

# George Orwell: Journalist; Aldous Huxley: Genius

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1985 is an appropriate year in which to evaluate the prophetic powers of George Orwell and Aldous Huxley. Although it is obvious that, to date, neither author's vision of the future has materialized exactly as predicted, one can certainly estimate which seems the likelier in the light of current developments. It is my contention that Huxley has been by far the better prophet.

The first point which must be made about Orwell's *1984* is that it predicts very little that is new. Orwell must be given full credit for Newspeak; various power groups have adopted censorship and bookburning to control the spread of offensive ideas but none to my knowledge has realized that one could "narrow the range of thought" and consciousness by deliberately decreasing the number of words in the language. Apart from Newspeak, however, the world of *1984* simply provides, in a consolidated and systematized form, more of the worst that has already been recorded in human history, especially in the decade prior to its publication. The hierarchical social structure found in all three super-states has been, as Goldstein observed, "the essential structure of

society ... throughout recorded history."<sup>1</sup> The repression of sexual gratification and indeed of all other forms of sensual pleasure is as old as Christianity. The rewriting of history, the expunging from the records of individuals or events which do not coincide with the current orthodoxy of the party in power, has been Russian practice on a national scale throughout this century, but it is worth remarking too, as did German historiographer and historical novelist Leon Feuchtwanger in 1963, that history and historiography have always been the "wish projections of certain periods and cultures and individuals. There is no such thing as authentic, objective, scientific history."<sup>2</sup> The systematic terrorism by which the party in power ensures its control over history and all other aspects of life differs only in its world-wide scope from that found in Spain during the Inquisition, France under

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Robespierre, Germany under Hitler, Russia under Stalin, or Guatemala and Chile under their current regimes. Orwell does predict accurately that new device the telescreen as a means of making round-the-clock surveillance a simple matter, but subjection of mind and body by starvation, torture and fear are, alas, old-hat.

Huxley, on the other hand, predicts a radically different society. Like Orwell he forecasts "the ultimate revolution ... which lies beyond politics and economics, and which aims at the total subversion of the individual's psychology and physiology," but as he told Orwell when the latter sent him a copy of *1984* on its publication in 1949, he did not believe that *"the policy of the boot-in-the-face can go on indefinitely... My own belief is that the ruling oligarchy will find less arduous and wasteful ways of governing and of satisfying its lust for power and that these ways will resemble those which I described in Brave New World... Within the next generation I believe that the world's rulers will discover that infant-conditioning and narco-hypnosis are more efficient, as instruments of government than clubs and prisons and that the lust for power can be just as completely satisfied by suggesting people into loving their servitude as by flogging and kicking them into obedience."*<sup>3</sup>

In *Brave New World* Huxley predicted that mankind would eliminate forever war, dirt, disease, hunger, overpopulation, jealousy, greed, hate, fear, pain, unsatisfied passion—all those evils which have plagued human societies throughout history and which Orwell believed would triumph completely. He based this seemingly extravagant claim on his belief that man, having learned in the eighteenth and nineteenth centuries how to conquer the natural world by learning the laws which governed it would, in the next six hundred years, successfully devote his attention to discovering the laws which governed himself until he could be, not merely procreative but truly self-creative. By discovering bit by bit the intricate mechanisms which control his own mind and body, his psychology and physiology, man could become God, recreating himself in whatever image or images he chose, in whatever numbers he preferred. He also believed that

these new Men-Who-Were-

Gods would choose to create heaven rather than hell, designing a world in which everyone would be perfectly happy from birth until death.

There is, of course, as Huxley points out, a price to be paid for perfection. People who seek heaven rarely stop to consider that once it is attained there is absolutely nothing left to do. Orwell could imagine a state in which the mutability of the past was a central tenet because man had to be cut off from his past in order to avoid the knowledge that he was worse off than his ancestors. Huxley realized a far greater horror: that the attainment of the perfect state automatically meant the destruction of the past; that heaven is, by definition, a perpetual time present repeated to eternity. Having followed knowledge like a sinking star until he reached the utmost bounds of human thought, Ulysses must spend the rest of his life becalmed among the sirens. Absolute knowledge of that subtle knot which makes us man would make any further knowledge unnecessary. The successful search for self-determination could lead to pre-determination.

Huxley devoted his entire life to finding an answer to that difficult question, what is man? Simply by reading the index to his collected letters one is made aware that he kept in touch with the work of almost every researcher who was exploring any small part of that vast territory, from Freud, Pavlov and J.B. Watson in the first decades of this century to W.H. Sheldon and Timothy Leary in the forties and fifties; from Western science to Eastern mysticism. As Sir Isaiah Berlin recognized in his memorial tribute on Huxley's death in 1963, Huxley *stood on the edge of, and peered beyond, the present frontiers of our self-knowledge. He was the herald of what will surely be one of the great advances in this and following centuries — the creation of new psycho-physical sciences, of discoveries in the realm of what at present, for want of a better term, we call the relations between body and mind; afield in which modern studies of myth and ritual, the psychological roots of social and individual behaviour, the relations of the physiological and the logical foundations of linguistics, as well*

*as the phenomena of paranormal psychology, psychical therapy and the like, are but the earliest and most rudimentary beginnings.*<sup>4</sup>

In the twenty years which have elapsed since Berlin wrote that evaluation, the unravelling of the tangled mind-body web has proceeded at such an alarming pace one must conclude that Huxley's chief error in *Brave New World* lay in vastly overestimating the time period which would elapse before man finally understood the intricate composition of his parts. Even twenty years ago the idea of a population bred to order in test tubes seemed outlandish to most of Huxley's readers, but dramatic advances in genetic engineering have been headline news for the past two decades. Towards the end of the 1960s a century-long effort to decode DNA (deox-ribonucleic acid) was finally completed. The understanding of this miracle molecule which contains, coded along its length, all the information needed to construct and maintain the complex machinery of the living cell and the information needed to reproduce itself was the key to a hundred doors. In the few years since they gained access to this primary determining force of every living thing, molecular biologists have learned to manufacture new bits of code that will do things as instructed and shuffle instructions between utterly different types of organism. They can engineer genes to suit almost any purpose.<sup>5</sup>

In 1978 British baby Louise Brown was born, the first so-called "test-tube" baby, conceived in a glass laboratory dish from the egg and sperm of her parents, the first of hundreds of IVF (in vitro fertilization) babies conceived in a growing number of clinics around the world. In the same year a reputable science writer, David M. Rorvik, published a book which, if true, recorded a far more remarkable achievement as having occurred in 1976 — the reproduction of a genetic twin of an organism without the union of two sex cells — the cloning of *Brave New World*. Successful cloning of simple organisms had, of course, already taken place by this time, but Rorvik claimed that he had organized, for one million dollars and the promise of strict confidentiality,

the birth of a clone "child" to a rich industrialist who wished for an heir who was literally himself.<sup>6</sup>

Less dramatic than these events but nonetheless pertinent to the solution of the human puzzle have been the investigations of researchers in non-verbal communication and the decoders of human perception. Scientists *can now describe a number of major sensory systems in addition to the five that had been so firmly rooted in thought since the Renaissance. These new systems include the vomeronasal system, capable of detecting pheromones (chemical signals given off to indicate intra-specific messages such as sexual receptivity, fear, identification); nociception (a separate sensory system for pain, distinct from touch and temperature sensing); parallel but separate sensory systems for experiencing thermal and tactile sensations; parallel but separate systems for detecting the visual contour/contrast/form of an object and its colour; the existence of a functional pineal gland in humans, able to respond to light and synchronize internal body rhythms to the rhythms of the sun; and so forth.*

*It has become apparent that some of the supposedly mystical abilities of extrasensory perception (ESP) [which so interested Huxley and which led many of his critics to feel his once fine mind had crumbled] could also be explained as the result of still undiscovered sensory systems.*<sup>7</sup>

The perception of auras, halos or projected images reported by psychics may become explicable now that the EEG (electroencephalograph), which measures the brain's electrical activity and whose inventors Huxley knew personally,<sup>8</sup> has been superseded by a device known as a SQUID (superconducting quantum interference device) which can measure extremely fine electrical activity in the brain from just above the scalp, making it possible to determine whether the activity of the brain actually projects outside itself (*Deciphering*, 198). Another area which has burgeoned is research into mind-altering drugs comparable to Huxley's soma. The first scientific investigations of mescaline and LSD, which Huxley followed closely in the fifties developed

into widespread and alarming public recreational use in the sixties. In 1950, Dr. Heintz Lehman introduced in Montreal the neuroleptics, a group of anti-psychotic drugs developed in Europe which normalize mood; by 1957 they were widely prescribed by psychiatrists in both Canada and the United States.<sup>9</sup> Biochemical explanations of and controls for mental illnesses have fuelled biochemical research to the point that, in 1984, biological psychiatry had become more common than the psychological theories and therapies of Freud and his disciples.<sup>10</sup> The study of chemical reactions in the living brain was first facilitated by the development of the Computerized Axial Tomogram or CAT, which scans the brain in slices and creates a three-dimensional picture with the aid of a computer. It has recently been superseded by the PET (positron emission tomograph) scan, which can take computerized pictures of the brain, making it possible to trace and photograph various biochemical activities as they occur. In North America, brain research is likely to increase in the near future, funded generously by governments facing an increasingly aging population who are anxious to discover the reasons for the mental impairment which so often accompanies the aging process.<sup>11</sup>

I want to concentrate, however, on the development of Orthomolecular medicine, a less widely publicized and accepted area of research which Huxley encouraged in its infancy and which I have been following with great curiosity for the past twenty years. Huxley's interest in mind-altering drugs led him, in 1953, to read of the experiments with mescaline in the treatment of schizophrenia being conducted in the province of Saskatchewan in Western Canada. He wrote an encouraging letter to Dr. Humphry Osmond, then clinical director of the Saskatchewan Mental Hospital in Weyburn, inviting him to stay during a psychiatric Congress being held that spring in Los Angeles (*Letters*, 668-669). During that visit Dr. Osmond administered mescaline to Huxley and, in 1954, Huxley published the account of his first personal experience of the hallucinogenic drug in *The Doors of Perception*. Osmond and his co-researchers Dr. John

Smithies and Dr. Abram Hoffer, had first been struck by the close similarity in chemical composition between mescaline and adrenalin, and later noted a structural biochemical relationship between LSD and other compounds. They believed that adrenochrome, a product of the decomposition of adrenalin, could produce many of the symptoms observed in mescaline intoxication. Since adrenochrome appeared to occur spontaneously in the human body, they wondered if schizophrenia was caused by a chemical disorder involving the production of adrenochrome and the chemical disorder due in turn to psychological distresses affecting the adrenals.<sup>12</sup>

Huxley maintained until his death in 1963 close contact with the work of Osmond and Hoffer. The word "psychedelic" was coined by Osmond after consultation with Huxley and first used in a 1956 paper presented to the New York Academy of Sciences.<sup>13</sup> However, experiments with hallucinogens were only the first part of this research program. Huxley was also aware of and interested in the development of the adrenochrome hypothesis with the use of water soluble vitamins, principally vitamin B-3 (*Letters*, 829-830, 836-837). Dr. Hoffer began his career as a research biochemist whose thesis was concerned with the problem of getting vitamins into bread without loss of their strength in the baking process. That research made him aware of pellagra, a disease caused by extreme malnutrition. After completing his psychiatric training and becoming organizer of research programs in psychiatry for the Saskatchewan Department of Public Health in 1951-52, he met Osmond, became interested in the causes and treatment of schizophrenia, and recalled that the symptoms of pellagra, caused by vitamin deficiency, were very similar to those of schizophrenia. The adrenochrome hypothesis provided a rationale for using vitamin B-3 as a methyl acceptor, which decreased the formation of adrenaline, and for the use of Vitamin C to decrease oxidation of adrenaline to adrenochrome. If an excessive conversion of adrenalin into adrenochrome occurred in the schizophrenic, they wondered if it would be possible to reverse this change by administering megadoses (3-10 grams per day) of

B-3. Pilot studies produced encouraging results.<sup>14</sup>

Although my home was in Saskatoon, Saskatchewan, I did not become aware of this research until 1960, the year I graduated with an Honours B.A. in English, four years after I first read *Brave New World* and realized, if then only dimly, the importance of the issues Huxley had raised for anyone who called himself a humanist. The event which occurred so dramatically in that year and served to support the original hypothesis of Osmond and Hoffer was, as is so often the case in scientific research, entirely fortuitous. An acquaintance of my family, George Porteous, had been a physical education instructor in the Canadian Army. Captured by the Japanese in Hong Kong, he had endured forty-four months on inhuman treatment in prisoner-of-war camps which reduced him to a bag of bones suffering from extreme malnutrition. The surviving Hong Kong Veterans were treated with high doses of vitamins and seemed to recover but within a few years broke down physically and mentally. When I first knew this man, he suffered from crippling arthritis, anxiety and irrational fears. Psychiatric treatment with barbiturates and amphetamines had done nothing to help him and the only job he could hold was as director of a nursing home for the elderly.

In 1960 Dr. Hoffer, working out of the University of Saskatchewan Hospital in Saskatoon, was investigating the effects of vitamin B-3 in the prevention of senility and got permission to administer three grams a day to the residents of Porteous' nursing home. As Director, Porteous asked to take the same dosage in order to answer questions about any side effects put to him by his patients. Two weeks later he was entirely cured of his arthritis and psychological problems. Returned to health he went on to become Lieutenant Governor of the Province of Saskatchewan, dying in 1980 after a long and useful life. (*Orthomolecular*, 10-12)

Dr. Hoffer was perhaps less amazed than I by this extraordinary recovery. He had undertaken the research project with senile patients because of yet another unexpected demonstration of the efficacy of vitamin therapy for the elderly. In 1954 he had

prescribed vitamin B-3 for his sixty-six year old mother, at the time under extreme stress and suffering as well from arthritis, neuralgia and failing memory. He prescribed it only for its placebo effect since he then accepted the prevailing view that senility was not reversible. Three months later Mrs. Hoffer had recovered from all her ailments and, on a continued vitamin program, remained in good physical and mental health until her death at eighty-seven.<sup>15</sup>

Research has also been undertaken on the relationship between alcoholism and nutrition. Through Aldous Huxley, Osmond and Hoffer met Mr. Bill W., later known as Bill Wilson, co-founder of Alcoholics Anonymous. Once Wilson became aware of their work, he made an effort to introduce vitamin B-3 into the treatment program of Alcoholics Anonymous, despite massive resistance from the organization's Internal Board. "Since then a large number of centers in the United States, especially with an Alcoholics Anonymous orientation, are using vitamin B-3 as part of their program."<sup>16</sup>

Linus Pauling, Professor of Chemistry at Stanford University, became involved with this research in 1966. He had twice won the Nobel Prize, in 1954 for his work as an early investigator of the structure of the DNA molecule and later for unravelling the molecular basis of sickle-cell anemia. When a psychiatrist friend lent him a copy of Hoffer and Osmond's book, *How To Live With Schizophrenia*,<sup>17</sup> he was intrigued by their use of megadoses of B-3, later by experiments using megadoses of vitamin C for schizophrenia and also by the urging of Dr. Irwin Stone, who had been collecting evidence about vitamin C for thirty years, that he try a high dosage of this vitamin himself. On such a regimen, Pauling noticed a feeling of increased well-being and a striking decrease in the severity and number of colds he caught; he determined to investigate why. His 1970 book *Vitamin C and the Common Cold*<sup>18</sup> brought world-wide attention to mega-vitamin therapy. Pauling's contention that an optimal intake of vitamin C is in the range of several grams a day (ten grams for himself) is based on Dr. Irwin Stone's hypothesis that chronic subclinical scurvy is present throughout the population as a contributing factor in a wide variety of other ailments. While animals manufacture

their own vitamin C, human beings have a built-in C deficiency. Pauling's most recent research, on the use of vitamin C in the treatment of cancer, undertaken with Dr. Ewan Cameron, has led to the conclusion that many if not all of the factors involved in host resistance to tumor growth are significantly dependent upon the availability of vitamin C, that C supplements are of some value to all cancer patients and of dramatic benefit to a fortunate few. However, Pauling, like other researchers in this field, stresses that vitamins do not operate in a vacuum, singly, or with a few nutrients; a deficiency in vitamin A or the B-complex vitamins can negate most of the effectiveness of vitamin C.<sup>19</sup>

It was Pauling who coined the term "Orthomolecular" and published it in his now famous 1968 report on "Orthomolecular Psychiatry" in the journal *Science*.<sup>20</sup> The Greek word "ortho" means "to straighten." Pauling wanted to convey the basic idea that many mental illnesses could be corrected by straightening out, in effect, the concentrations of specific molecules in the brain so as to provide the optimum molecular environment for the mind. He defined Orthomolecular therapy as "the provision for the individual person of the optimum concentration of important normal constituents of the brain" (*Orthomolecular*, 13). At this time there are five American psychiatric hospitals using an Orthomolecular approach, none in Canada. Hoffer helped to organize the American Schizophrenia Association in 1964 and the Canadian in 1968, both based on the Orthomolecular approach. The American society's name was later changed to The Huxley Institute for Biosocial Research, and in 1984 to The American Schizophrenia Association, a Division of The Huxley Institute for Biosocial Research.

In 1980, Dr. Richard Kunin, current president of the American Orthomolecular Medical Society, published his book *Mega-Nutrition: The New Prescription for Maximum Health, Energy, and Longevity*, dedicated to Abram Hoffer as a pioneer in the field. In it he makes a number of key points. First, he stresses that the goal of the movement is to make checks of diet and tests for nutritional deficiencies as much a routine part of medical examination as tests of blood pressure, and to promote preventive

medicine by educating the public about nutrition. The case histories he presents stress how very individual are the nutritional requirements of each person; one may require in large quantities a nutrient which would be useless in that amount to another. Recommended Daily Allowances (RDA) of vitamins and minerals established in the 1940s do not take this fact into account nor do they reflect the nutritional needs of a population receiving mass-produced, artificially preserved and often nutritionally deficient foodstuffs in a technologically polluted, stress-filled environment which also depletes their nutritional resources. Most researchers could not know the effects of nutrition on various diseases at the clinical or subclinical level because most of the experiments conducted over the past fifty years by drug companies and traditional medical teams, while carefully setting up control groups which take into account such factors as age, weight and sex, have usually overlooked entirely the nutritional habits and condition of their subjects.

In order to understand both the progress represented by the present knowledge of Orthomolecular medicine and the reasons for the massive resistance it has met from the medical establishment it is necessary to review briefly the history of the "mind-body problem" in this century, particularly as it is evidenced in theories of and therapies for mental disorders. Historian Laurence Davidson has remarked that, in the United States in the 1890s "the psychiatrist's role was largely custodial" since serious mental illness was regarded as incurable because caused by hereditary brain malfunction. In 1892 Dr. Adolph Meyer arrived in the United States from Switzerland and replaced that view with the belief "that both heredity (biology) and environment (psychological responses) play a role in the development of disorganized or otherwise 'deficient' reaction patterns to life experiences" and that something could be done to change these patterns.<sup>21</sup> His influence in a number of increasingly important positions over a period of fifty years rippled out across North America "and inspired the mental hygiene movement, psychiatric social work and child guidance clinics" (Davidson, 137). Dr. Humphry

Osmond has told me that he was trained by Meyer's followers in Britain in the 1940s and not required to know anything about Freud, Jung or psychoanalysis in the examinations he took for certification in psychiatry in Britain in 1949 or when he qualified to practice in Canada in 1952.<sup>22</sup>

That situation was dramatically reversed when, in the 1940s, Meyer's retirement and death coincided with the arrival in North America of many of Freud's and Jung's disciples fleeing from Hitler. The fifties and sixties were the heyday of psychoanalysis within clinical psychiatry but Freud and Jung had been the most discussed figures in literary, psychological and intellectual circles in both Britain and the United States since Freud gave five invited lectures on the basic theories of psychoanalysis at Clark University in Worcester, Massachusetts in 1909. In the twenties such influential critics as Conrad Aiken, Van Wyck Brooks and Joseph Ward Krutch in America or Ernest Jones and Herbert Read in England applied Freudian theory to literary criticism.<sup>23</sup>

Writers themselves were much engaged in the Freudian controversies, many as adversaries. Dr. Osmond has reminded me that, although Leonard and Virginia Woolf were Freud's publishers in England and her brother a qualified psychoanalyst, Virginia's mental illness was never treated by psychoanalysis.<sup>24</sup> D.H. Lawrence in his essays *Psychoanalysis and the Unconscious* (1921) and *Fantasia of the Unconscious* (1922) presented his own sexually oriented theory of being as preferable to that of Freud which he regarded as yet another example of that "sex in the head" he hated so much.<sup>25</sup> James Joyce became familiar with Freud's ideas around 1912 when he was living in Trieste<sup>26</sup> and, although he felt more imaginatively stimulated by Vico than by Freud or Jung (Ellmann, 706), despite his opinion that psychoanalysis was " 'neither more nor less than blackmail' " (Ellmann, 538), he did include analysis by Jung among the many different treatments sought in his desperate and fruitless efforts to find a cure for his schizophrenic daughter Lucia (Ellmann, 664).

Aldous Huxley, however, remained a life-long opponent of Freud's solution to the mind-

body problem. As early as 1925 he was debunking Freud's sexual interpretation of dreams (*Letters*, 290) and his view that the origin of art lay in infantile caprophily (*Letters*, 243). The characters Spandrell and Beatrice in his 1928 novel *Point Counter Point* are Freudian case histories, their adult aberrations caused by their childhood sexual experiences. Fearful of Freud's popularity and influence, Huxley made him along with Henry Ford a co-god of Brave New World, that paradise in which the family, which Freud had identified with almost every mental aberration, has been totally eliminated along with the repressive puritanical superego. The instinctive pleasure-seeking id reigns supreme, satisfied by erotic play in childhood and unlimited promiscuity at maturity.

As a confirmed Freudophobe, Huxley rejoiced at the development of biochemical theories of mental illness but wrote Osmond in 1960, "*of course you will be attacked by all the Freudians. They will be fighting, not only for the Master, but for their livelihood. No more ten-year analyses, no more couch-addicts. What will become of the poor fellows.*" (*Letters*, 895-896).

Huxley did not live to see equally strong opposition from the other bio-chemical camp which, as we have seen, began using the major and minor tranquillizers widely in the late fifties, despite their often serious side-effects, and which has gradually merged with the psychoanalytic group until, in 1984, most psychiatrists in private practice combine psychotherapy and drug therapy.<sup>27</sup> The present situation is that the psycho/ drug therapists and most general practitioners regard the Orthomolecular approach as quackery, a view strongly supported by the drug companies who now have an even larger economic stake in the issue and an even stronger influence on the medical profession than they did in medieval England when Chaucer noted the collusion between the Doctor of Physik and the Apothecary. The Orthomolecular minority, on the other hand, believes, in Hoffer's words, that "standard psychiatry (tranquillizers and talk) has proven itself bankrupt."<sup>28</sup> Were Huxley now alive to witness the war between the two biochemical camps he had originally encouraged, I am inclined to think he would favour the Orthomolecular side as the best

means of creating strong and healthy individuals, operating independently at their maximum physical and mental capacity.

Notes

1. George Orwell, J. 984 (1949; rpt. Harmondsworth: Penguin, 1984). p. 174.
2. Harold A. Basilius, trans. Foreword to Leon Feuchtwanger, *The House of Desdemona or The Laurels and Limitations of Historical Fiction*, trans. Harold A. Basilius (Detroit: Wayne State Univ. Press, 1963), p. 7.
3. *Letters of Aldous Huxley*, ed. Grover Smith (New York and Evanston: Harper & Row, 1969), pp. 604-605; hereafter cited in text as *Letters*. The same views are reiterated a decade later in *Brave New World Revisited*.
4. *Aldous Huxley, 1884-1963, A Memorial Volume*, ed. Julian Huxley (New York: Harper & Row, 1965), p. 149.
5. Jeremy Cherfas, *Man-Made Life: An Overview of the Science, Technology and Commerce of Genetic Engineering* (New York: Pantheon, 1982), pp. vii, 3.
6. *In His Image: The Cloning of A Man* (Philadelphia and New York: Lippincott, 1978).
7. Robert Rivlin and Karen Gravelle, *Deciphering the Senses: The Expanding World of Human Perception* (New York: Simon and Schuster, 1984), pp. 16-17; hereafter cited in the text as *Deciphering*. See also Fernando Poyatos, *New Perspectives in Nonverbal Communication: Studies in Cultural Anthropology, Social Psychology, Linguistics, Literature and Semiotics* (Oxford: Pergamon Press, 1983).
8. *Aldous Huxley: 1984-1963*, p. 104.
9. Conversation with Dr. Raymond Denson, child psychiatrist in private practice in Saskatoon, Saskatchewan.
10. *Maclean's Magazine* (Toronto, Canada), 97,12 (19 March 1984), 46-52.
11. Robin Marantz Henig, *The Myth of Senility: Misconceptions About the Brain and Aging* (Garden City, N.Y.: Doubleday, 1981), pp. 137-138, 268-270.
12. *The Doors of Perception* (London: Chatto & Windus, 1960), pp. 6-7.
13. Glenn Collins, "An Expert on the Roles People Play in Life", *New York Times* (23 February 1981).
14. Abram Hoffer and Morton Walker, *Orthomolecular Nutrition: New Lifestyle for Super Good Health* (New Canaan, Conn.: Keats Publishing, 1978), pp. 30-32; hereafter cited in the text as *Ortho-molecular*.
15. Abram Hoffer and Morton Walker, *Nutrients to Age Without Senility* (New Canaan, Conn.: Keats Publishing, 1980), pp. 8-12.
16. Letter to W. Bogaards from Abram Hoffer, 25 May 1984.
17. (New York: University Books, 1974).
18. (San Francisco: W.H. Freeman, 1970).
19. **Richard A. Kunin, *Mega-Nutrition: The New Prescription for Maximum Health, Energy, and Longevity*** (New York & Scarborough: New American Library, 1980), pp. 107, 226, 229, 232, 242.
20. 160,265.
21. Lawrence Davidson, "The Strange Disappearance of Adolph Meyer," *Orthomolecular Psychiatry*, 9, 2 (1980), 136; hereafter cited in text as Davidson.
22. Letter to W. Bogaards from Dr. Humphrey Osmond, 1 June 1984.
23. Claudia C. Morrison, *Freud and the Critic: The Early Use of Depth Psychology in Literary Criticism* (Chapel Hill: The University of North Carolina Press, 1968), pp. 6-11.
24. Letter to W. Bogaards from Dr. Humphrey Osmond, 1 June 1984.
25. See Frederick J. Hoffman, "Lawrence's Quarrel with Freud," in his *Freudianism and the Literary Mind*, 2nd ed. (Baton Rouge: Louisiana State Press, 1957), pp. 151-176.
26. Richard Ellmann, *James Joyce* (New York: Oxford University Press, 1959), p. 351; hereafter cited in the text as Ellmann.
27. Conversation with Dr. Gordon Marjerrison, psychiatrist in private practice in Saskatoon, Saskatchewan.
28. Kunin, *Mega-Nutrition*, p. 142.