

**THE DISCOVERY OF ANESTHESIA: ITS RELATIONSHIP TO THE
LITERATURE OF THE ROMANTIC ERA**

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**PRESENTED AS THE 3rd HARMEL LECTURE AT DUKE
UNIVERSITY
FEB. 15, 1989**

INTRODUCTION

A) Thanks to David Watkins and the Department of Anesthesiology at Duke for the honor to give this lecture.

B) Tribute to Merel Harmel

This presentation is not an historical review of the Discovery of Anesthesia. My hypothesis is that the Discovery awaited societal readiness of acceptance of the idea of pain avoidance or amelioration - and that the evidence for a major change in social behavior of this sort may be found in the imaginative and intuitive insights of poets, essayists, novelists and philosophers. For this purpose, an observer must cross the thin line between history and literature which wavers and blurs considerably.

Obviously many important events and many contributors of vast importance to the discovery of anesthesia will not be considered – in part by choice of selection dictated

by the reasonableness of time for an early morning lecture and the fact that my approach to this subject is controversial and, therefore, potentially uncomfortable—and finally by a desire on my part to try out these views of our specialty's origin before this distinguished department and its friends at Duke University—for the purpose of producing provocative thought—and hopefully to give you some pleasure as well.

C) Some definitions - to help in the communication process (for physicians and apologies to literary experts)

1) Romantic Period:

a) Not - June - Moon & love etc.

b) Is a commonly accepted term in the scholarship of The Humanities for the period between the French Revolution of 1789 and the Revolutions of 1848 in all of Europe.

2) The word Romantic is meant to convey the mood of that era in recognizing the importance of emotion as an added dimension for man. It is not anti-intellectual but adds the ideas of passion, sentiment, individualism, subjectivity and imagination to rational thought to enlarge the human condition over the rationalism of the 18th Century Augustan Age.

D) What was the impact of the Romantic Gestalt on the release of energy, and the reevaluation of the individual's worth, on the discovery of anesthesia? These are my contentions:

1) Only with the enhanced value placed on the individual could the idea emerge that a valued person should enjoy life on this earth.

2) That fact implies, among others, that he should be happy and free of pain, if possible, as a human right.

3) It is but one step further to agree that control of pain means also prevention of pain - and the idea of anesthesia to prevent surgical pain becomes possible to consider as desirable and necessary.

E) There are changes in medicine which were needed to complement the societal views.

1) The humanistic idea of pain prevention was useless practically until the terrible lack of clinical skills in medicine could be overcome by abandoning the irrational medicine used since Greek times up to the Romantic period.

2) A new medicine based on careful thought and the use of scientific knowledge long available and ignored (e.g. Harvey & Circulation of the Blood) applied to diagnosis and treatment evolved in large part because of great curiosity and energy of the Romantic Period. It was at least as important as the changes produced by the Renaissance in the 15th Century.

3) The freeing of the surgeon from the bondage of being 2nd class was the next crucial step. The surgeon could not function without anesthesia – and so it all came about!

F) Why it took so long to discover anesthesia was the motive for me to examine the evidence that it was not stupidity, and disinterest – but that “readiness” had to occur and the Romantics made that happen in the early 19th Century.

G) Let us explore the literary evidence together about these proposals and arguments.

"BUT I DON'T WANT COMFORT. I WANT GOD, I WANT POETRY, I WANT REAL DANGER, I WANT FREEDOM, I WANT GOODNESS, I WANT SIN."

"IN FACT," SAID MUSTAPHA MOND, "YOU'RE CLAIMING THE RIGHT TO BE UNHAPPY"

"ALL RIGHT THEN," SAID THE SAVAGE DEFIANTLY, "I'M CLAIMING THE RIGHT TO BE UNHAPPY."

NOT TO MENTION THE RIGHT TO GROW OLD AND UGLY AND IMPOTENT; THE RIGHT TO HAVE SYPHILIS AND CANCER; THE RIGHT TO HAVE TOO LITTLE TO EAT; THE RIGHT TO BE LOUSY; THE RIGHT TO LIVE IN CONSTANT APPREHENSION OF WHAT MAY HAPPEN TOMORROW; THE RIGHT TO CATCH TYPHOID; THE RIGHT TO BE TORTURED BY UNSPEAKABLE PAINS OF EVERY KIND. THERE WAS A LONG SILENCE, "I CLAIM THEM ALL," SAID THE SAVAGE AT LAST. ¹

THAT THE RIGHT TO HAVE PAIN MAY HAVE BEEN A NECESSARY CORRELATE FOR PERSONAL FREEDOM IS ILLUSTRATED BY THIS EXCERPT FROM HUXLEY'S BRAVE NEW WORLD. IT IS IMPORTANT TO ASK THE QUESTION ABOUT THE ROLE OF PAIN IN LIVING. CAN IT BE

THAT PERSONAL FREEDOM INCLUDES A "RIGHT TO PAIN" OR IS IT AN EXTREME ILLUSTRATION OF THE PROPOSITION THAT ACCEPTING PAIN IS BETTER THAN LOSING OTHER FREEDOMS; IF THAT, IN FACT, IS THE CHOICE?

PERCEPTIONS ABOUT PAIN ARE SOCIALLY CONDITIONED. THESE ATTITUDES ARE IMPORTANT CONSIDERATIONS OF THE HUMAN CONDITION AND THEY HAVE UNDERGONE MANY CHANGES IN RESPONSE TO RELIGIOUS, HUMANISTIC, SCIENTIFIC AND SOCIOLOGIC FORCES OF GREAT MOMENT OVER A LONG PERIOD OF TIME. MOST IMPORTANT, PERHAPS, IS THAT THESE PERCEPTIVE ATTITUDES TOWARD PAIN NECESSARILY CONDITIONED THE POSSIBILITY OF PREVENTING PAIN AND PROVIDING THE ULTIMATE IMPORTANT MEANS TO DO SO BY PROVIDING ANESTHESIA FOR SURGICAL INTERVENTION. THIS POSSIBILITY IS FORETOLD FREQUENTLY, ANALYZED OFTEN AND ALSO JUDGED ALWAYS IN THE POETRY OF THE EARLY CENTURY.

ONE CAN SPECULATE USEFULLY ON HOW THE DISCOVERY OF ANESTHESIA OCCURRED ESPECIALLY AND UNIQUELY DURING THE ROMANTIC PERIOD (1789-1848+/-), AND WHAT SORT OF CHANGE IN ATTITUDES TOWARD THE RELIEF OR PREVENTION OF PAIN HAD TO OCCUR TO MAKE THIS BOON TO MANKIND (AS VIEWED RETROSPECTIVELY IN THE TWENTIETH CENTURY) POSSIBLE AT THE TIME AND IN THE WAY IT DID. IT IS VALUABLE TO EXAMINE WITH WILLIAM JAMES – (I QUOTE) "A STRANGE MORAL TRANSFORMATION (THAT) HAS WITHIN THE PAST CENTURY SWEEPED OVER OUR WESTERN WORLD. WE NO LONGER THINK THAT WE ARE CALLED ON TO FACE PHYSICAL PAIN WITH EQUANIMITY. THE WAY IN WHICH OUR ANCESTORS LOOKED UPON PAIN AS AN EXTERNAL INGREDIENT OF THE WORLD'S ORDER, AND BOTH CAUSED AND SUFFERED IT AS A MATTER-

OF-COURSE AS A PORTION OF THEIR DAY'S WORK, FILLS US WITH AMAZEMENT."²

IN ANCIENT TIMES, DISEASE AND PAIN WERE OFTEN LOOKED UPON AS THE PUNISHMENT FOR SIN. IN JOB "THE WICKED MAN TRAVAILLETH WITH PAIN ALL HIS DAY."³ THROUGHOUT MOST OF THE SUCCEEDING CENTURIES, THERE WAS MUCH PESSIMISM AND RESIGNATION ABOUT PAIN AND DISEASE. JOHN DONNE WROTE:

THERE IS NO HEALTH; PHYSICIANS SAY THAT WE
AT BEST, ENJOY BUT A NEUTRALITY.
AND CAN THERE BE WORSE SICKNESS, THAN TO KNOW
THAT WE ARE NEVER WELL, NOR CAN BE SO?
WE ARE BORN RUINOUS; ⁴

DONNE'S VIEWS ARE ESPECIALLY IMPORTANT BECAUSE HE WAS NOT ONLY A GREAT POET, BUT WAS ALSO A MINISTER OF THE CHURCH AND WAS WELL-READ IN THE MEDICINE OF HIS TIME. HIS POEM REFLECTS THE DESPAIRING HEAVY HAND OF EVIL WHICH MAKES PAIN A PUNISHMENT TO BE BORNE WITHOUT HOPE.

THE 18th CENTURY AGE OF ENLIGHTENMENT BROUGHT LITTLE CHANGE IN THE MANAGEMENT OF PAIN AND DISEASE. PHYSICIANS WERE STILL PRACTICING THE DOCTRINAIRE INHERITED GALENIC TEXTUAL MEDICINE WHICH WAS MARKED BY HEROIC AND ILLOGICAL THERAPIES DESIGNED TO AFFECT THE BODY SYSTEMS BROADLY. THE DEPLETIVE THERAPIES AND HEROIC OVERDOSES OF MEDICINES WERE THE RULE IN EUROPE, BRITAIN AND IN THE YOUNG UNITED STATES. AN EXCESS OR A DEFICIENCY OF A BODILY ELEMENT WAS TREATED BY BLOODLETTING, PURGATION, AND INDUCED EMESIS. THE "TONICS" USED WERE CHINCHONA, OPIUM ALCOHOL OR A LOCAL FOLK REMEDY.⁵ DESPITE

THE DIMINUTION OF THE ROLE OF RELIGION IN DAILY LIFE AND THE DEVELOPMENT OF THE NATURAL SCIENCES, THERE IS NO DISCERNIBLE CHANGE OF SIGNIFICANCE OF THESE PROCESSES OF SECULARIZATION IN TREATING DISEASE OR ALLEVIATING PAIN IN THE EIGHTEENTH CENTURY. THE CONTINUAL INEFFECTIVE PRACTICE OF MEDICAL CARE AROUSED MARKED SCEPTICISM AND RESISTANCE AMONG THINKERS AS WELL AS PATIENTS AS THE WINDS OF CHANGE WERE FELT IN THE EARLY ROMANTIC PERIOD.*

THE GREAT ROMANTIC POET BYRON WAS JUSTLY AND UNDERSTANDABLY SCEPTICAL OF THESE ILLOGICAL REMEDIES WHEN THEY WERE PROPOSED FOR HIM BY HIS PHYSICIANS. HIS SCEPTICISM AND RIDICULE OF CURRENT MEDICAL PRACTICES ARE EVIDENT IN HIS LETTERS, IN CONNECTION WITH THE TRAGICALLY POOR MANAGEMENT OF HIS TERMINAL FEBRILE ILLNESS AND ALSO IN HIS POETRY.

HERE BE TWO PHYSICIANS, ONE OF WHOM TRUSTS TO HIS GENIUS (NEVER HAVING STUDIED)...WHEN I WAS SEIZED WITH MY DISORDER I PROTESTED AGAINST BOTH THESE ASSASSINS, BUT WHAT CAN A HELPLESS, FEVERISH, TOASTED AND POOR WRETCH DO? IN SPITE OF MY TEETH AND TONGUE, THE ENGLISH CONSUL FORCED PHYSICIANS UPON ME, AND IN THREE DAYS VOMITED AND GLISTERED ME TO THE LAST GASP.⁶

* A THOROUGH AND FASCINATING REVIEW OF THE HISTORY AND SOCIOLOGICAL CHANGES OF THE PERIOD CAN BE FOUND IN DONALD CATON'S SUPERB ARTICLE "THE SECULARIZATION OF PAIN" (ANESTHESIOLOGY 62:493, 1985)

MARCHAND, BYRON'S BIOGRAPHER SAID "HIS DEATH WAS HASTENED BY HIS PHYSICIANS AND THEIR INTEMPERATE "CURES" OF THE TIME.

WITH PARRY GONE, THERE WAS NO ONE TO PROTECT BYRON, FOR EACH OF THE SERVANTS HAD BEEN WON OVER TO THE DOCTORS' FAITH IN BLEEDING....IN HIS LUCID MOMENTS BYRON WAS ABLE STILL TO RESIST FURTHER BLEEDING, AND THEY PLED HIM WITH PURGATIVES AGAIN."7

BYRON IN A PITHY LINE FURTHER EXPRESSED HIS ATTITUDE ABOUT MEDICINE AND DOCTORS IN DON JUAN: "DOCTORS LESS FAMOUS FOR THEIR CURES THAN FEES."8

THE TIME HAD COME IN THE EARLY ROMANTIC PERIOD WHEN THE STEPS WHICH HAD TO BE TAKEN TO TREAT DISEASE AND PAIN LOGICALLY AND SENSIBLY WERE AT HAND. THE BURDEN OF SIN ASSOCIATED WITH DISEASE WAS LIFTED BY THE EARLY ROMANTIC POET BLAKE, WHO DESCRIBES IN ONE OF HIS POEMS, THE POSSIBILITY OF "NATURAL" OR PERHAPS DIVINE AID TO A SUFFERING HUMANITY VIA THE LOVE OF GOD OR OF THE PROVIDENTIAL ESSENCE.

THINK NOT, THOU CANST SIGH A SIGH,

AND THY MAKER IS NOT BY.

THINK NOT, THOU CANST WEEP A TEAR,

AND THY MAKER IS NOT NEAR.

O! HE GIVES TO US HIS JOY,

THAT OUR GRIEF HE MAY DESTROY.

TILL OUR GRIEF IS FLED AND GONE

HE DOTHSIT BY US AND MOAN.9

BLAKE GOES ON TO SAY THAT WE ARE NOT NECESSARILY DESTINED

TO GLOOM AND DOOM. IN DAUGHTERS OF ALBION, HE WRITES THAT THE INFANT IS "FEARLESS, LUSTFUL, HAPPY! NESTLING FOR DELIGHT. IN LAPS OF PLEASURE; INNOCENCE! HONEST, OPEN, SEEKING/THE VIGOROUS JOYS OF MORNING LIGHT".¹⁰ WORDSWORTH, IN HIS EARLIER POETIC YEARS, IS ALSO OPTIMISTIC THAT BETTER THINGS CAN BE IN STORE FOR HUMANITY, BY STATING: "BUT TRAILING CLOUDS OF GLORY DO WE COME /FROM GOD, WHO IS OUR HOME." ¹¹

THE IDEA BECAME GRADUALLY ACCEPTED THAT DISEASE AND PAIN ARE NOT DUE TO SIN, MAGIC OR SOME OTHER SUPERNATURAL PHENOMENON, BUT ARE PART OF NATURE AND CAN THEREFORE BE STUDIED AND EVEN MANIPULATED BENEFICIALLY FOR MAN. THESE CONCEPTS WERE LINKED WITH APPRECIATION OF THE NEED FOR IMPROVING HUMAN WELFARE AND PROVIDING BETTER LIVES FOR MORE PEOPLE. SO MUCH OF THE IDEALISM AND THE DESIRE TO STRIVE CONTINUOUSLY FOR A BETTER WORLD WHICH STEMMED FROM THE GREAT HOPES THAT WERE TO BE THE CONSEQUENCES OF THE FRENCH AND AMERICAN REVOLUTIONS ALSO WERE SEEN IN THE DEVELOPMENT OF MODERN MEDICINE. ANESTHESIA WAS BORN OUT OF THE NEW MEDICINE. THE NEW SENSE OF CARING FOR HUMANITY NOW AND HERE ON THIS EARTH AND NOT IN A LIFE OF THE HEREAFTER WAS A PRECONDITION OF THE MIND SET NEEDED TO STOP PAIN AND TO PREVENT IT - WHICH IS ANESTHESIA.

THE NEW HUMANITARIAN MOVEMENT, ASSOCIATED WITH THE ACCEPTANCE OF CHANGE AND THE RELEASE OF ENERGY OF THE ROMANTIC PERIOD, PLACED INCREASING VALUE ON THE CURRENT

WELFARE OF PEOPLE.¹² THESE MOVEMENTS WERE DIVERSE AND IN TIME INCLUDED LABOR LAWS, PROGRAMS FOR THE POOR, PRISON REFORM, SCHOOL REFORM, CHILD LABOR LAWS AND SIMILAR MEASURES. THE ABOLITION OF SLAVERY AT FIRST IN BRITAIN AND AFTER THE WAR BETWEEN THE STATES IN THE UNITED STATES OF AMERICA WAS PART OF THE NEW HUMANISM. DIVERSE THOUGH THESE MEASURES WERE, THEY ALL ALSO INCLUDED A PREOCCUPATION OR AT LEAST AN AWARENESS OF THE NEED TO DEAL WITH PAIN IN A SECULAR MANNER AS PART OF SOCIAL WELFARE AND REFORM. THE FULL TURN TOWARDS SEEING PAIN AS AN EVIL AND NOT INFLICTED BY GOD FOR THE PUNISHMENT FOR SIN IS ILLUSTRATED IN THE VIVID PROSE OF JOHN STUART MILL, ONE OF ENGLAND'S MOST IMPORTANT PHILOSOPHERS OF THE ROMANTIC PERIOD. HE WROTE:

NATURE IMPALES MEN, BREAKS THEM AS IF ON THE WHEEL, CASTS THEM TO BE DEVoured BY WILD BEASTS, BURNS THEM TO DEATH, CRUSHES THEM WITH STONES LIKE THE FIRST CHRISTIAN MARTYR, ... WITH THE MOST SUPERCILIOUS DISREGARD BOTH OF MERCY AND JUSTICE... EVEN WHEN SHE DOES NOT INTEND TO KILL SHE INFLICTS THE SAME TORTURES IN APPARENT WANTONNESS. ¹³

THIS APPARENT, AND PERHAPS, REAL CONFLICT IN THE PERCEPTION OF A NATURE THAT CAN BE CRUEL AND PAIN INFLICTING AND ONE THAT OFFERS SOLACE, COMFORT, AND AN END OF SUFFERING CAN BE RECONCILED, IN PART, BY REALIZING THE CHANGING VIEW OF MAN'S CONCEPT OF HIMSELF IN THE WORLD ABOUT HIM. A

VARIETY OF GOODS AND EVILS WERE POSSIBLY DUE TO CHANCE ALONE-AND COULD BE WORKED ON FOR HUMAN WELFARE.

DE ALMEIDA OFFERS SIGNIFICANT INSIGHT INTO THE VIEW OF THE ROMANTIC PERIOD ABOUT THE ROLE OF MAN IN HIS WORLD. IT DIFFERS GREATLY FROM THE HUMANISM OF THE GREEK MODEL IN AN IMPORTANT RESPECT. SHE POINTS OUT THAT THE GREEK VIEW TOWARD LIFE WAS ANTHROPOCENTRIC IN THE CLASSICAL SENSE OF HUMANISM. THE GREEKS REALIZED, SHE SAYS, THE ROLE OF THE UNIVERSAL LAWS OF HUMAN NATURE, BUT THEIR SENSE OF HUMANISM WAS FAR FROM SUBJECTIVE INDIVIDUALISM. ONLY THE HEROES WERE HELPED - AND THE THERAPIES WERE DIVINELY GIVEN. THE FOCUS OF THE ROMANTICS WAS THE "SELF", THE SUBJECTIVE SELF, WHICH HAS BECOME THE INTELLECTUAL PRINCIPLE OF THE MODERN WORLD. THIS CHANGE, DE ALMEIDA DESCRIBES AS CRUCIAL. OF RELEVANCE FOR THESE PURPOSES IS THE GERMAN ROMANTIC POET SCHILLER'S DESCRIPTION OF THE SENTIMENTAL POET WHO FINDS A NATURE WHICH IS SEPARATE FROM HIM AND DRIVES HIM TO SEEK UNITY IN THE WORLD. THE EFFORT IS IN VAIN, AND THE UNITY HE SEEKS ACCORDING TO SCHILLER IS REALLY IN HIS OWN MIND. THE DISCOVERY FREES HIM TO DEVELOP HIS OWN VIEWS AND IMAGES OF THAT WORLD AND HE DISCOVERS THAT HE CAN ACT FREELY IN ACCORDANCE WITH THIS NEW INSIGHT. THE TRUTH AND THE REALITY ARE REALLY MORE OF THE MIND THAN THEY ARE OF THE EXTERNAL WORLD IN THIS VIEW OF INDIVIDUAL HUMANISM.¹⁴

THE FORCING OF MAN TO RELY UPON HIS OWN RESOURCES FOR THE

SEEKING OF TRUTH, AND FOR THAT MATTER, FOR THE IMPROVEMENT OF HIS CONDITION IN THE WORLD IS AIDED BY A SUBJECTIVE INSIGHT IN WHICH THE TRUE REALITY CAN BE IN THE MIND. A FORCE THAT WAS VERY IMPORTANT IS THRUSTING THE THINKERS AND POETS IN THIS DIRECTION WAS THE FAILURE OF THE HOPES WHICH WERE STIMULATED BY THE FRENCH REVOLUTION. BLAKE STATED: "WHEN FRANCE GOT FREE EUROPE 'TWIXT FOOLS AND KNAVES / WERE SAVAGE FIRST TO FRANCE AND AFTER; SLAVES."¹⁵ THE FRENCH REVOLUTION, AND TO A LESSER EXTENT, ITS AMERICAN COUNTERPART WHICH WAS EARLIER IN TIME, GAVE HOPE THAT THE WORLD COULD BE A BETTER PLACE BY REMOVING THE AUTOCRACY OF THE MONARCH, THE NOBILITY, AND THE PRIVILEGED CLASSES. AN AUTOMATIC BETTERMENT OF LIFE ON THIS EARTH WAS FREEDOM FOR THE COMMON PEOPLE WHICH COULD PROVIDE SO MANY ASPECTS OF SOCIAL, ECONOMIC, AND PERSONAL LIBERTY. THE FRENCH REVOLUTION WAS, IN THE MINDS OF MANY OF THE ROMANTIC POETS, A SIGNAL THAT THEY COULD HOPE FOR FORMAL AND STRUCTURAL REVISION OF SOCIAL FORCES THAT WOULD AUTOMATICALLY PROVIDE FOR THE BENEFIT THAT WAS SOUGHT. THIS HOPE FOR INDIVIDUAL IMPROVEMENT COULD HAVE TAKEN PLACE, HAD THE REVOLUTION BEEN SUCCESSFUL AND EFFECTIVE AS A MAJOR SOURCE OF CREATING AN ENVIRONMENT WHICH WAS GOOD FOR THE PEOPLE.

THE POTENTIAL HOPES FOR FREEDOM WERE DASHED AND DESTROYED BY THE DISTORTION AND THE PERVERSION OF THE FRENCH REVOLUTION AS AN AID TO MANKIND. THE REIGN OF TERROR WAS A DISRUPTIVE ANTI-HUMAN FORCE OF MAJOR PROPORTIONS. THE IDEALISTIC ASPIRATIONS OF LIBERTY, FRATERNTY AND EQUALITY FOR

THE COMMON MAN AS A GIFT OF THE REVOLUTION WERE DESTROYED BY ROBESPIERRE.

THE EARLY HEROIC NAPOLEON IN BRINGING THE MESSAGE OF THE FRENCH REVOLUTION TO MUCH OF EUROPE ALSO BECAME A DESTROYER VERY SOON. THE NEW FRANCE BECAME THE ENEMY AND OPPRESSOR OF EUROPE, NOT ITS BENEFACTOR. THESE WAS BITTERNESS OF REALIZING THAT THE AUTOCRACY AND TYRANNY OF THE ANCIENT REGIME, ALTHOUGH MODERNIZED, WAS THE SAME. BYRON SATIRICALLY DESCRIBED THE LOST HERO WHO WAS NAPOLEON: "OH YE GREAT BULLETIN OF BONAPARTE! OH YE LESS GRAND LIST OF KILLED AND WOUNDED."¹⁶

THE DISILLUSION WHICH FOLLOWED NAPOLEON'S ACCESS TO POWER FORCED THE PHILOSOPHERS AND PARTICULARLY THE POETS TO A POSITION THAT, IN THE FINAL ANALYSIS, ONLY MAN CAN IMPROVE MAN AND THAT HE MUST WORK HARD TO EFFECT THOSE IMPROVEMENTS. THERE WAS NO WAY TO BELIEVE ANY LONGER IN THE POSSIBILITY OF REVOLUTIONARY IMPROVEMENT OR DIVINE INTERVENTION TO DO SOMETHING IMPORTANT ON THIS EARTH FOR HUMAN BETTERMENT. MAN COULD NOT RELY UPON A BENEFICIAL EXTERNAL ORDER FOR THESE CHANGES. THE REALITY OF TRUTH AND THE OPPORTUNITIES RESULTING FROM FREEDOM WERE THRUST INWARD TOWARD HUMAN IMAGINATION AS A MAJOR FORCE-PERHAPS THE ONLY FORCE OF ENTRY INTO A NEW HUMANISM. MIND AND IMAGINATION WERE NOW THE REALITY. TO EXTEND THIS CONCEPT TO SOME OF THE EFFECTORS OF IMPROVEMENT REQUIRED MAN'S NEW VIEW OF HIMSELF. SELF HELP WAS ESSENTIAL AND WITHOUT IT, THE IDEA OF RATIONAL CONTROL OF THE ENVIRONMENT AND BETTER CONDITIONS FOR HUMAN ASPIRATION WERE NOT POSSIBLE.

THE INWARD TURNING OF HUMANITY TO THE MIND FOR SUSTENANCE RAISED SEVERAL COLLATERAL ISSUES. FOR SOME, AND SHELLEY WAS ONE OF THEM, THE THEODICY OF THE EIGHTEENTH CENTURY'S BELIEFS BECAME IRRELEVANT. MAN DID NOT HAVE TO BELIEVE IN GOD. IF ONE HAD THE COURAGE TO CONFRONT THE ISSUES IT BECAME POSSIBLE FOR THOSE WHO COULD FREE THEMSELVES OF THE RESTRAINTS IMPOSED EVEN BY A RATIONAL CREATOR, TO BELIEVE THAT THE UNIVERSE WAS NOT DESIGNED FOR MAN'S COMFORTS ALONE NOR FOR THAT MATTER FOR ANY PURPOSE. SHELLEY COULD BECOME AN ATHEIST, AND A NEW REALITY COULD ARISE THAT WAS ACCEPTING OF A PURPOSELESS UNIVERSE. LATER, THINKERS LIKE EINSTEIN COULD POSE THE QUESTION WHICH IS PARAPHRASED: "IF I SEE THE MOON FOR THE FIRST TIME, DOES IT MEAN THAT IT WAS NEVER THERE UNTIL I SAW IT?"¹⁷ DARWIN COULD, ALSO BELIEVE THAT EVOLUTIONARY CHANGE WAS THE EFFECT OF PURE CHANCE, WITHOUT PURPOSE AND UNRELATED TO MEANINGFUL BIOLOGICAL DIRECTION. IN THIS INTELLECTUAL ENVIRONMENT, MEDICINE WAS FREED OF DOCTRINAIRE THEORY, AND COULD BE DIRECTED TO THE ISSUES OF VALUE I.E. THE PROVISION OF BETTER HEALTH AS AN END IN ITSELF TO EVERYBODY AND NOT PART OF SOME GRAND DESIGN.

MEDICINE MUST THEREFORE BE VIEWED IN THIS LIGHT. THE NEED TO ABANDON DOCTRINAIRE, ALMOST MAGICAL THERAPIES, CANNOT BE FULFILLED UNTIL MANKIND IS WILLING TO BE MORE SELF SUFFICIENT. IF MEDICINE CAN BE DEVELOPED FROM DOCTRINAIRE PRACTICES TO THE IDEA OF OBJECTIVE EXAMINATION OF PATIENTS AND THEIR PROBLEMS, A NEW SYSTEM OF SCIENTIFICALLY BASED THERAPEUTICS BECOMES POSSIBLE. DESPITE THE PREVALENCE OF POWER OF THE

PHYSICIAN (THE NON-SURGICAL) THE SURGEON WAS FREED FROM HIS INDENTURED STATUS AS A BARBARIC FIGURE IN INFLICTING MORE PAIN ON SUFFERING HUMANITY. CONDITIONS COULD BE CREATED WHERE SURGICAL INTERVENTION AS A VALUABLE AND LEGITIMATE METHOD OF TREATMENT BECAME POSSIBLE. THE SURGEONS AMONG YOU SHOULD, I THINK, REMEMBER THAT ANESTHESIA DELIVERED YOU FROM BONDAGE TO A MEDICAL MAN OR PHYSICIAN. IN BRITAIN, THIS LOWLY ORIGIN OF THE SURGEON IS REMEMBERED IN BRITISH STYLE BY RETAINING THE TITLE MISTER.

SINCE SUCCESSFUL SURGICAL INTERVENTION MUST HAVE BOTH ANESTHESIA AND ASEPSIS, THE NEWLY CREATED PERCEPTIONS OF COMPASSION AND SENSITIVITY IN POETRY SET THE SOCIAL ACCEPTANCE STAGE FOR BOTH DISCOVERIES. ANESTHESIA WAS TO COME FIRST, AND WAS ASSOCIATED WITH THE NEWLY PERCEIVED GOALS OF PREVENTING PAIN AND SUFFERING TO MANKIND. SCIENTIFIC ADVANCES OF MAJOR PROPORTIONS HAD TO BE DEVELOPED TO ACHIEVE THIS AND SIMILAR OBJECTIVES. FREEDOM TO PREVENT PAIN HAD TO PRECEDE THE ADVANCES IN SCIENTIFIC KNOWLEDGE BEFORE THEY COULD BE PURSUED WITH SOCIAL APPROVAL. THE EXPLOSIVE FORCE OF A CHANGE IN SCIENCE FROM THAT OF THE NATURAL DISCIPLINES, LIKE MATHEMATICS AND PHYSICS, TO THE LIFE SCIENCES WAS A REFLECTION OF THIS SOCIAL TRANSFORMATION. IT IS NOT ACCIDENTAL THAT A NEW MEDICINE, FREED OF THE SHACKLES OF TRADITION, MAKE POSSIBLE THE DISCOVERY OF ANESTHESIA (FOLLOWED NOT TOO LONG THEREAFTER BY THE DISCOVERY OF ASEPSIS AFTER ANTISEPSIS WAS ESTABLISHED), AND THE NEWLY IMPORTANT PERCEPTIONS OF MAN FROM THE STANDPOINT OF EVOLUTION

WERE ALL ACHIEVED WITHIN A VERY SHORT TIME OF EACH OTHER. EVOLUTION, THE NEW MEDICINE, THE NEW BIOLOGY, AND THE DEVELOPMENT OF SURGICAL ANESTHESIA HAVE A TEMPORAL ASSOCIATION THAT IS FAR FROM COINCIDENTAL.

WITH EVERY ADVANCE IN THE CONDITION OF MAN OR HIS ASPIRATIONS, THERE APPEARS ALSO TO BE A NEGATIVE SIDE AS WELL. THE AGE OF NATURAL SCIENCE AND ITS APPLICATION TO MACHINE DEVELOPMENT ON THE ONE HAND PRODUCED INCREASED CREATURE COMFORTS BUT WAS ALSO RESPONSIBLE FOR THE MAJOR INJURIES PRODUCED BY THE INDUSTRIAL REVOLUTION AND PRECIPITATED A NEED FOR REFORM. BLAKE DESCRIBES IT IN "HOLY THURSDAY"/"AND SO MANY CHILDREN POORY"/"IT IS A LAND OF POVERTY!"¹⁸ NONETHELESS, THERE AROSE A PERSISTENT PERCEPTION THAT PAIN INFLICTED BY SOCIETY DID NOT HAVE TO BE TOLERATED. IT WAS A SMALL, BUT CRUCIAL, ADDITIONAL STEP, TO BELIEVE THAT PAIN COULD AND SHOULD BE PREVENTED, INCLUDING EVEN THAT SPECIFIC PAIN ALLEGEDLY INFLICTED FOR THE GOOD OF MEN, WHICH IS SURGICAL INTERVENTION..

THIS VIEW WAS SYSTEMIZED BY BENTHAM WHO ANALYZED PAIN IN SOME DETAIL. HE POINTED OUT THAT PAIN COULD BE PHYSICAL OR MENTAL (PAIN VS. COMFORT?) AND THAT IT COULD BE NATURAL, MAN INDUCED, AND PERHAPS EVEN DIVINELY PERPETRATED. THE DIFFERENTIATION OF PHYSICAL PAIN AND MENTAL ANGUISH WHICH PERMITTED AND FACILITATED A REASSESSMENT OF SCIENTIFIC STUDY AND MEDICAL MANAGEMENT OF PAIN WAS MADE POSSIBLE BY BENTHAM'S SEPARATION OF THE PHYSICAL AND MENTAL ASPECTS

OF THE PAIN EXPERIENCE. THE POLAR CONTRAST OF PAIN, IN FOLLOWING ITS CONTRARY, PLEASURE, WAS HIGHLIGHTED BY THOMAS JEFFERSON'S CHANGE OF LOCKE'S PHRASE, "LIFE, LIBERTY, AND ESTATE" TO "LIFE, LIBERTY, AND THE PURSUIT OF HAPPINESS".¹⁹ ONCE THE AMELIORATION OF PAIN HAD BECOME AN ACCEPTED SOCIAL GOAL, IT WAS POSSIBLE ALSO TO ACCEPT THE CONCEPT OF SURGICAL ANESTHESIA AS ONE OF THE MANY NUMEROUS FACETS OF THE TOTALITY OF LIFE EMBRACED BY THE "PURSUIT OF HAPPINESS" IDEA.

SINCE THE DISCOVERY OF ANESTHESIA WAS UNIQUELY AMERICAN, ALTHOUGH ITS READY ACCEPTANCE IN BRITAIN SUGGESTS IT COULD HAVE AND PERHAPS SHOULD HAVE BEEN DISCOVERED THERE, IT IS NOT SURPRISING TO NOTE A POETIC REFLECTION OF THE PAIN EXPERIENCE IN THE UNITED STATES. EMILY DICKINSON, NOT A ROMANTIC POET, WROTE THAT "PAIN--HAS AN ELEMENT OF BLANK".²⁰ SHE ALSO DESCRIBED PAIN AS AN "HOUR OF LEAD-/REMEMBERED, IF OUTLIVED,--/AS FREEZING PERSONS, RECOLLECT THE SNOW--/FIRST--CHILL--THEN STUPOR--THEN THE LETTING GO" .²¹

ANOTHER ISSUE THAT HAD TO BE CONFRONTED ABOUT THE ATTITUDES TOWARD PAIN WAS A VERSION OF THE QUESTION OF ART VERSUS NATURE A SUBJECT OF GREAT INTEREST AS A GENERAL ISSUE IN THE POETRY AND PHILOSOPHY OF THE ROMANTIC AGE. THIS PROBLEM WAS PARTICULARIZED IN ATTITUDES TOWARD THE THERAPY OF PAIN, ONCE IT WAS ESTABLISHED THAT THE RELIEF OF PAIN WAS A SOCIAL GOOD. BECAUSE OF THE REVULSION AGAINST THE HEROIC THERAPIES OF THE EIGHTEENTH CENTURY, THERE WERE THOSE

WHO ADVOCATED "NATURAL" RELIEF OF PAIN AND CURE OF DISEASE. ILLNESSES COULD BE IMPROVED BY THE CORRECTION OF ENVIRONMENTAL DEFICIENCIES OR COMPASSIONATE CARE BY THE PHYSICIAN OR NURSE. THESE APPROACHES WERE OBVIOUSLY LESS INJURIOUS THAN BAD ACTIVE HEROIC THERAPY. HOWEVER, THE DEVELOPING OF SCIENTIFICALLY ORIENTED MEDICINE OFFERED THE POSSIBILITY OF PAIN RELIEF BY A BETTER UNDERSTANDING OF THE PATHO-PHYSIOLOGY OF DISEASE. IN ANY EVENT, THERE WAS NO WAY TO AVOID A CONFRONTATION ABOUT SURGICAL THERAPY AND THE IATROGENIC INFLICTION OF PAIN BY THE SURGEON. IT WAS ONE THING TO THINK AND FEEL AS T.S. ELIOT DID IN THE 20TH CENTURY IN THE EAST COKER POEMS: "THE WOUNDED SURGEON PLIES THE STEEL/THAT QUESTIONS THE DISTEMPERED PART;/BENEATH THE BLEEDING HANDS WE FEEL/THE SHARP COMPASSION OF THE HEALER'S ART.22

IT WAS QUITE ANOTHER PROBLEM FOR PROSPECTIVE PATIENTS THAN MERELY FEELING COMPASSION FOR THE COMPASSIONATE SURGEON! IF SURGICAL INTERVENTION TO CORRECT INJURIES AND DISEASE AND TREAT THE CONSEQUENCES OF TRAUMA WAS NECESSARY, THEN COMPASSION HAD TO BE EXTENDED TO THE PATIENT AS WELL AS THE SURGEON! IT WAS CLEARLY IN THE SPIRIT OF THE HUMANISM OF THE EARLY NINETEENTH CENTURY TO BELIEVE THAT THE PREVENTION OF PAIN ASSOCIATED WITH THE BENEFICIAL BUT PAINFUL STIMULI OF SURGICAL OPERATION WAS NOT ONLY ACCEPTABLE BUT ESSENTIAL. THIS WAS A PREFERENCE FOR ART BUT NOT AN ABANDONMENT OF NATURE IN THERAPEUTIC MEDICINE WITH RESPECT TO PAIN RELIEF AND THE CONCEPT OF

SURGICAL ANESTHESIA. ART AND NATURE IN THE ONCOMING APPEARANCE OF ANESTHESIA APPEAR, FORTUNATELY, TO BE IN HARMONIOUS UNISON.

TO SOME DEGREE IT IS ASTONISHING TO NOTE THE SENSITIVITY AND THE PRECISION WITH WHICH THE COLLATERAL ASPECTS OF THE ANESTHETIC PROCESS ARE CONSIDERED AND DESCRIBED IN THE POETRY OF THE ROMANTIC PERIOD. THERE IS, OF COURSE, NO REASON TO THINK THAT SHELLEY HAD ANESTHESIA SPECIFICALLY IN MIND WHEN HE WAS COMPOSING PROMETHEUS UNBOUND BUT THERE ARE MANY ALLUSIONS DIRECTLY TO MATTERS THAT CONCERN THE ANESTHETIC PROCESSES INCLUDING THE LOSS OF CONSCIOUSNESS, THE PROVISION OF AMNESIA, ANALGESIA, AND SOME OF THE MATTERS WHICH WERE TO BECOME CONTROVERSIAL ABOUT THE ANESTHETIC PROCESS ITSELF. SHELLEY'S ORIENTATION FOR THE WELFARE OF MANKIND AND THE HUMAN LIBERATION PROVIDED BY LOVE, PITY, AND COMPASSION IS AMPLY DEMONSTRATED IN MUCH OF HIS POETRY, ESPECIALLY PROMETHEUS UNBOUND,⁺

FOR INSTANCE, SHELLEY FORECASTS THE DEVELOPMENT OF THE AMNESIA REQUIRED FOR THE SAFETY OF PAIN PREVENTION. HE HAS ASIA DESCRIBE IT IN THIS FASHION: "WHICH SLEEP WITHIN FOLDED ELYSIAN FLOWERS, NEPENTHE, MOLY, AMARANTH, FADELESS BLOOMS".²³ THESE DRUGS ARE ANCIENT AND WERE, OF COURSE, KNOWN TO THE GREEKS. THEY WERE THOUGHT TO CAUSE RESPECTIVELY, THE BANISHMENT OF GRIEF OR TROUBLE, A CHARM AGAINST SORCERERS, AND EVERLASTING BLISS WHEN THESE PLANTS OR

MEDICATIONS WERE USED. A MOST INTERESTING FORECAST OF THE CONTROVERSY TO COME ABOUT THE NATURE OF NATURAL SLEEP COMPARED TO ANESTHESIA, AND EVEN ITS RELATIONSHIP TO THE SLEEP OF DEATH IS ALSO A MATTER OF CONCERN TO SHELLEY HE HAS EARTH SAY: "DEATH IS THE VEIL WHICH THOSE WHO LIVE CALL LIFE:/THEY SLEEP - AND IT IS LIFTED".²³ SHELLEY IS SO CONCERNED ABOUT PAIN THAT HE EQUATES IT WITH HATE AND FEAR WHICH MUST BE BANISHED. HE DESCRIBES IT AS: "TILL HATE AND FEAR AND PAIN", "LIGHT – VANQUISHED SHADOWS FLEEING".²³

THE ACTUALITIES OF TWO ASPECTS OF THE PRACTICAL ADMINISTRATION OF SURGICAL ANESTHESIA CAN BE FOUND IN PROMETHEUS UNBOUND. ASIA TALKS ABOUT AN ANESTHETIC SUBSTANCE/ERE THE VAPOUR DIM THY BRAIN (169). THE EXPERIENCE OF THE INDUCTION OF ANESTHESIA IS ALSO DESCRIBED BY ASIA--/MY BRAIN/GROWS DIZZY--I SEE THIN SHAPES WITHIN THE MIST (170).

ABRAMS, IN HIS PSYCHOANALYTIC COMMENTARY ON PROMETHEUS UNBOUND, INTRODUCES THE IMPORTANT NOTION OF COMPASSION. HE WRITES: "BUT BY SUBSTITUTING COMPASSION FOR HATE, PROMETHEUS, ALTHOUGH UNKNOWINGLY, HAS RELEASED HIS FEMININE COMPLEMENT, THE FULL POWER OF LOVE, FROM HER LONG EXILE.²³ ALL OF THESE FORCES OF POETIC PROPHECY, PHILOSOPHICAL SECULARIZATION, THE DEVELOPMENT OF SUBJECTIVITY, AND THE INEVITABLE CONCENTRATION ON PAIN AS AN EVIL ARE REFLECTIONS PERTINENT TO PREPARING THE WAY FOR THE DISCOVERY OF ANESTHESIA. COMPASSION COUPLED WITH THE ABANDONMENT OF IRRATIONAL

SCIENCE AND COUPLED WITH THE EVOLUTION OF MEDICAL PRACTICE TO PRECISION IN DIAGNOSIS AND THE INCREASED APPRECIATION OF THE POSSIBLE VALUE OF SURGICAL INTERVENTION FOR CERTAIN DISEASES AS WELL AS THE CONSEQUENCES OF TRAUMA, MADE THE DISCOVERY OF ANESTHESIA ALMOST INEVITABLE BY THE MID NINETEENTH CENTURY BUT NOT BEFORE THEN. SPECIFICALLY, THE SOCIAL FABRIC SET BY THE INDUSTRIAL REVOLUTION COUPLED WITH THE SUBJECTIVITY OF THE ROMANTIC MOOD, AND ITS RELEASE OF HUMAN ENERGY FORECAST THE DISCOVERY OF ANESTHESIA. WHY IT SHOULD HAVE OCCURRED IN THE UNITED STATES RATHER THAN IN GREAT BRITAIN IS A SUBJECT OF INTEREST AND PERHAPS CONTROVERSY. ONE POSSIBLE EXPLANATION IS THE COMMON USE OF SUBSTANCES LIKE ETHER AND NITROUS OXIDE FOR MIND ALTERING PURPOSES TO ENHANCE SUBJECTIVE EXPERIENCES. THESE ACTIVITIES WERE ACCEPTABLE IN THE SOCIAL CONDUCT OF LIFE IN THE YOUNG UNTIED STATES.

IN 1842, CRAWFORD LONG MADE THE ASTONISHING AND BRILLIANT CONNECTION BETWEEN THE EFFECTS OF SOCIAL PRACTICES WITH MIND ALTERING SUBSTANCES LIKE NITROUS OXIDE AND ETHER WITH THE PREVENTION OF PAIN IN SURGICAL PROCEDURES. LONG DESCRIBED THE FREQUENT USE OF ETHER AS A SOCIAL EXPERIENCE:

THE ETHER WAS INTRODUCED: I GAVE IT FIRST TO THE GENTLEMAN WHO HAD PREVIOUSLY INHALED IT, THEN INHALED IT MYSELF, AND AFTERWARD GAVE IT TO ALL THOSE PRESENT . . . AND ITS INHALATION SOON BECAME QUITE FASHIONABLE IN THIS COUNTY, AND IN FACT EXTENDED FROM THIS PLACE THROUGH SEVERAL COUNTIES IN THIS PART OF GEORGIA.²⁴ ON NUMEROUS

OCCASIONS I HAVE INHALED ETHER FOR ITS EXHILERATING (SIC?) PROPERTIES AND WOULD FREQUENTLY, ... DISCOVER BRUISES OR PAINFUL SPOTS ON MY PERSON, WHICH I HAD NO RECOLLECTION OF CAUSING. AND WHICH I FELT SATISFIED WERE RECEIVED UNDER THE INFLUENCE OF ETHER.

I NOTICED MY FRIENDS, WHILE ETHERIZED, RECEIVED FALLS AND BLOWS, WHICH I BELIEVE WERE SUFFICIENT TO PRODUCE PAIN - AND THEY ASSURED ME THAT THEY DID NOT FEEL THE LEAST PAIN FROM THESE ACCIDENTS.²⁴

IN THIS DRAMATIC FASHION, A SOCIAL PRACTICE, VIVIDLY DESCRIBED IN LONG'S PROSE, TRANSLATED THE POSSIBILITY OF CONNECTING A PLEASURABLE SOCIAL EXPERIENCE TO THE USE OF ETHER FOR SURGICAL ANESTHESIA. POSSIBLY THE SOCIAL ORIGIN OF HIS OBSERVATION LED LONG TO DELAY HIS PUBLICATION OF AN IMPORTANT MEDICAL EVENT UNTIL AFTER THE MORTON DEMONSTRATION HAD OCCURRED IN BOSTON. THE APPLICATION AND PUBLIC DEMONSTRATION OF THE USE OF ETHER BY MORTON AT THE MASSACHUSETTS GENERAL HOSPITAL MADE PUBLIC THIS NEW AND IMPORTANT DISCOVERY IN THERAPEUTICS.²⁵ PERHAPS THE CRITERION OF THE PURSUIT OF HAPPINESS TILTED THE DISCOVERY LOCUS TO THE UNITED STATES SINCE HAPPINESS WAS A GOOD GOAL BUT NOT YET A PROMINENT PART OF BRITISH LIFE OF THE TIMES. ONE COULD SUMMARIZE THE ISSUES OF THAT ERA IN THE WORDS OF EDWARD H. CLARKE, PROFESSOR OF MEDICINE AT HARVARD, WHO PUT IT THIS WAY:

THE AMERICAN REVOLUTION, THE FORERUNNER OF POLITICAL CHANGES OF THE GREATEST CHARACTER IN EUROPE AS WELL AS IN AMERICA, WAS COINCIDENT WITH THIS NEW DEPARTURE IN MEDICINE . . .THE FAITH OF CHRISTENDOM HAS BEEN, AND IS, CRYSTALLIZING INTO NEW FORMS AND MOVING TO NEW ISSUES. THE PROGRESS IN MEDICINE HAS KEPT ABREAST OF THE OTHER NATURAL SCIENCES, OF POLITICS AND OF THEOLOGY AND HAD MADE EQUAL CONQUESTS OVER AUTHORITY, ERROR AND TRADITION . . . SUCH HAS BEEN THE PROGRESS . . . AND. . . ACHIEVEMENTS OF MEDICAL SCIENCE . . . TO JUSTIFY THE ENTHUSIASTIC REGARD IN WHICH PHYSICIANS HOLD THEIR PROFESSION AND TO DESERVE THE GRATITUDE OF MANKIND.²⁶

THE DISCOVERY OF ANESTHESIA WAS PART OF THIS "ENTHUSIASTIC REGARD" OF PHYSICIANS AND OF THE "GRATITUDE" OF MANKIND. IT SEEMS REASONABLE TO VIEW THE DISCOVERY OF ANESTHESIA AS PART OF THE AWARENESS OF SELF, OF THE COMPASSION, AND THE SENSITIVITY OF THE ROMANTIC ERA POETS AND WRITERS AND AS PART OF THE "PURSUIT OF HAPPINESS". POETIC INSIGHTS REFLECTED THE HOPES FOR A BETTER WORLD FOR HUMANITY. THE PREVENTION AND CONTROL OF PAIN AND THE DEVELOPMENT OF ANESTHESIA WERE IMPORTANT CHARACTER IF THE GOOD LIFE WHICH ORIGINATED IN THE ENERGY OF THE LITERARY ARTISTS EFLECTING THE BASIC HUMAN CONCERNS OF THE TIME.

REFERENCES

1. HUXLEY ALDOUS: BRAVE NEW WORLD. NEW YORK, BANTAM BOOKS, 1960, P. 163.
2. JAMES W: THE VARIETIES OF RELIGIOUS EXPERIENCE, A STUDY IN HUMAN NATURE. NEW YORK, PENGUIN BOOKS, 1982, P. 297-298.
3. THE HOLY BIBLE, BOOK OF JOB 5:17.
4. DONNE J: AN ANATOMY OF THE WORLD, THE COMPLETE ENGLISH POEMS. EDITED BY SMITH AJ. NEW YORK, PENGUIN BOOKS 1981, P. 273.
5. NEIBYL PETER H.: THE ENGLISH BLOODLETTING REVOLUTION, OR MODERN MEDICINE BEFORE 1850. BULLETIN OF THE HISTORY OF MEDICINE 51:464-483, 1977.
6. BYRON LORD: LORD BYRON: SELECTED LETTERS AND JOURNALS. EDITED BY MARCHAND LA. MASSACHUSETTS, THE BELKNAP PRESS OF HARVARD UNIVERSITY PRESS, 1982, PP 332-337.
7. MARCHAND LESLIE A: BYRON, A PORTRAIT. 1970. CHICAGO, UNIVERSITY OF CHICAGO PRESS, 1979, P. 456.
8. BYRON LORD: LORD BYRON: DON JUAN, EDITED BY STEFFAN TG, STEFFAN E., AND PRATT WW. NEW HAVEN, YALE

UNIVERSITY PRESS, 1982, P. 483.

9. BLAKE W: ON ANOTHER'S SORROW, THE COMPLETE POETRY AND PROSE OF WILLIAM BLAKE. EDITED BY ERDMAN DV. NEW YORK, ANCHOR PRESS-DOUBLE DAY, 1982, P 17.
10. BLAKE W: VISIONS OF THE DAUGHTERS OF ALBION, THE COMPLETE POETRY AND PROSE OF WILLIAM BLAKE. EDITED BY ERDMAN DV. NEW YORK, ANCHOR PRESS-DOUBLE DAY 1982, P. 49.
11. WORDSWORTH WILLIAM: ODE ON INTIMATIONS OF IMMORTALITY FROM RECOLLECTIONS OF EARLY CHILDHOOD, THE LITERATURE OF ENGLAND. EDITED BY WOODS, GB WATT HA, AND ANDERSON GK. CHICAGO, SCOTT FORESMAN, 1953, P 681-684.
12. GREENE NM: A CONSIDERATION OF FACTORS IN THE DISCOVERY OF ANESTHESIA AND THEIR EFFECTS ON ITS DEVELOPMENT. ANESTHESIOLOGY 35:515-522, 1971.
13. MILLS JS: NATURE, THE PHILOSOPHY OF JOHN STUART MILL, EDITED BY COHEN M. NEW YORK, MODERN LIBRARY, 1961, PP 463-467.
14. DE ALMEIDA HERMOINE: BYRON & JOYCE THROUGH HOMER: DON JUAN AND ULYSSES. NEW YORK, COLUMBIA UNIVERSITY PRESS, 1981, PP 145-641.

15. BLAKE W: THE COMPLETE POETRY AND PROSE OF WILLIAM BLAKE, EDITED BY ERDMAN DV. NEW YORK, ANCHOR PRESS-DOUBLE DAY, 1982, P 641.
16. BYRON LORD: LORD BYRON: DON JUAN. EDITED STEFFAN TG, STEFFAN E, AND PRATT WW. NEW HAVEN: YALE UNIVERSITY PRESS, 1982, P 315.
17. REGIS ED: WHO GOT EINSTEIN'S OFFICE? NEW YORK, ADDISON-WESLEY PUBLISHING COMPANY, 1987, P 29.
18. BLAKE W: HOLY THURSDAY, THE COMPLETE POETRY AND PROSE OF WILLIAM BLAKE. EDITED BY ERDMAN, DV. NEW YORK, ANCHOR PRESS-DOUBLE DAY, 1982, P 19.
19. BENTHAM J: AN INTRODUCTION TO THE PRINCIPLES OF MORALS AND LEGISLATION. EDITED BY BURONS JH AND HART HLA. NEW YORK, METHUEN PRESS, 1982, P 34.
20. DICKINSON EMILY: POEM 650, THE COMPLETE POEMS OF EMILY DICKINSON. EDITED BY JOHNSON TH. BOSTON, LITTLE BROWN, 1960, P 323.
21. DICKINSON EMILY: POEM 341, THE COMPLETE POEMS OF EMILY DICKINSON. EDITED BY JOHNSON TH. BOSTON, LITTLE BROWN, 1960, P 162.
22. ELIOT TS: EAST COKER IN FOUR QUARTETS, COMPLETE POEMS AND PLAYS, 1909-1950. NEW YORK, HARCOURT BRACE & WORLD, 1950,

P 127.

23. SHELLEY PERCY BYSSHE: PROMETHEUS UNBOUND, SHELLEY'S POETRY AND PROSE. 1974. EDITED BY REIMAN DH AND POWERS SB. NEW YORK, WW NORTON & COMPANY, 1977, PP 132-210.
24. LONG CRAWFORD, W: AN ACCOUNT OF THE FIRST USE OF SULPHURIC ETHER BY INHALATION AS AN ANAESTHETIC IN SURGICAL OPERATIONS. SOUTHERN MED SURG. J. 5:705-713, 1849.
25. BIGELOW HENRY JACOB: INSENSIBILITY DURING SURGICAL OPERATIONS PRODUCED BY INHALATION. BOSTON MED SURG J 35:309-317, 1846.
26. CLARKE EH: PRACTICAL MEDICINE, A CENTURY OF AMERICAN MEDICINE 1776-1876. EDITED BY CLARKE EH, BIGELOW HJ, ET AL. OLD HICKORY BOOKSTORE, 1876, P 2-72.