# A REFLECTION OF THE SCIENTIFIC ATTITUDE IN ENGLISH LITERATURE OF THE SEVENTEENTH AND EARLY EIGHTEENTH CENTURIES

by
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# PREFACE

I wish to thank Dr. Edgar Finley Shannon for the great freedom he has allowed me in writing this thesis.

H.K.D.

# CHAPTER I

## THE BACKGROUND OF THE SEVENTEENTH CENTURY

With the Fall of the Roman Empire in 476 there came an end to the Roman idea of Unity in government. It was far too difficult and complicated to combat and to regulate a nation extending from Syria to the Straits of Gibralter, from Tunis and Egypt to Britain. The size alone would have raised a great problem in an age of slow transportation and communication; but any nation composed of heterogeneous groups, differing amongst themselves in laws, languages, and customs, naturally decomposed into its elemental parts. Yet that spirit of unity in government remains a memory which has the peculiar habit of rearing its head and driving one nation after another in the attempt to restore the basis of that idea.

It is natural and indeed inevitable, therefore, that the actual physical differences should affect the more abstract and universal qualities and questions: science and religion; reason and emotion; experience and authority. The unity of thought throughout the Middle Ages is based upon the last. Its being and life remained within the arms of the church, perhaps rather blindly, but remained never-

theless. The expression of such a feeling naturally is to be found in literature, for language and use of words give a picture of the age and its problems better than any other means.

The unity of thought throughout the Middle Ages, is based upon the somewhat syllogistic reasonings of Aquinas and Anselm. The latter admits God in:

> "I have an idea of a most perfect being, than which no more perfect is conceivable. Since perfection of being implies necessity, therefore God exists." (1)

But any admission as this is based upon hope and not upon reason, although reason may be used to reach the desired end. This desire to manifest faith during the eight to the sixteenth centuries led to the erection of huge monuments to their devotion: the cathedrals of Europe where prince and pauper, scientist, scholar, ecclesiastic met upon one footing: that of faith in authority.

Yet to place such emphasis upon an intangible and unmeasurable foundation defeated itself as did the walls of the cathedrals; the higher the striving toward God the higher the dome of the cathe-

(1) Kirk; Stars, Atoms and God, pg. 63

dral; the higher the flying butresses; the lessening of the support for the walls and the need of greater support for themselves. At length the physical limit was reached and no longer was salvation the main desire.

Man realized that for some time he had placed the cart before the horse and that authority based upon authority alone defeats itself. Whenever any action must justify itself by faith and hope rather than by reason based upon observation, change is imperative. Just as any principle that runs in circles rather than toward one directed end defeats itself, just so Scholasticism and its faith lost. In its place man became concious of his power to synthesize and analyze for himself. Man, if he thought, might have as great an opportunity to dogmatize as those authorities long revered.

Since the Church was the center of life, when it grew too top-heavy and its superstructure too ornate for the minds of its followers, or rather the foundations upon which it was supported, it toppled. Its shell and the memory of its original form remains the same, at least in outline, for regardless of the

changes in man's belief, the fundamental cosmological forces remain the same. And the difference is evident only in expression.

It would be foolish to say that the age following the decline of Scholasticism was devoid of faith. But rather an age in which both the views were allowed. Authority still working from the general to the individual, and experience representing the opposite. Regardless of the colour, race, or creed of people, the same principles of truth and love for reflection remain ever dominant.

Just as soil is poisoned by the excessive planting of the same crop year after year, just so man's mind becomes confused with the trifling arguments advanced, often to no purpose, over a long period of time. The fundamental truth underlying the the principles may, and probably does remain the same although the aspects of those principles may indeed grow tiring to the reasoner. It is natural, then, that opinions arise, not by chance, but by a repetition of former theories and at length by laws. The new ideas, or hopes, or theories, may at length become quite revolutionary, yet they are founded upon and

supported by the observed facts of the earlier observations and principles.

Perhaps it is possible to account, not without doubt, that the rise of the same opinions and modes of thought by different men at the same time but in different localities comes not from a feeling of stagnation and then retrogression, but a feeling of adventure and new power within the same spirit. The penduleum of thought may often start its counter cource soon after the most favorable position of the belief has been reached. But that swinging is not born alone from the desire of change, but augmented to a great extent by the desire to experiment further or at least to think a little more clearly upon a new path. Every mental reaction must have had its conception in some person's mind. In which the swift chain of thoughts may have sprung perhaps from a slight fallacy. By gradually placing these separate and individual thoughts together there is syntheized a new theory.

Whenever the concrete becomes, through mental stimulation, abstract, then science draws near literature, and the opposite must of necessity be true likewise. For literature as any of the other arts is not tangible, but its results may seem so.

And science, except in the abstract sense, deals with facts and not fancies. Yet even here the bounds between abstract science and philosophy are far from sharp

As we grow from fear to superstition and at length to doubt we as individuals have undergone the changes which to us are embryonic; to the person of the seventeenth and eighteenth centuries it was a slow and often impossible task, which more than often was considered foolish. As children, we are the center of the universe, but as we grow our nursery and self importance becomes relegated to the background. Ourselves become less and less important and separate until we gradually realize that we are not the center of the universe, although the latter may exist only when we are able to comprehend it either by physical or mental means. As this process grows and becomes enlarged, we realize our dwarfing. But that process to us never covers an exceedingly long time. To the persons of the seventeenth and eighteenth centuries it was more than their span of life.

One even slightly familiar with the

deductions of the Middle Ages, the age of faith, realizes the utter absurdity of many of the arguments proposed. So, too, there lies danger in the resorting to reason alone. Men such as Voltaire, Bentham, Thales, Marx, all disciples of reason, show clearly the paths along which one may follow if there is not placed upon our mental actions some limitation, whether it be through the abstraction of literature, interpretation by philosophy or through the knowledge of the universe and its manifold projects by the hand of science.

These three are desirous both for truth and for peace, both mentally and physically. Yet there is a striking closness to the three. The growth of science from the simplest measurments made by surveying, to the position of extreme complexity, has begun to indicate that science has become metaphysical and consequently approaches philosophy. And as philosophy desires to know the ultimate cosmology of the world its expression approaches literature. And so literature attempts to join the two together to the mutual advantage of both.

Science by its very nature, at present,

is centrifugal. But the spirit of literature is centripetal since the subjectiveness of each word varies as its impression is made upon the different individual. But that thought or impression often does not extend beyond the individual himself. Until we are able to unite both science with its exactness and literature with its power of impression we are without progress, although there may be progress within both fields. As knowledge grows perhaps we shall be better able to cope with such a situation. And even now there is a ray of hope in that as science is interested in being and actuality, literature crosses its line of demarkation and becomes not only a part of the mental wordings of man but his reality is an exceedingly potent problem. This is further strengthened since being directs reason and reason favours being.

Since science is often supposed to represent a single creed of thought its specialization, into Chemistry, Biology, Physics, or their sub divisions, may lose the touch of humanity. Whenever a single creed of thought dominates any civilization, that civilization becomes warped, and, in so doing, seals its own doom. Consequently, we must have a sense of equilibrium be-

tween hard, cold fact and the fantastic workings of fancy.

We are confronted with the question, that if we pause to catch our breath and allow our minds to absorb the theories expounded by various fields, will our present knowledge inspire future generations as we have been inspired? Science alone can not do this, but its expression or rather the expression of the scientfic attitude can only be understood by the use of words. And that use makes literature.

Our immortality, if ever gained, rests solely and entirely upon our ability to give to posterity, or our contempories kind enough to remember us, some degree of inspiration. Else we live in vain. Not to those persons to whom monuments have been erected for martial leadership or their ability in leading affairs of state, but to those persons whose actions or impressions live in the memory of others immortality is granted. The actual "pomp and circumstance" of life is short lived, but the expression of the thoughts causing such an exhibit is immortal.

Indeed our hopes, our theories, may

give inspiration to some person other than ourselves. Perhaps that inspiration shall carry fruit far beyond our wildest dreams. But those same hopes unless they are given to posterity in such a maner that combines the actual expression and the spirit beneath are without issue. Let us hope therefore, that science and literature may go hand in hand. That the one may serve the other. If so, the developments of the scientific attitude in literature are not in vain. That attitude took a long time to make itself felt, but from the seventeenth century onward there has developed a literature based upon experience and not authority. A spirit that learning must have some value other than for petty arguments.

# CHAPTER II

## ADVANCEMENT IN SCIENCE DURING THE SEVENTEENTH CENTURY

> "To any person regarding the scientific advancements of the present age as the most characteristic and essential elements of modern civilization, and who looks at the present from a historical point of view, the seventeenth century is a period of great significance." (1)

For no other century, with the possible exception of the last, can show the tremendous strides in the field of knowledge:- First, it outlined methods and means of scientific advance; secondly, it discovered a great number of facts; and lastly, it showed a reaction toward the prejudices accumulated through the previous centuries.

The seventeenth century gave birth to chemical laboratories, although alchemy had possessed its furnaces, countless glass vessels, and distilling devices for many centuries before. But the actual conception of a laboratory free from alchemy was not born until the seventeenth century. Even the astronomical laboratory, the seat for astrology, had existed likewise for many years. Its equipment the telescope, as the microscope did not arrive until this century.

It is interesting to note the differences between the Aristotelian and the Newtonian ideas regarding physics. The former believed that: first,

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(1) Ornstein, The Role of Scientific Societies, pg 3.

"Bodies have either a natural motion downward or upward. The former are called ' heavy ' and the latter ' positively light'."

secondly,

"There are two types of motion: that of heavenly bodies is perfect, circular, unchangive; that of earthly bodies is rectilinear and requires for its maintenance a force acting continually. If the force stops, it stops."

thirdly,

"Bodies fall in accelerated motion because as the body falls the air gives it speed, hence in a vacuum ( if conceivable ) bodies would fall with uniform velocity."

lastly, (2)

"Heavier bodies fall more quickly than light bodies."

Compare this theory to that held by Galileo, Kepler, Newton:- first,

"All bodies are subject to the force of gravitation and are ' heavy !"

secondly,

"Every body, celestial or terrestrial, continues in its state of rest or of uniform motion in a straight line unless it be compelled by a force to change its state. Uniform rectiliner motion would thus continue forever unless it met resistance. ' Force ' is that, by means of which rest or motion of a body is changed."

thirdly,

"Bodies fall in accelerated motion because of the force of gravitation; air does not accelerate but impeeds motion."

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(2) Ornstein, op. cit. , pg.6.

lastly, (3)

"All bodies fall with uniform acceleration."

Before the seventeenth century, Roger Bacon gave some idea of the focal properties of spherical mirrors, but not until Kepler were the minute details of lenses known. With the help of Newton the decomposition of white light was effected into the spectral colours.

Regarding astronomy, there was already at the start of the seventeenth century a firmly established theory in the old Ptolomaic conception of the universe. But even in this, the Copernican system been expounded during the sixteenth century. It remained for the next century however, to destroy the theory that:

> "The moon and sun move about the earth, but Mercury, Venus, Mars, Jupiter and Sateurn about the sun - a system corresponding with observation and having the advantage of not interfering with any biblical passage." (4)

Although this is based upon observation it is not without some vestige of authority. This authority was exploded during the seventeenth century with the development of the telescope which could, and did, prove the Copernican theory.

Through the work of Huygens and Halley the paths of comets became subjected to the formation of laws which were the result of observation and not

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(3) Ornstein, op. cit., pg. 7.
(4) Ibid, pg. 8.

authority regarding them, this more than any other factor destroyed the medieval notion that spirits of men caused the moving of planets and comets.

In the field of chemistry perhaps was the greatest change, with the possible exception of physiology. For here the concepts of the four fundamental qualities of Aristotle, the four humors of Jonson, were dealt a severe blow. No longer was earth, cold and dry; water, cold and wet; air, hot and wet; fire as dry and hot, since observation had noted the change from ice to steam and so exist in three states. The seventeenth century, however, found a conflict between two schools of chemistry. The one, followers of Paracelsus, believed that the earth was composed of three basic substances: mercury, sulphur, and salt. Mercury is not the element alone, but all that is volatile, brillant, and metallic. Salt represents all that remains in the form of ash after the body is burned. Sulphur represents every thing that is burnable in nature. Of these three the animal, vegtable and minerial kingdoms were assumed to be constituted. But their value did not stop there for the health of any individual depended upon the normal proportion of these three.

If an abnormal amount of any one, disease resulted.

Opposed to this view was the chemistry advanced by Robert Boyle. In this there was a sharp separation from alchemy and medicine. The single purpose of chemistry then being the investigation of natural phenomena. Boyle differed from Paracelsus in that fire did not always reduce bodies to their more simple compounds. And secondly, other processes than fire could reduce bodies also. He concluded, then, in the development of the theory that substances when reduced to their lowest possible state might be considered the bases for all compounds. By their nature then, they became elements. (5)

Medicine which combined both botany and zoology at the opening of the seventeenth century shows little advance over the ideas given by Galen and Aristotle. Botany was considered not a science in itself, but a means of healing, and in such became merely a part of medicine. Classification had been attempted, but such classification was based upon the scent of the flowers according to the plan of L'Ecluse or upon Carrichter's zodiacal arrangement. The existence of a soul within the plant, perhaps no more impossible today than the existence of a soul in any and every form of living

(5) Duncan, New Science , pg. 79.

matter, was a manifestation not of the result of observation but of authority and mental reasoning. This was abruptly changed with the development of the microscope. For here a new world was opened to man. By the close of the seventeenth century Ray and Willoughby had started a classification of plants, and of animals upon an anotomical basis. And although their work was not final they laid the foundations for Linnaeus and his universal work.

Just so with zoology, which before the seventeenth century was interested either in the classification for classifications sake alone or a justification of the biblical importance given to man in comparison with other animals.(6) Disection as such was not for any advantage to zoology, but rather as an occasional adjunct to medical study.

The medical knowledge prior to 1700 rested almost entirely upon Galen's teaching of physiology. The process of circulation and absorption of food from the alimentery tract was done through the portal veins to the liver and that organ then converted the food into blood.

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(6) Duncan, op. cit. pg. 84.

unacc.

"This blood then goes to the right side of the heart, whence most of it is sent to the body along the veins in a flow followed by an ebb thus securing the nourishment of all organs of the body including the lungs. Some of the blood, however, passes from the right ventricle through innumerable, invisible pores in the system of the left ventricle where it is mixed with air which is drawn from the lungs as the heart expands. Then by the help of that heat which is innate in the heart, placed there as a source of heat of the body by God, the blood is laden with ' vital spirits ' and this new kind of blood is again distributed in flow and ebb along the arteries to the various parts of the body, giving them the power of exercising their vital function. Blood laden with vital spirits reaching the brain generates there a third species of ' spirits ' the ' animal spirits ' which - pure and unmixed with blood - are carried aalong the nerves to bring about movement of the body." (7)

By the beginning of the eighteenth century Harvey had given his theory of blood circulation to the public. It is interesting to contrast the two theories in the following:-

"Harvey proves (1) that it is the contraction, not the dilation, of the heart which coincides with the pulse, and that the ventricles, or true muscular sacs, squeeze the blood which they contain into the aorta and pulmonary artery; (2) that the pulse is produced by the arteries being filled with blood; (3) that there are no pores in the septum of the heart, so that the whole blood in the right ventricle is sent to the lungs and round by the pulmonary veins to the left ventricle, and also that the whole blood in the left ventricle is again sent into the arteries round by the smaller veins

(7)Ornstein, op. cit. pg. 13.

> into the venae cavae, and by them to the right ventricle again - thus making a com-. plete ' circulation '; (4) that the blood in the arteries and that in the veins is the same blood; (5) that the action of the right and left sides of the heart, auricles, ventricles, and valves, is the same, the mechanism in both being for reception and propulsion of liquid and not of air; (6) that the blood propelled through the arteries to the tissues is not all used, but that most of it runs through into the veins; (7) that there is no to-and-fro undulation in the veins, but a constant stream from the distant parts toward the heart; (8) that the dynamical starting-point of the blood is the heart and not the liver." (8)

The contrast is so striking that nothing more than a casual reading of both makes this manifest. Especially the shattering of the former's theory regarding the importance of the liver. Harvey places tremendous emphasis upon the position of the heart not as a mere adjunct to the liver, but independent of it.

Even in mathematics, great developments were not unseen. It is an age of that evolved the logarithmic tables through the work of Naeier and Briggs. It is natural and logical that such developments in mathematics should be made, for it is the basis of both physics and astronomy, and through its use, it becomes as valuable to astronomy as even the telescope or the position of the microscope to biology.

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(8) Encyclopedia Britannica ; William Harvey.

The exactness then became a natural but unconscious characteristic of the age. Prior to the seventeenth century man's thoughts were directed to a point, to be sure, but the path to that point was indeed circuitous. It has been said that the science of the Middle Ages depended upon reference to some ' authority ' and not to the actual. Perhaps this feeling is due to an insecure mental position; perhaps to too great an amount of introspection. For surely man was as great a problem as the number of angels dancing upon the point of a pin. If in nothing else, the seventeenth century firmly impressed the position of man upon man's mind.

It would be impossible to name any single date as the start of this movement yet it is possible to see that the first half of the sixteenth century was devoted to the development of instruments. The latter half given to the elaboration of these results. However, in that one must not forget the tremendous contributions given to the sixteenth century, or any other century, by all the events preceding that single date. Man's thought does not undergo sharp and sudden mutation but a gradual and slow evolution. Such evolution may vary in speed, and at times may be either exceedingly rapid or painfully

slow yet there is constant motion, advancement or retrogression.

Among the first great men of this age was Dr. William Gilbert, (1540 - 1603) - he is not of the seventeenth century entirely although his work on magnetism was published in 1600. As a physician to Elizibeth he was naturally favored with the greatest and widest field for observation. For Elizabeth was a patron not only of art. Gilbert, however, was a hybred in his attitude toward science for he did not entirely refute authority, and yet he joined that authority with observation. His reasoning however is that of a scientist:- "first hypothesis; then consturctions of apparatus to prove the hypothesis, and then proof by experiment."(9) His attitude is distinctly modern; his background, medieval.

William Harvey, (1578 - 1657) , serves as an excellent personification of the theory of evolution of thought, as Gilbert serves the mutation theory. For in Harvey his work was not the product of himself alone, but the result of a long period of work:

> "Vesalius, (1515 - 1564) had first insisted on the methods of dissection and had at first timidly, then more and more boldly, proclaimed that what he saw at the disecting table did not

(9) Ornstein, op. cit. pg. 22.

> always tally with Galen's teaching, and that Galen was wrong. He incorporated his results in a book, Structure of the Human Body (1543) and thereby became the founder of the non-Galenic science of anatomy. Vesalius' work was continued by his pupils, Falloppio (1528 - 1562), and Realdus Columbus, (1516 - 1559). Caesalpinus (1519 - 1603), a pupil of Falloppio, understood the pulmonary circulation of the blood, and Fabricius (1537 - 1619), --- wrote a book with correct views on the valves of the heart." (10)

Harvey then as the pupil of Fabriuius furnished the final link, not in the discovery of the circulation of the blood, but in its demonstration. For his work is not the product of his own ability, but the culmination of a long line of experiments.

With these two attitudes, that of evolution and mutation, the age of authority was over. But not without the help of Sir Francis Bacon could the spirit of that age have reached the entire world. The exact amount of influence he had upon the founding of the Royal Society is doubtful. It is certain however that his Advancement of Learning and the Novum Organum promoted the cause of experimental science. It is rather paradoxical however that Bacon who considers himself an experimentalist should advocate the philosophical aspects of the new spirit.

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(10) Ornstein, op. cit. pg. 34.

> "Those who have handled sciences have been either men of experiment or men of dogmas. The men of experiment are like ants; they only collect and use; the reasoners resemble spiders who make cobwebs out of their own substance. But the bee takes the middle course: it gathers its material from the flowers of the garden -- but transforms and digests it by a power of its own. Not unlike this is the true business of philosophy; for it neither relies solely --- on the powers of the mind, nor does it take the matter which it gathers from natural history and mechanical experiments and lay it up in memory whole as it finds it; but lays it up in the understanding altered and digested. Therefore from a closer and purer league betweenthese two faculties, the experimental and rational ( such as has never yet been made ) much may be hoped." (11)

In this Bacon favors both observation and reason after the observation has been made, thereby clearing himself from the dangers which invaded the Middle Ages and not inditing himself with any excessive radical reasoning.

The interest in the observation of the phenomena of nature demanded such attention that an attempt at founding a Royal Academy was made in 1616. (12)

It was not until:

> "1662 the king declared himself the founder of the Society and dubbed it ' Societas Regalis Londini pro Scientia Naturali Promovenda.' " (13)

So great an interest was arroused in this early group

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(11) Bacon, Novum Organum, Chapter XCV
(12) Weld, C.R., History of the Royal Society, Vol.I pg. 70
(13) Ibid, pg.73.

that by 1645 the group included:

> "Dr. John Wilkins, Dr. Jonathan Goddard, Dr. George Ent, Dr. Glisson, Dr. Merret, Mr. Samuel Foster, then professor of astronomy at Gershum College, Mr. Theodore Hank - ( a German of the Palatinate then resident in London, who I think gave the first occasion, and first suggested those meetings), and many others. These meetings were held some times at Dr. Goddard's lodging in Wood Street ---- sometimes at a convenient place in Cheapside and sometimes at Gresham College or some place near adjoining." (14)

Of these Dr. Goddard, Dr. Ent, and Dr. Glisson were friends of Harvey. The last, Dr. Glisson, being one of the first to teach the circulation of the blood. (15) Dr. Wilkins and Samuel Foster were both astronomers. Dr. Merret represented the botanists. This group through the interests of Henshaw succeded in gaining a charter in July 15, 1662, with the following members:

> "Lord Brouncker, Robert Moray, Robert Boyle, William Bereton, Kenelm Digby, Paul Neil, Henry Slingesby, William Petty, John Wallis, Dr. Timothy Clark, Professor John Wilkins, Dr. George Ent, William Aerskin, Dr. Jonathan Goddard, Dr. Christopher Wren, Saville, William Ball, Mathew Wren, Evelyn, Thomas Henshaw, Dudley Palmer, Henry Oldenburg, Issac Barrow, Theodore Hank, Robert Hooke, Bishop Sprat, Willoughby, John Winthrop." (16)

By 1667 the Society had formulated a general plan of

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(14) Weld, C.R., op. cit. pg. 30.
(15) Ornstein, op. cit., pg. 95.
(16) Ibid, pg. 96.

research which was divided into the fields of : fire atmosphere, water, metals,and stones, vagatables, medical matters, heat, light, motion, chemistry and any rarity which might be of interest.(17) Of this last class the following is of interest:

> "During the month of July 1667 news reached London of two operations performed in Paris in which the blood was transfused from sheep into a maniac. Several members of the Society being therefore eager to try it for themselves, a committee waited on Dr. Allen, physician to the Hospital((Bedlam) to ask for a victim ---- the request was not granted but in November 1677 the experiment was really performed at Arundull House where the Society was then meeting. Arthur Coga, a poor student offered himself a willing sacrifice for a guinea --- About twelve ounces of blood was transfused with success." (18)

As great or as varied as the laboratory work of the Society was in experimentation and investigation, whether it was concerned with science or with industry; the testing of Boyle's experiments with the vacuum;(19) Mariotte's investigations relative to the blind spot in the eye;(20) the improving of methods for brewing of ale and wine;(21) there remained two important factors:

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(17) Ornstein, op. cit., pg.98.
(18) Duncan. New Science, pg. 100.
(19) Weld, op. cit., pg 270.
(20) Ibid, pg. 272.
Ibid,Ibid, pg. 136.

The first: the spread of the findings of the Society into other countries or to other societies for research. Its effect is obviously in favor of the greater universal knowledge of scientific principles. Secondly: the spreading of scientific knowledge to the unlearned. In so doing the Royal Society became an authority in itself, but its authority was based upon experiment.

The publication of Newton's works especially the Principia in Latin dealt a severe blow to the Society. He did nevertheless dominate the Society both in writing and research. Yet, this blow was again repeated although not in Latin by Swift and Pope who do not ridicule Newton but that Society, founded upon the desire for universal knowledge based upon experiment and experience, which would allow the seeming authority of one person.

# CHAPTER III

## REACTION IN POETRY

With the declaration of the Commonwealth in 1649, England opened a new period in her development both in literature and in politics. Politically, the struggle between the King and Parliament represented a struggle not confined to the court, but one of national feeling. Upon one side the group of men interested in authority and order within both Church and State, followers of Machiavellian principles, advocates of the divine right of kings. On the other wing was a group of self-styled conservatives profoundly interested in the religious, moral and social aspects of the conflict, defenders of popular privilege, advocates of the inalienable rights of every man. The one group, the Cavaliers, enjoyed the favors of the court. The other, composed mainly of commercial and trading classes, favored Parliment.

This latter group although they controlled England for only a short time boasted leaders both political and literary who were at once strong and serious, obstinate and fanatical. They were not cowed by their opponents nor were they bound to respect the traditions given by those who had been in power. Their hostility to the theatre was the final blow to the languishing

Elizabethian drama. Yet this same blow developed a Restoration drama upon a new plan. Poetry and prose of this period was imbued with an exceedingly didactic spirit. Its contrast to the spirit of the Cavalier poets is striking. This is seen clearly in Herrick's advice To the Virgins:-

"Gather ye rose buds while ye may,
Old time is still a-flying;
And this same flower that smiles today
Tomorrow will be dying.

The glorious lamp of heaven, the sun,
The higher he's a-getting,
The sooner will his race be run,
And nearer he's to setting.

That age is best which is the first,
When youth and blood are warmer;
But being spent, the worse and worst
Times still succeed the former.

Then be not coy, but use your time,
And while ye may, go merry;
For, having lost but once your prime,
You may forever tarry."

This compared with the opening five lines of Paradise Lost describes the differences of the age clearly:

"Of man's first disobedience, and the fruit
Of that forbidden tree whose mortal taste
Brought death into the World, and all our woe,
With loss of Eden, till one greater Man
Restore us, and regain the blissful seat."

Surely, if we can consider Milton typical of his age, that age is not interested in love-making and sport,

but in the demands of a more stern purpose of life. An age that reflects the opposite of the gay preceding age for it is doubtful if there is a single line that might be considered even a slight degree humorous in any of Milton's writing. Not that the Cavalier poets showed any rollicking sense of humor or wit, but compared to the somberness of Milton their writing is exceedingly light and delicate. But whether each of these types alone would or could have affected English literature is a grave question. Alone, they quite probably should have done nothing or practically nothing. Even if they had followed each other as they did, without the Restoration they would be void.

As the seventeenth and eighteenth centuries were filled with practical knowledge, just so the application came with the Commonwealth. Here gave an opportunity to prove the value of the common man. For he was often as educated as the nobility. Milton, Butler, Cowley, Pope, belong to this risen class of England and this class of English men was destined to become the great back-bone of the nation. But since they are within that age of great advancement in science and a new spirit not only of investigation, but a spirit which

guided the actions of every man, it is natural that we attempt to show their recognition of that spirit:- A revolt against time honored authority and in its place a desire for knowledge based upon experience and observation. Possible no two men bridge these two ages better than Abraham Cowley and John Milton. In the former's ode Upon Dr. Harvey he combines the pedantry and subtlety of the former age with the acknowledgment of the position of science and a principle of reason. This attitude is shown in the fourth stanza:

"Thus Harvey sought for Truth in Truth's own Book
The Creatures, which by God himself was writ;
And wisely thought 'twas fit,
Not to read Comments only upon it,
But on the original itself to look.
Me thinks in Arts great Circle others stand
Lock't up together, Hand in Hand,
Every one leads as he is led,
The same bare path they tread,
A dance like Faries a Fantastick round,
But neither change their motion, nor their ground:
Had Harvey to this Road confin'd his wit,
His noble Circle of the Blood, had been untroden yet.
Great Doctor! Th' Art of Curing's cur'd by thee,
We now thy patient Physick see,
From all inveterate diseases free,
Purg'd of old errors by thy care,
New dieted, put forth to clearer air,
It now will strong and healthful prove,
It self before Lethargick lay, and could not move."

It is obvious from the above that although there is an attempt to give poetic expression to the new ideas, the lines including those ideas become exceedingly awkward.

if not expressive of new science they are conventional and more than often classical imagery obscures them as:-

"When Harveys violent passion she did see,
Began to tremble , and to flee,
Took Sanctuary like Daphne in a tree:
There Daphnes lover stop't, and thought it much
The very leaves of her to touch,
But Harvey our Appollo, stopt not so," (1)

The artificiality present in these two selections is entirely lacking in his Proposition for the Advancement of Learning, and although this latter is not in poetry it may be included here. In this he proposes a plan for the endowment of research which is far from artificial or classical.

Although he is dwarfed by comparison with Milton, Cowley does attempt to place the spirit of the age in poetry. Yet he is not totally able to free himself from the heritage of the former age. But his attempt alone demands recognition not only of itself, but the spirit causing it.

In John Milton we see a far different type of poet. His university training naturally taught him the Ptolemaic doctrines. His contemporaries gave him the right to be independent,and a follower if he wished, of the new Scientific attitude. Paradise Lost is in the

(1) Cowley: Ode upon Dr. Harvey.

midst of this readjustment. It has the background of the old thoughts, but there arises an undercurrent of revolt. His conception of the earth,

> "follows the Ptolemaic system, according to which the earth is the center of the Universe, about which the other bodies revolve. These are supposed to be fastened in a series of hollow spheres, made of some transparent substance, which move around the earth as a common center. The hollow spheres were in medieval and early modern times supposed to be ten in number, the outermost being the primum mobile, or first moved: Thus the starry universe has the form of a large globe, and it is suspended from the wall of heaven by a golden chain. Heaven is the region lying above it. Surrounding the universe and separated from heaven be a wall is chaos, the region of unformed, warring elements through which Satan and his hosts were hurled from heaven. At the bottom of this region of chaos is hell, the place of punishment prepared for Satan and his followers when they rebelled. Hell, then, is under the universe and is separated from it by a distance through chaos equal to the distance from the center of the earth to the primum mobile." (2)

This, then, becomes a world exceedingly like that of Dante, and the latter is surely Ptolemaic.

With his thought that spirits walk the earth unseen (3) and that planets other than the earth are inhabited by monstrous and abortive births (4) from this world, he joins a peculiar mysticism with classical belief. But even in this one feels by his vagueness

(2) Shafer, Beowulf to Thomas Hardy, vol 1. pg. 401, note
(3) Paradise Lost, Bk. IV, line 667.
(4) Ibid, Bk. III, lines 455 -462.

that Milton is not quite sure of his position, He is certain, however, of one thing:- that man stands in the center of the universe. Even with this bound conventional thinking, Milton does represent some of the new spirit of the age:-

> "Milton scouted the idea that man's body, whether pure of impure, was simply the tabernacle inhabited by his spirit. He believed fully that man was one, body and soul, the delights of the two were interpenetrating, commingled, and infused." (5)

There is one striking contrast here in the "body" and "soul", the latter is distinctly of mediaeval feeling while the former is greatly stressed by the new age. To join these two represents a bridge fully as strong as Cowley.

Milton swings further away from the old path of religious thought and

> "strikes a note which is consistently maintained to the end of the poem and throughout Paradise Regained and Agonistes as well, that Christ is man only with a greater share of the divine nature." (6)

In this Milton is fearless. But that ability arising from himself must have found some favorable permission to allow its growth. Surely then, this is not entirely

(5) Sampson, Studies in Milton, pg. 141.
(6) Ibid, pg. 196.

a product of Milton but of the age. This may not be scientific investigation nor observation yet it does deal a blow to authority. Although man does stand in the center of the Universe, that universe is ever widening and dwarfing the mind of man.

No better reaction to this spirit of freedom can be found than in the use of classical mythology and Christian dogma. This is due partly to Miltons great linguistic knowledge.

> "His literature was unquestionable immense; his adversaries admitted that he was the most able and acute scholor living. With Hebrew, and its two dialects, he was well acquainted; in the Greek, Latin, Italian, French and Spanish language he was eminently skilled." (7)

It is natural then, that his writings combine the knowledge of his study. And although he does combine "Etrurian shades" and Cherub and Seraph; Christ, Isis and Jove, he combines not only a great learning, but an embracing of not one single problem but numerous. In that he recognizes the spirit of the age.

Secondly this same spirit is shown in his regard to the laws of God and the laws of nature:

> "that the laws of God do in this exactly agree with the laws of nature;and that this is a settled maxim of the law of nature, never to be shaken, that the senate and the people are superior to kings," (8)

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(7)Milton, Poetical Works , pg. XXXIX
(8)Ibid, pg. LX

Milton's "law of nature" could only have come from observation, for he is a product of the Commonwealth and that demanded recognition of the individual man based on a fair value. And that value could only result from observing the individual.

Perhaps no better summary of his attitude can be found than in:

> "The mind is its own place, and in itself
> Can make a Heaven of Hell, a Hell of Heaven." (9)

In this he does not place emphasis upon authority but upon individual experience. In each individual man there lies authority, yet that authority must come partly from the recognition of the laws of nature. Paradise Lost was written in the midst of this period of readjustment. Its background is naturally composed of the old science yet affected and impressed with the new spirit.

> "A few items of scientific news he had gleaned, however, such as the newly discovered sunspots, the motion of the earth and the cause of the winds. But not even these ideas are used with constancy ---- He may have come too late to adjust himself to the new ideas, certainly he was not uninspired by them." (10)

It is natural that as any movement gains

(9) Paradise Lost, Bk. I, 254 - 255
(10) Duncan, op. cit., pg. 37.

momentum there appears a reaction toward it; either in the form of a counter movement, if the first is none too strong, or, if it is firmly imbedded, a satirizing and a ridiculing of it. This period during the seventeenth and early eighteenth centuries is fortunate that among its writers there should appear one of the most bitter and scathing men of English literature, Alexander Pope. Indeed he may rightly be called the epitome of the age for in his writings appear the reflections not only of himself, but the public toward contemporary problems. The spirit of scientific questioning especially becomes the butt of all manner of jesting. No where is it more bitter than in the Rape of the Lock. Here the satire becomes general and not limited as Dryden's to political problems. His scope is given fully in:

> "Who give the lysteric, or poetic fit,
> On various tempers act by various ways,
> Make some take physic, others scribble plays." (11)

But the height of satire appears in the last canto. The classical Gods, Sir Fopling Flutter, Galileo, all become the butt of his indisposition. His attitude, and consequently that of many of his contemporaries, toward the trivialities of science is given in the two bitter lines:

> "Cages for gnats, and chains to yoke a flea
> Dried butterflies, and tomes of casuistry." (12)

(11) Pope, Rape of the Lock, Canto IV, 61-63
(12) Ibid, Canto V, 121 - 122

Just as Jonson laughed alchemy to scorn, just so Pope and Swift ridiculed astrology. Pope uses the entire fifth canto of The Rape Of the Lock to destroy that idea, but it is condensed in:

> "This Partridge soon shall view in cloudless skies,
> When next he looks through Galileo's eyes;
> And hence the Egregious wizard shall foredoom
> The fats of Louis, and the fall of Rome." (13)

It is Milton that senses the new spirit, but his admission of it is partly implied. It remains for Pope to show the advances made by that feeling of conclusions based upon experience and not authority during the forty odd years between the publishing of Paradise Lost and The Rape of the Lock.

# CHAPTER IV

## REACTION IN PROSE

The reaction toward the spirit of scientific investigation, or rather the conflict between authority and experience, and the adoption of the new ideas rather than a continuation of the old has been partly shown in the preceding chapter. In that however, the reaction was confined to the treatment of poetry. But since this poetry of the entire period is the product of the head and not the heart, it is almost devoid of emotion. It is the product of an age that found itself rather self sufficient. An age that may have been Golden, but one that found itself tarnishing easily.

The reaction against Milton and the Puritans who had asked a Gargantuan task of humanity in the attempt to remake England, and to produce men not of the character of Sir John Falstaff nor Sir Toby Belch nor Justice Shallow, but of the pilgrim, Christian, or even Milton himself. No better picture of England can be gained than from the court surrounding Charles the Second. For:

> "Charles II was of a temper tolerant and broad-minded, and he had great charm of person and manner: but he was dissolute, cynical and unprincipled, and his court soon became as scandalous as it was gay. To literature he was, according to his lights, a useful friend. No doubt he preferred wit and sparkle to imagination

> and ecstasy; the rhetoric of Dryden's dramas and the impudent satire of Hudibras were more pleasing to him than a dozen Paradise Losts. He liked to have his feet on the earth and never wished to lift his head above the clouds." (1)

Surely that is the spirit of cold realism, willing to accept, but only for value received.

Pepys again and again speaks of the plague. On the fifteenth of August he writes:

> "It was dark before I could get home, and so land at Churchyard stairs, where to my great trouble, I met a dead corps of the plague, in the narrow ally just bringing a little pair of stairs."

Again sixteen days later:

> "The plague having a great increase this week, beyond all expectation of almost 2000, making the General Bill 7000, odd 100; and the plague above 6000. Thus this month ends with great sadness upon the publick, through the greatness of the plague every where through the Kingdom almost. Every day sadder and sadder news of its increase. In the City died this week 7496 and of them the 6102 of the plague. But it is feared that the true number of the dead this week is near 10,000; partly from the poor that cannot be taken notice of, through the greatness of the number, and partly from the Quakers and others that will not have any bell ring for them." (2) (3)

With such an atmosphere it is natural to expect the public to turn to extreem devotion or to stark realism. The former is impossible being too close to the Commonwealth

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(1) Buchan: History of English Literature, pg. 200.
(2) August 31, 1665
(3) It is interesting to note Defoe's treatment of this in his Journal of the Plague Year.

and the Puritans; although the public held to the lucidity and power of the imaginative prose which no attempt of the witty and sparkling court might foster. But even with the highly imaginative thoughts, there are in prose: Dryden and Congreve, Swift and Defoe, Pope, Butler and Cowley, Hooke and Boyle, Walton and Evelyn, either use prose or are essentially prosaic.

> "No age has pictured itself more vividly than this unimaginative epoch has done in the two famous diaries of Pepys and Evelyn. There we can read what men did, what men thought about, and what they felt; and behold it is all prose --- humdrum and commonplace, by no means strait-laced, but of extraordinary interest." (4)

To trace each of these three actions through all and every writer of this period would be far too Gargantuan a task to attempt in this chapter or even in this paper. Suffice that we consider first, the diary of an extraordinary man dealing with the events of ordinary life. Extraordinary in that he had the singular ability to be natural even in his writings. This coupled with his true representation of the age and surroundings in which he lived, grant Samuel Pepys a place in literature already secure.

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(4) Buchan: op. cit., pg. 201.

Throughout the Diary one is convinced that Pepys wrote not for publication for his thoughts are often a bit incriminating. As:

> "So with my wife and Mercer took boat and away home: but in the evening before I went, comes Mrs. Knipp, just to speak with me privately, to excuse her not coming to me yesterday, complaining how like a devil her husband treats her, but will be with us in towne a week hence, and so I kissed her and parted." (5)

But it is not with Mrs. Knipp, Deb, Mrs. Aynsworth, nor any other pretty woman that the diary interests us. Nor is it the account of the mornings at taverns during which ale and spiritous liquors took the place of breakfast. But rather his diary interests us as an indication of the age not entirely the person. For Pepys is singularly devoid of his own feelings. He represents, rather the actual and objective than the hoped and subjective. It is not himself, but the people about him that forms his interest. The objects he sees represent facts to him and not imaginations. His one fault then might be the lack of thoughtful endeavour; but his observation is the product of the age, as the Diary is the record of those facts.

It is quite strange that he should represent as detached a view and still report his own actions

(5)January 7, 1666

and the actions of his contemporaries. He represents a child-like interest in everything from the clothes on a wash line to the presence of a King at a royal function or play. Perhaps one of the most ironical of all passages occurs with a strange mixture of modern experiment and ancient authority.

> "Met Mr. Pierce, the Surgeon, and Dr. Clarke, Waldron, Turberville, my physician for the eyes and Loure, to dissect several eyes of sheep and oxen, with great pleasure and to my great information. But strange that this Turberville should be so great a man and yet to this day had seen no eyes dissected or but once, but desired this Dr. Lowre to give him the opportunity to dessect some."(6)

Obviously this is the spirit of the new experience, but to be followed by:

> "This morning I was let blood, and did bleed about fourteen ounces, toward curing my eyes." (7)

This last is rather inconsistant with the former spirit. To resort to the practices, time honoured as Aristotle, may be retrogressive, but three days later:

> "I by water with my Lord Brouneker to Arundell House, to the Royal Society, and there saw an experiment of a dog's being tied through the back, about the spinal artery, and thereby being made void of all motion; and the artery being loosened again, the dog recovers." (8)

Again he reports in November, 1667 of a visit to the Royal

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(6) July 3, 1668.
(7) July 13, 1668.
(8) July 16, 1668.

society where he witnessed the transfusion of the blood taken from a sheep into the veins of a man.

Each one of the above shows the attempt of the public, and Samuel Pepys may be considered one thereof, although of a higher plane than most to question the ability of authority and to attempt some knowledge for themselves.

But Pepys is not confined to observations upon experiments alone:

> "I up to my wife's closett, and there played on my viollin a good while, and without supper anon to bed, sad for want of my wife, whom I love with all my heart, though of late she has given me some troubled thoughts." (9)

Surely the thoughts of a man who is as interested in hearing Bartholomew Fair,(10) Hamlet,(11) Merry Wives of Windsor,(12) Romeo and Juliet,(13) The Silent Woman,(14) joined with the delight of knowing Butler,(15) Nell Gwynne can be limited to no single age, but his record of observations may help in describing that period. His diary is in prose since it deals with mundane and trivial things yet he adds a

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(9) June 16, 1663.
(10) September 7, 1661.
(11) August 24, 1661.
(12) December 5, 1660.
(13) March 1, 1662.
(14) September 19, 1668.
(15) July 19, 1668.

poetic feeling with the joy and delight of being. Yet within the period of the diary he represents as complete a change as that of the entire period. Stevenson in his essay on Pepys notes this change:

> "When he began the Journal, he was a trifle prim and puritanic; merry enough, to be sure, over his private cups." (16)

But as the diary progresses he changes with the age. Upon every walk his interest was directed toward the curiosity of investigation. His attitude of eager expectation regarding what might be just beyond the next corner whether it be in the form of friendship or of death is typical of Pepys, but in a larger sense it is the spirit of the age. A man who learned to sing after he had mastered " the lute, the flute, the flagel ,
(17)
and the theorbo." was not confined to his own ability but the inspiration of his friends surrounding him.

Perhaps no better tribute can be paid Pepys than Stevenson does:

> "He stood well by his business in the appalling plague of 1666. He was loved and respected by some of the best and wisest men in England. He was President of the Royal Society; and when he came to die people said of his conduct in that solemn hour --- thinking it needless to say more --- that it was answerabe to the greatness of his life. Thus he walked in dignity, guards of soldiers sometimes attending him in his walks, subaltons bowing before his periwig; and when he uttered his thoughts they were suitable to

(16) Stevenson, Jamiliar Studies, pg. 303.
(17) Ibid, pg. 288.

his state and service." (18)

Indeed three outstanding facts can be noted from this. First, he was a business man, and a successful one, moreover. Secondly, his friendship was not limited to his business associates but was based upon mutual gain both for himself and for his colleagues else he would have gained the pleasure in the pit of many theaters nor the learned discourses about some tavern table. And lastly his spirit of scientific investigation, although it may have resulted in nothing by and through itself gave him a position of President of the newly founded S Society.

That last fact alone would assure his attitude, but to have it joined with the former two represents a man interested in both realism and romance, yet both dependent upon each other. Since the latter depends on the spirit of actuality, Pepys is a disciple of experience.

Perhaps Pepys represents a far too optimistic a view for the new age. It is well, therefore, to examine those writings representing the opposite. As Pepys exhibited the interest in natural surroundings, just so the Tatler and Spectators represent the feeling

(18) Stevenson, ob. cit. pg. 277.

perhaps of the more educated class, against the triviality in the examination of natural phenomena. Undoubtedly these two publications, the products of the height of the essay, can be considered a second means of judging the attitude of the people toward the progress made upon experimentation. In both there is a general atmosphere of bantering humour based upon satire. The striking difference between the two lies, possibly, in the formers attitude toward personal ridicule. The latter is far more interested in causing the reader to laugh at the prevailing absurdities. A simple comparison of the two treatments is easily seen in the following:

> "I must not leave this subject without observing, that as physicians are apt to deal in poetry, apothecaries endeavour to recommend themselves by oratory, and are therefore, without controversy, the most eloquent persons in the whole British nation. I would not willingly discourage any of the arts, especially that of which I am an humble professor; but I must confess, for the good of my native country, I could wish there might be a suspension of physic for some time, that our kingdom, which has been so much exhausted by the wars might have leave to recruit itself." (19)

It is obvious that here the physician is a single individual. Compare this with the same subject taken from the Spectator:

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(19) Tatler, pg.240.

> " There are besides the above-mentioned innumerable retainers to physic, who, for want of other patients, ammuse themselves with the stifling of cats in an air-pump, cutting up dogs alive, or impaling of insects upon the point of a needle for microscopical observations; besides those that are employed in the gathering of weeds, and the chase of butterflies; not to mention the cockle-shell merchants and the spider catchers." (20)

The bitterness which at once is apparent is a fair indication of the direction taken by the general populus against the scientific man, or more often those men laboring under the name of science. Indeed it is the attitude taken regarding a child who, has already broken many toys, now has a new one and must experiment. There is much to criticise regarding the triviality of much of the observation, but the spirit beneath is that of desire for knowledge; not the classification as typified by the Medieval mind, although Evelyn's Silva and indeed in a sense Walton's Complete Angler show some of the orderliness of the Middle Ages. But in both of these, the spirit not only of classification but rather of relationship to the larger world pervades the entire effect. There is a feeling of interdependence through which one subject relies upon another, whether that dependence be resultant from trees or fishes or

(20) Spectator, 21.

even as in the Tatler for August 30, 1710.

> "Sometimes I considered every leaf as an elaborate piece of tissue, in which the threads and fibres were woven together in different configurations, which gave a different colouring to the light as it glanced on the several parts of the surface. Sometimes I considered the whole bed of of tulips, according to the notion of the greatest mathamatician and philosopher that ever lived, as a multitude of optic instruments, designed for the separating of light into all those various colours of which it is composed." (21)

The same spirit of meditation follows the actual observation here as it does in The Complete Angler time after time. Walton ends his discourse after he has listed some twenty different breeds of fishes with the striking;

> "And as a pious man advised his friend, that to beget mortification, he should frequent churches, and view monuments, and charnee-houses, and then and there consider how many dead bodies time had piled up at the gate of death, so when I would beget content and increase confidence in the power, and wisdom, and providence of Almighty God, I will walk the meadows, by some gliding stream, and there contemplate the liles that take no care," (22)

Indeed in both these last two passages the same spirit of the age is seen. Both show some recognition of the mere listing of fauna or flora, but with a sharp and singural feeling of philosophical relationship between

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(21) Tatler, 218.
(22) Walton, The Complete Angler, pg. 214.

the external facts and the impressions those facts make upon the individual. The desire for actual classification may be the result of the Medieval orderliness yet it may go to a more remote place in history. Aristotle attempted to classify yet it is Linnaeus who gives to us our modern system. There may be no direct attempt to place the different fishes in distinct categories yet there is a wish to gather some knowledge about fish together.

John Evelyn in his Discourse of Forest Trees (23) deals with the familiar trees of England and her forests. And although it is far more boring than the Complete Angler it gives a general plan of the "Aboreal Kingdom". But it too is not limited to classification but reflects upon the value and heritage of English forests.

In both of these there is an attempt to join gentlemanly reflection and natural observation. In that they draw close to Samuel Pepys' Diary but lack a strange informality common to the Diary, The Spectator and The Tatler. They are almost devoid of any form of humour and as such represent the pains taking, calm and reflected mind. And as the Diary

(23) delivered before The Royal Society Oct. 15, 1662.

represents the observations of perhaps too model a citizen, just so The Spectator and The Tatler indicate the humorous but not bitter satire against the spirit of investigation. It is fitting therefore, that we examine the writings of perhaps the bitterest prose writer of the seventeenth century. For nowhere is there a more severe arraingment of the new scientific spirit that that found in Gulliver's Travels.

Strangely there exists a nice transition from the humour of most of The Spectator and Tatler to the biting irony of Gulliver's Travels. On January 12, 1710, Addison remarks:

> "I have been present at the dissection of a mite, and have seen the skeleton of a flea. I have been shown a forest of numberless trees, which has been picked out of an acorn. Your microscope can show you in it a complete oak in miniature, and could you suit all your organs as we do, you might pluck an acorn from this little oak, which contains another tree, as long as you would think fit to continue your disquisitions. It is almost impossible (added he) to talk of things so remote from common life, and the ordinary notions which mankind receive from blunt and gross organs of sense, without appearing extravagant and ridiculous. You have often seen a dog opened to observe the circulation of the blood, or make any other useful inquiry; and yet would be tempted to laugh if I should tell you, that a circle of much greater philosophers than any of the Royal Society, were present at the cutting up of one of those little animals which we find in the blue of a plum;

> that it was tied down alive before them; and that they observed the palpitations of the heart, the course of the blood, the workings of the muscles, and the convulsions in the several limbs, with great accuracy and improvement." (24)

The humour present is exceedingly bitter and rather a contrast to that of the earlier Tatler. Yet the reaction is inevitable that with any great amount of interest directed in one particular path, there should appear a counter movement. For an age that is still experimenting in realism the easist direction is satire. As Pope directed his venom against all those who might have laughed at him physically, just so Swift directs his force against those who disagree in the slightest. His growing distaste for his fellows is no where more evident than in the development of the Travels. Within the first two books, then, he controls himself to such an extent that whenever he feels himself carried into too deep and bitter satire, he resorts to laughing at the parties, politics and court of Britain. When he drops the role of censor he presents a picture of vice and folly throughout the fasionable world, or even the field of philosophy. Yet throughout these first two books, the voyages to Lilliput and

(24) Tatler, 119.

and Brobdingnag he is more concerned with the political conditions of England. His main theme in the former is the comparison of England to a land where the inhabitants are only six inches high and yet t (25) whose Emperor is " the delight and terror of the universe". (26) Swift's satire is confined, in the voyage to Lilliput to the general tone exhibited in the following:

> "As to the first, you are to understand that for above seventy moons past there have been two struggling parties in the Empire, under the names of Tramecksan and Slamecksan from the high and low heels of their shoes, by which they distinguish themselves. It is alleged, indeed that the high heels are most agreeable to our ancient constitution; but, however this be, his majesty has determined to make use only of low heels in the administration of the government, and all offices in the gift of the crown, as you cannot but observe." (27)

Just as the Whig and Tory parties are characterized by their heels, just so are the Papists and Protestants ridiculed by their controversy over the proper manner of breaking eggs. (28)

But whether George the First or Sir Robert Walpole are satirized in the characters of the Emperor and Flimnap, the lord treasurer makes no great difference. The satire is contered about them, as they

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(25) Swift, Gulliver's Travels, pg.27.
(26) Ibid, pg. 56.
(27) Ibid, pg. 63.
(28) Ibid, pg. 64.

are the court, and it is directed against the pettiness of the court life.

The voyage to Brobdingnag shows a growing contempt for mankind; yet there is a great effort taken to keep the standard proportions between the giants and the pigmies. It needs no clever interpretation to see that Swift attempts to ridicule the courseness of the court. The size of the individuals alone would justify that. Swift does represent them as having far more scientific spirit or interest than the Lilliputians. The King, himself a philosopher and mathematician of no little note, with his three great scholors agreed after observation, the result of the new Spirit and not time honored custom, that Gulliver

> "-- could not be produced according to the regular laws of nature, because I was not framed with a capicity of preserving my life, either by swiftness, or climbing trees, or digging of holes in the earth. --- One of these virtuosi seemed to think that I might be an embroy of abortive birth. But this opinion was rejected by the other two, who observed my limbs to be perfect and finished; and that I had lived several years, as it was manifest from my beard." (29)

Even if Swift is diseased with the hatred of many of his fellow men he is thoroughly infected with the spirit of the age. No writer other than scientific would have dared to use the terms "embryo" and "abortive birth", and very few scientific writers. As Kittredge remarks

that the Elizabethan Age showed every form of literary usage of words,[30] surely the scientific terminology should also be present. As yet I have found only this reference in the eighteenth century.

Perhaps this feeling of scientific achievment made itself so felt upon Swift that in the second part of the travels there seems a sharp contrast between the voyages to Lilliput and Brobdingnag and those to Laputa and Honyhumhums. In these latter two Swift's imagination does run wild, yet not without some basis. Nowhere is there a more bitter satire against those persons who direct their whole attention to intense speculation than in the description of the inhabitants of the island. Their eyes turned inward; they, themselves so engrossed with their own thoughts that speaking to one another is quite impossible. Their clothes, too; adorned with many musical instruments and scientific data, lent an atmosphere artificial yet quite possible if the actions and mentality of any race should allow nothing but time for reflection.[31]

Often Swift seems to be merely laughing at the entire population, yet beneath the humour there

(30) Greenough and Kittredge; Words and their Ways, pg. 116.
(31) Swift, op. cit. pg. 202.

is a terrific bitterness. It is amusing to think of a woman's beauty spoken of in terms of geometry or music.[32] Yet to have all men continually base their actions upon as materialistic a view as he attempts to portray shows far deeper feeling than mere humour.

The interest in astronomy allows Swift's mind to run to great lengths in imagination. Yet foolish and impossible as most of his thoughts seem, they are based upon logical development of the knowledge of his time. His description of the magnet by which the island is moved reflects imagination yet the logical developments of the introduction of the compass during the sixteenth century.

There is an obvious comparison between the Grand Academy of Lagado and the Royal Society. The list of profectors and their employment[33] is indeed filled with humour, yet the satire of reducing human excrement to its original food; or mixing colors by blind men; or a new manner of plowing; or even the omission of all words except nouns to shorter discourse, all find their justification in the work of the Royal Society.[34] Yet Swift does not stop with the satire of

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(32) Swift, op. cit. pg. 207.
(33) Ibid, pg. 228.
(34) It is interesting to note the treatment of professors by Rabelais. Bk. V Chapt. xxxiii

science but indites every person and profession;

> "They can discover a close-stool, to signify a council; a flock of geese, a senate; a buzzard, a prime minister; a lame dog, an invader; the plague, the standing army; the gout, a high priest; a gibbet, a secretary of state; a chamber pot, a committee of grandees; a sieve, a court lady; a broom, a revolution; a mouse-trap, an employment; a bottomless pit, a treasury; a smile, a coury; a cap and bells, a favorite; a brocken reed, a court of justice; an empty tun, a general; a running sore, the administration." (35)

Swift may be typical of the period in that he desires to form an Utopia. Yet this desire is thwarted by his satirical ravings against philosophers and inventors. But even in the midst of his anger, his logical development and position shows the validity of his ridicule. He is at fault, however, in the lack of separation between those persons who are merely pretenders and those who really demand and deserve credit. Again he is at fault in his insufficient knowledge upon mathematics, philosophy, and microscopy. These two faults he attempts to cover by his extensive interest in mankind.

If the reaction in prose does nothing more than summarize the attitude toward science, it helps English literature toward developing a style of writing which is clear, both in words and in meaning;

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(35) Swift op. cit. pg. 243.

pointed, without barbs upon which one is caught; and above all, freedom from any great embellishments. And lastly, the entire period is based upon reasonable premisis from which the conclusion is drawn through experience. In this then the heritage of the Medieval faith is completly severed and English literature is ready to reflect actual and not mental happenings.

# CHAPTER V

## A CONCLUSION

Probably the most impressive fact of any civilization is its mental reaction toward the problems of the day. Each age has its own method of dealing with its trials whether the question be of universal nature or only of temporary character. But as varied as these different problems may be they are all treated in the same general manner. For man's thought at the best evolves slowly, and he is far from willing to reject the manner of thinking inherited by him from his parents.

It is of tremendous and outstanding importance, then, when any age finds itself slowly but definitely changing not only its thoughts but its manner of thinking from the preceding ages. Such is the case of the seventeenth century in England. Prior to that period the minds of the English were held in one direction, that of authority. To be sure the same was true for the other countries of Europe, but the actual change is not as striking, for it requires tremendous power to move any nation composed primarily of painstaking and conscientious Teutons. When such a change is made, the effect is the more pronounced.

Indeed it was obvious that any rebirth

of learning should deal a staggering blow to authority yet at the time few people could have realized the far reaching effects. For we at this present age feel quite secure in our general plan of reasoning, although we may admit flaws in some of the produced thoughts. But to us any radical change in our method would and does seem quite preposterous. For this reason more than the advances in sciences, the seventeenth century seems of unlimited interest. And as man's words in literature and actions in science give a slight indication of their thoughts, the mental attitude of that age becomes fairly clear.

It would be impossible to attempt a complete picture of this age in one single year, even it is doubted that after several years of intensive study the seventeenth century should be a completed canvas. There might indeed be a great number of brush strokes, and the general structure of the picture might be gained, but upon inspection the picture would seem characterized by vagueness. That same vagueness is characteristic of the age and as such is a reflection thereof.

It has been attempted to find not a com-

plete and detailed account of the advance of science during the seventeenth century. Nor has there been an attempt to give a complete study of the reactions or reflections of that scientific spirit in the literature of the time. Rather there has been a hope that by touching a few aspects of this period the spirit of the same age might be gained.

With that thought in mind the mental background of the century was found to rest upon the medieval conception of authority. As contrasted with the tremendous strides in science were outlined more with the spirit causing them than the actual tangible results. Harvey, and Gilbert were cited not for their tremendous contributions, as great as the former's were, but to show the change from authority to observation based upon experience. Undoubtedly that spirit was the result in part of the desire to note the wierd and strange objects surrounding man. And as the universe grew the postiion of man became smaller and less important, if he were unable to explain the phenomena existing in nature.

This observation had one marked effect. Before the seventeenth century any person interested

in science went to Italy or France. After the developments during the seventeenth century England boasted as advanced scientific schools as Italy or France. In this effort too much can not be said in favour of the Royal Society. For through its work it stimulated scientific progress in the universities; secondly, it became the sponsor for public lectures; and lastly, it undertood the publication of many scientific books.

Much might have been said regarding Newton who was as great a scientist as the seventeenth century saw. Yet he is not typical of the new movement, for his works remain for the most part in Latin, and consequently can not be considered of the seventeenth century spirit.

Boyle might also have been given great space, yet he is a follower of the age and although his contributions are outstanding he is not a leader of the movement but within the movement. Sydenham and Brown likewise, great as they are in the history of English medicine, are within the period yet both are responsible for a blow to quack doctors and witchcraft. Through their efforts joined to those of the early men of the Royal Society medicine was no longer

a secret and occult art, but one which could become open and sensible.

In the Reaction in Poetry: Cowley was chosen as one upon whom the advances in science made the greatest impression. Yet it is clear from the two short selections of his poetry, that scientific language was not suited for poetical expression.

With Milton this scientific expression took the form of a slight revolt, in that man was an individual and not a toy of God. Milton had the ability to remain free from any further conflict in a struggle for or against the position of science. In his attempt to remain free from such a conflict he becomes almost characteristic of no individual age. This is sharply contrasted to the satirical vein of Pope who represents the bitterest reaction of this spirit in poetry.

In prose, Pepys perhaps is more characteristic of his age than any other writer. He was a man of average advantages who seized the spirit of the age to become the personification of it.

Since the eighteenth century is one of prose it is natural that the hight of prose be considered. In this the Spectator and the Tatler represent not a feeling against the scientific spirit but against

the foolish men who find themselves so given to it that they are unable to keep a sane balance between their reason and their observation.

In Swift as in Pope the height of satire is reached. Perhaps the ravings of both are the products of diseased minds, but satire does effectively deflate any false sense of greatness. Both the last two chapters, then, attempt to give not only a view taken by the average person om the writer most typical of his age, but a view gained from the bitterest reactionaries of the spirit.

Indeed as science expresses the conditions upon which and through which life may be lived, and literature expresses not the living but the results of the process, they go hand in hand; the one augmenting the other. If nothing else developed from this reaction of literature toward the advancement of science, the relationship was seen. Wordsworth a century later summarizes this in his preface to the Lyrical Ballads.

> "The knowledge both of the Poet and the Man of science is pleasure; but the knowledge of the one cleaves to us as a necessary part of our existence, our natural and unalienable inheritance; the other is a personal and indivdual acquistion, slow to come to us, and by no

habitual and direct sympathy connecting us with our fellow-beings. The man of science seeks truth as a remote and unknown benefactor; he cherishes and loves it in his solitude; the Poet, singing a song in which all human beings join with him, rejoices in the presence of truth as our visible friend and hourly companion. Poetry is t the breath and finer spirit of all knowledge; it is the impassioned expression which is in the countenance of all science."

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