cassell) 1893.

R.D. HAYNES Ph.D. Thesis 1973.

The Influence of Science on the Thought of H.G.Wells.

In an attempt to assess the influence of Wells's scientific background on his work and the originality of his contribution to literature this thesis presents first a survey of earlier literature dealing with the concepts of science, utopias, journeys in space and time, and the figure of the scientist.

It is concluded that these predecessors had relatively little influence on Wells's work. His own background in science is examined and an assessment made of the scientific validity of his thinking.

There follows a discussion of Wells's pre-occupation with the role of science in society - science and technology, science and government, waste and disorder - and in the life of the individual - free-will and predestination as understood in science, and the mythic and mystical elements of science.

The influence of science on Wells's approach to characterization is considered - his concept of the individual, his awareness of psychology as a science and his development of the figure of the scientist as a literary character.

Finally some analysis is made of Wells's techniques of presenting a scientific dimension in his work and rendering it credible and interesting to a reading public largely ignorant of scientific method and the progress of science. This leads to a discussion of Wells's concept of Art and his debate with Henry James about the role of the novel.

Wells's most significant contributions to literature are seen to be his 'discovery of the future', his expansion of the scope of the novel to include the concerns of science and the figure of the scientist, and his role as an integrator of several apparently diverse disciplines and interests.

