The English Virtuoso in the Seventeenth Century: Part I
Author(s): Walter E. Houghton, Jr.
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THE ENGLISH VIRTUOSO IN THE SEVENTEENTH CENTURY

"God has given enough for use, not for Curiosity, which is Endless."—Evelyn, *Memoires for my Grand-son.*

By Walter E. Houghton, Jr.

Part I

In the study of Renaissance learning the virtuosi have never received the attention bestowed on their rivals the professional scholars. Nothing comparable to the work on Scaliger, Lipsius, and Casaubon has ever been done for Pinelli in Italy, Peiresc in France, or Evelyn in England; nor is there any survey of virtuosity analogous to Sandys' *History of Classical Scholarship.* And yet, in the formation of modern culture, it may be wondered if the virtuosi had not ultimately an equal share with the scholars. Certainly their contribution, especially to the spread of science, is a demonstrable fact, sufficient in itself to rescue them from the neglect accorded the amateur by our age of specialists. This essay is designed as an introduction to the full and sympathetic study so badly needed. Taking England as a manageable limit, I attempt to combine definition with some historical account of the movement in its greatest period.[1]

[1] I should warn the reader that my main concern is definition, my real subject the analysis rather than the history of the virtuoso. Beyond the explanations in sections three and six of the growth and decline of the movement, I do not attempt any historical narrative. Particular men and their studies are cited only to illustrate definitions or to support a general historical perspective.

I wish particularly to thank Professors Douglas Bush and Kenneth B. Murdock, and my wife, Esther Rhoads Houghton, for giving me the help of their knowledge and critical insight. To my friend and former student, Secor Browne, I owe the quotation below the title and my first knowledge of Jonathan Richardson.

§ 1. *Definitions*

What is a virtuoso? The answer is less easy than it seems, for the word was applied in the seventeenth century to such widely different characters as Bacon, Arundel, Evelyn, Boyle, and Charles II—not to mention Gimcrack; and it carried various meanings that are difficult to reconcile. It was first used in England by Henry Peacham in 1634, when he wrote of classical antiquities—statues, inscriptions, and coins:

> The possession of such rarities, by reason of their dead costlinesse, doth properly belong to Princes, or rather to princely minds. . . . Such as are skilled in them, are by the *Italians* termed *Virtuosi*.[1a]

But the word was also used for "connoisseurs" rather than "antiquaries," for patrons of art like Colonel Hutchinson, who "became a great virtuoso . . . in seeking out all the rare artists he could hear of, and in considering their works in paintings, sculptures, gravings, and all other such curiosities."[2] In an extended and looser sense, the term was sometimes applied to the student of the humanities in general, by Dryden in the case of Sir Martin Mar-all, who boasts of his learning in poetry and music, as well as painting; or by the anonymous writer who proposed in 1659 that Oxford should teach "politicks, geography, history, and all other ornaments becoming exact virtuosi."[3] Yet in the same period the "virtuosi" were the members of the Royal Society; and Boyle, in the dedication to his *New Experiments Physico-Mechanical* (1660), used the term in a radically different sense:

> Perceiving by letters from some other ingenious persons at *Paris*, that several of the Virtuosi there were very intent upon the examination of the interest of the air, in hindering the descent of the quick-silver, in the famous experiment touching a vacuum; I thought I could not comply with your

[1a] *Peacham's Compleat Gentleman, 1634,* ed. G. S. Gordon (1906), pp. 104–105. The first edition, which did not contain this chapter on antiquities, appeared in 1622. The earliest use of "virtuoso" given by the *New English Dictionary* is from Evelyn's diary, Mar. 1, 1644.

[2] Lucy Hutchinson, *Memoirs of Colonel Hutchinson* (Everyman's Library), 1936, p. 292.

[3] Dryden, *Sir Martin Mar-all* (produced in 1667), act III, sc. i; *Sundry Things from Severall Hands concerning the University of Oxford,* in *The Harleian Miscellany* (1810, quarto ed.), VI, 89.

desires in a more fit and seasonable manner, than by prosecuting and endeavoring to promote that noble experiment of *Torricellius.*[4]

Finally, we must notice a qualification of Boyle's usage which is highly important. Mary Astell is writing the "Character of a Virtuoso" in 1696:

> He Trafficks to all places, and has his Correspondents in every part of the World; yet his Merchandizes serve not to promote our Luxury, nor encrease our Trade, and neither enrich the Nation, nor himself. A Box or two of *Pebbles* or *Shells,* and a dozen of *Wasps, Spiders* and *Caterpillers* are his Cargoe. He values a *Camelion,* or *Salamander's* Egg, above all the Sugars and Spices of the *West* and *East-Indies.* . . . He visits Mines, Colepits, and Quarries frequently, but not for that sordid end that other Men usually do, *viz.* gain; but for the sake of the fossile Shells and Teeth that are sometimes found there. . . .
>
> To what purpose is it, that these Gentlemen ransack all Parts both of *Earth* and *Sea* to procure these *Triffles?* . . . I know that the desire of knowledge, and the discovery of things yet unknown is the Pretence; but what Knowledge is it? What Discoveries do we owe to their Labours? It is only the Discovery of some few unheeded Varieties of Plants, Shells, or Insects, unheeded only because useless; and the Knowledge, they boast so much of, is no more than a Register of their Names, and Marks of Distinction only.[5]

On the basis of these passages we can reach a number of initial conclusions. The range of interest precludes any definition of virtuosity based on subject matter. All we can say is that painting, antiquities, and science are the major concerns, though in saying so, we must not assume that therefore we have three distinct types of the virtuoso. The character of Mary Astell is not merely a natural scientist, he is also an antiquary: "his Cash consists much in old Coins, and he thinks the Face of Alexander in one of 'em worth more than all his Conquests." The normal case indeed would include the study of all three subjects. In the next place the virtuoso is clearly a man of wealth and leisure: he is a gentleman, and we shall see that the movement was strongly class-conscious. But he is also a student. Whatever the subject, it is not a mere accomplishment, or an occasional recreation; it is a study to which he devotes much of his time, and in which he is, or pretends to be,

[4] *The Works of the Honourable Robert Boyle,* ed. T. Birch (1772), I, 5.

[5] *An Essay in Defence of the Female Sex,* pp. 97–98, 102–103. I quote from the second edition, which also appeared in 1696.

something of an authority. And finally, his studies are never devoted to utilitarian ends, no more to political or professional success than to commercial gain. This is not to say that motives of practical utility never affected the studies of the virtuosi: one thinks of the greatest name in the movement, John Evelyn. But when they appear, they indicate either the necessary—or instinctive—rationale of "pure" learning in an age of utilitarian norms, or else the temporary abdication of the virtuoso's genuine rôle. And this provides, I think, the first defining quality, for the attitude toward learning implied in all the quotations (it is explicit in Mary Astell) is precisely that which Gimcrack announced as his guiding principle: "I seldom bring any thing to use, 'tis not my way, Knowledge is my ultimate end."[6]

Yet if Boyle with his experiments on a vacuum, and the type character of Astell with his random collections, may both be said to seek for "knowledge," they do so with a crucial difference, and one so fundamental that they cannot usefully be described by the same term. This, indeed, was recognized by Astell herself in the important qualification that follows the character:

> I wou'd not have any Body mistake me so far, as to think I wou'd in the least reflect upon any sincere, and intelligent Enquirer into Nature, of which I as heartily wish a better knowledge, as any *Vertuoso* of 'em all. You can be my Witness, *Madam,* that I us'd to say, I thought Mr. *Boyle* more honourable for his learned Labours, than for his Noble Birth; and that the *Royal Society,* by their great and celebrated Performances . . . highly merited the *Esteem, Respect* and *Honour* paid 'em by the Lovers of Learning all *Europe* over. But though I have a very great Veneration for the *Society* in general, I can't but put a vast difference between the particular Members that compose it.

In short, there were virtuosi and virtuosi—the amateurs or dilettantes, and the "sincere" inquirers into nature, with or without the Baconian purpose of ultimate use.[7] Although the word was

[6] *The Virtuoso* (1676), act II, in *The Complete Works of Thomas Shadwell,* ed. Montague Summers (1927), III, 127. Cf. act. V, p. 169: "We Virtuoso's never find out anything of use, 'tis not our way."

[7] This important distinction was also recognized by William Wotton (see below, sec. 6) and by Addison in *The Tatler,* no. 236, for Oct. 12, 1710: "There is no study more becoming a rational creature than that of natural philosophy; but, as several of our modern virtuosi manage it, their speculations do not so much tend to open and enlarge the mind, as to contract and fix it upon trifles." Cf. the quotations from Bacon and Boyle in note 9, where the same distinction is pushed further.

extended about 1650 to include the latter, it was first and normally applied, and still should be applied, to the former alone; leaving the term "natural philosopher" to describe the genuine scientist. This distinction has often been made, but often, I suspect, without realizing what it means; for the difference is not, except accidentally, between a frivolous and a serious spirit. We are misled by derogatory connotations which, in course of time, got attached to "virtuoso," "dilettante," and "amateur," but which clearly did not belong to their primary and normal meanings: a "dilettante" in the seventeenth century was still one who delighted—and it might be seriously—in learning and art. The right approach was made by Spingarn in 1908, though he failed to realize the ultimate conclusion:

> Scholarship, physical science, the study of antiquities, the history of letters and fine arts were all within the scope of the pervasive dilettantism of the virtuoso, so long as they were approached in the proper spirit, that is, with an especial interest in the details of study and research, in the actual circumstances of their growth and life, and not as abstractions or as mere illustrations of theory and law. . . . The study of things as they are in themselves . . . is the field of virtuoso endeavour.[8]

Hence the passion for collecting, the galleries and cabinets and museums which the virtuosi assembled. In contrast, as Spingarn implies, the "philosopher," whether scientist or antiquary or critic of art, is concerned with facts as they illustrate or reveal a pattern of law or development.[9] It was the failure of the virtuoso to use

[8] *Critical Essays of the Seventeenth Century,* ed. J. E. Spingarn (1908–1909), introduction, I, xc.

[9] The distinction is found in Bacon, *Filum Labyrinthi,* in *The Works of Francis Bacon,* ed. J. Spedding, R. L. Ellis, and D. D. Heath (1857–1859), III, 498: "If any one amongst so many seeketh knowledge for itself, yet he rather seeketh to know the variety of things, than to discern of the truth and causes of them." Cf. Boyle, *Occasional Reflections upon Several Subjects* (1665), in *Works,* II, 342, where he plainly has the virtuosi in mind: "If men were sollicitous to apply the things they take notice of in occasional objects, to the discovery or illustration of oeconomical, political, or physical matters, it would probably bring such kind of thoughts more into request with several sorts of men, and possibly conduce to the improvement of those parts of knowledge themselves." Also cf. the quotation from Descartes, below, §5.

It seems curious that after defining the virtuoso as he did, Spingarn should have chosen Boyle the Baconian, of all people, to exemplify the type; should have selected this particular book, so definitely utilitarian, as a typical piece of virtuosity; and

his learning in this way, as well as for immediate utility, that Shadwell had in mind when he laughed at knowledge as an ultimate end:

> Longvil: But to what end do you weigh this Air, Sir?
> Gimcrack: To what end shou'd I? to know what it weighs.
> O Knowledge is a fine thing.[10]

Yet this only raises the last and crucial question: why *was* knowledge in itself such a fine thing? The answer was given by Bacon in the famous passage on mistaking or misplacing of the right end of knowledge. In contrast to "benefit and use,"

> men have entered into a desire of learning and knowledge, sometimes upon a natural curiosity and inquisitive appetite; sometimes to entertain their minds with variety and delight; sometimes for ornament and reputation; . . . as if there were sought in knowledge a couch, whereupon to rest a searching and restless spirit; or a terrace, for a wandering and variable mind to walk up and down with a fair prospect; or a tower of state, for a proud mind to raise itself upon.[11]

With extraordinary acuteness Bacon has cut through to the foundations of virtuosity. Coins or pictures, shells or insects, none are valued for use, neither for the advancement of learning nor for immediate gain: they are valued in themselves because they arouse curiosity and stimulate delight; and because their knowledge or collection guarantees a social reputation.

It is true enough that the virtuosi often talked of the advancement of learning, often recognized the historical and scientific importance of their collections of coins and natural history—sometimes, indeed, made contributions of value; but as in the case of practical utility, the philosophical interest was subordinate to per-

should have made the mistake of calling Gimcrack "no other than Robert Boyle," when in spite of his talk about the Meletetiques, Gimcrack was not a member of the Royal Society (in act III, p. 125, "the Colledge indeed refus'd him"; and see also act V, p. 178).

[10] Act V, p. 164. The common failure of scholars to recognize any distinction between the virtuosi and the natural philosophers leads to a misunderstanding of passages like this. Cf., for example, Claude Lloyd, "Shadwell and the Virtuosi," *PMLA,* XLIV (1929), 492: "Shadwell aims the unkindest cut of all at the natural philosophers when he misrepresents their aim as knowledge rather than use." On the contrary, he rightly represents the aim of the *virtuosi* as "pure" knowledge.

[11] *The Advancement of Learning* (1605), in *Works* III, 294. I do not mean to claim that Bacon was thinking only of the virtuosi, but the motives cited are precisely theirs, except for ornament, which applies more properly (see §2) to courtiers.

sonal incentives. Or to put it differently, the virtuoso is a man predominantly, though not solely, actuated by the motives which Bacon rejects: the "pure" or "complete" type rarely, if ever, existed. We can see the typical emphasis in Evelyn's important letter to Mr. Maddox, where he recommends the study of "many excellent receipts to make perfumes, sweet powders, pomanders, antidotes, and divers such curiosities":

> Though they are indeed but trifles in comparison of more solid things, yet, if ever you should affect to live a retired life hereafter, you will take more pleasures in those recreations than you can now imagine. And really gentlemen despising those vulgar things, deprive themselves of many advantages to improve their time, and do service to the desiderants of philosophy; which is the only part of learning best illustrated by experiments. . . .
>
> Commonly indeed persons of mean condition possess them [the receipts], because their necessity renders them industrious: but if men of quality made it their delight also, arts could not but receive infinite advantages, because they have both means and leisure to improve and cultivate them; and, as I said before, there is nothing by which a good man may more sweetly pass his time.[12]

Clearly the virtuoso is not at bottom a man whose wealth and leisure allow him to become a "philosopher" (the case of Boyle). He is fundamentally a man for whom learning is the means to dispose of wealth and leisure in the happiest fashion—and with the comforting assurance that he may also be serving the desiderants of philosophy, history, or art. The study of virtuosity is therefore a study in sensibility. We have to trace historically the origin, growth, and decline of a subjective approach to learning; which means that the ultimate clue is often the tone of voice. In the passages that follow, for example, Moryson and Coryat are both urging the traveller to visit foreign scholars; it is the style alone that indicates which is the virtuoso:

> Let him visit the most learned men, and those that excell in military Art or any vertue, and let him conferre with them, as his ends require.

[12] *Diary and Correspondence of John Evelyn,* ed. William Bray (1859), III, 84. The letter is dated Jan. 10, 1656/57. That Evelyn is describing the virtuoso is clear from his remark just below (*ibid.,* p. 85) on Gassendi's life of Peiresc: "I suppose you carry the Life of that illustrious and incomparable virtuoso always about with you in your motions." The biography was first published in 1641, and translated by William Rand in 1657, as *The Mirrour of True Nobility & Gentility, being the Life of . . . N. C. Fabricius, Lord of Peiresk,* with a dedication to Evelyn himself for his *"Peireskian Vertues."*

What a singular and incomparable comfort is it to conferre with those learned men in forraine Universities and noble Cities, whose excellent workes we reade in our private studies at home, as with Isaac Casaubon the pearle of Paris. . . .[13]

Moryson's denotative phrasing correlates with the utilitarian objectives. In Coryat the emotive diction (even cities are "noble") indicates at once the contrary motive—the thrill of mere contact with celebrities. Besides the historical outline, therefore, we have also to analyze the quality of delight and the kind of curiosity which, with certain distinctions, underlie and harmonize the interest in such different fields as painting, antiquities, and science.

§ 2. *Origins and Sources in England*

If we glance at Sir William Temple's account of the Renaissance, we see the source of virtuosity in the revival of letters. Scholars were invited, he says, to all the courts of Europe "for the Use and Entertainment" of princes and ministers, until learning became so much "the humour and mode of the Age" that finally "Many Nobles pursued this Vein with great Application and Success."[14] The patronage of learning for "entertainment" is the first step toward virtuosity; but the actual movement does not exist until the nobility themselves take up study as a serious pursuit. Or to put it differently, the virtuoso is the product and fusion of two traditions, of the courtier and the scholar: he is, as we say, the gentleman-scholar. In England, the assimilation of Italian culture shows a progressive development, starting with a predominant concern for practical studies, moral and political, in Elyot's *Governour,* expanding in the Elizabethan period to studies of ornament, the accomplishments and entertainments of the courtier, as Elyot was supplemented by Castiglione, and finally in the early seventeenth century, for reasons to be considered, arriving at the pursuit of learning in itself for curiosity, delight, and reputation. The last step was undoubtedly delayed because the English ideal of public service, the gentleman as governor much more than as

[13] Fynes Moryson, *An Itinerary Containing his Ten Yeeres Travell* (1907–1908), III, 372. Thomas Coryat, *Coryat's Crudities Hastily Gobled up in Five Moneths Travells* (1905), I, 8. The first editions came out, respectively, in 1617 and 1611.

[14] "An Essay upon the Ancient and Modern Learning" (1690), in Spingarn, *Critical Essays,* III, 68.

courtier, let alone as virtuoso, laid predominant stress on study for use. If Elyot mentions the pleasures of drawing and painting and geometry, even the "incredible delite" of cosmography "in beholding the diversities of people, beastis, foules, fishes, trees, frutes, and herbes," he not only insists on their practical values for husbandry and war, but he warns the gentleman to exercise them only as "a secrete pastime, or recreation of the wittes, late occupied in serious studies," and only before "the tyme cometh concerning businesse of greatter importaunce."[15] The same point of view controlled the education of Sidney. Lanquet's letter of 1574 cautioned his pupil against indulging a delight in learning for its own sake:

> You were quite right to learn the elements of astronomy, but I do not advise you to proceed far in the science, because it is very difficult, and not likely to be of much use to you. I know not whether it is wise to apply your mind to geometry, though it is a noble study and well worthy of a fine understanding; but you must consider your condition in life, how soon you will have to tear yourself from your literary leisure, and therefore the short time which you still have should be devoted entirely to such things as are most essential. . . . I consider it absurd to learn the rudiments of many sciences simply for display and not for use.[16]

The association of leisure only with youth assumes a life of action for which learning must provide, first and foremost, the essential tools.

The reference to display, however, reflects the different ideal which is found at its best in *Il Cortegiano*. Not that moral or political values are overlooked by Castiglione: the courtier must be prepared to serve his prince in war and peace. But in contrast to Elyot, learning is seen as a "true and principall ornament of the minde," and as a source of pleasure and recreation not restricted to youth. Beside the "contentation" of writing poetry, the courtier "shall by this meanes never want pleasant intertainements with women which ordinarily love such matters." "Knowledge in painting is cause of verie great pleasure," and helps him to judge "the excellencie of Images both olde and new, of vessels, buildings,

[15] *The Boke Named The Governour* (1531), in chaps. viii and xi, ed. Foster Watson (1907), pp. 28–32, 43.

[16] *The Correspondence of Sir Philip Sidney and Hubert Languet,* ed. Steuart A. Pears (1845), p. 25.

old coines, cameses, gravings, and such other matters."[17] It is significant that Castiglione makes no appeal to curiosity: these studies are not valued in themselves. The accomplishments of the courtier only become the tastes of the virtuoso when they pass beyond their social function, and their relative place in the full development of personality, to assume primary and independent status. This did not happen in England, to any extent, before the seventeenth century; but in the meanwhile the assimilation of Italian courtesy prepared the ground for the transition from Elyot's *Governour* to Peacham's *Compleat Gentleman.*

This can be illustrated by *The Arte of English Poesie* (1589), for it stands in the same relation to Castiglione that Sidney's *Apology* does to Elyot. The function of poetry as moral philosophy is subordinated by Puttenham to a radically different end:

> Our chiefe purpose herein is for the learning of Ladies and young Gentlewomen, or idle Courtiers, desirous to become skilful in their owne mother tongue, and for their private recreation to make now & then ditties of pleasure, thinking for our parte none other science so fit for them & the place as that which teacheth *beau semblant,* the chiefe profession as well of Courting as of poesie, since to such manner of mindes nothing is more combersome then tedious doctrines and schollarly methodes of discipline, we have in our owne conceit devised a new and strange modell of this arte, fitter to please the Court then the schoole.[18]

The devotion of leisure to studies not only delightful but easy is characteristic of the whole movement of virtuosity: eighty years later we find the same formula in Sprat, adopted for science—with a single and crucial difference. In place of recreation for courtiers "now and then," study is to fill the leisure of country gentlemen.[19]

This development has occurred by 1622. Even in the passage which affirms his debt to the past, to Erasmus and Vives, Elyot and Ascham, Peacham is plainly breathing a new atmosphere:

> *But as rare and curious stamps upon Coynes, for their varietie and strangenesse, are daily enquired after, and bought up,* though the Silver bee

[17] *The Book of the Courtier,* translated by Thomas Hoby (1561), ed. W. B. D. Henderson (1937), pp. 68, 71, 81–82.

[18] In *Elizabethan Critical Essays,* ed. G. G. Smith (1904), II, 164–165. It is true that Puttenham repeats the high theory of didactic learning (II, 25), but even there he adds "recreation onely" as a worthy goal.

[19] Thomas Sprat, *The History of the Royal Society of London* (1734 ed.), pp. 405–406, 409, partly quoted below, §3. The first edition is 1667.

all one and common with ours: so fares it with Bookes, which (as Meddailes) beare the Pictures and devices of our various Invention, though the matter bee the same, yet for varietie sake they shall be read.[20]

In the clause in italics, we see a kind and degree of interest quite distinct from the courtier's; and the close of the dedication reveals a new direction in English culture: "How sweet a thing it is to converse with the wisest of all Ages by History; to have insight into the most pleasing and admirable Sciences of the *Mathematiques, Poetry, Picture, Heraldry, &c. . . .*" The choice of epithet harmonizes with the description of the book as a "guide to knowledg; the ground, not only of the sweetest, but the happiest life." Not that Peacham ignores the value of learning for public service and social ornament, or concentrates on "knowledge" to the exclusion of manners and courtly exercises. In the chapter "Of the dignitie and necessitie of Learning in Princes and Nobilitie," he speaks of Solomon's desire for wisdom "that he might governe," quotes Plutarch on how learning "*reformeth the life and manners,* and affoordeth the wholesomest advice for the government of a Common-wealth." But the opening paragraph places the major stress on the dignity of learning, and gives the phrase a connotation that I think is unknown in English courtesy of the past:

> Who is nobly borne, and a Scholler withall, deserveth double Honour, being both εὐγενής and πολυμαθής: for heereby as an Ensigne of the fairest colours, he is afarre off discerned, and winneth to himselfe both love and admiration, heighthning with skill his Image to the life, making it precious, and lasting to posteritie.[21]

The courtier has become a scholar; culture for social ornament has passed into learning for fame and admiration. Upon the older tradition of Elyot and Castiglione, Peacham grafted a new ideal, which is illustrated significantly by his example of a "noble and absolutely compleat Gentleman": it is not a man like Sir Henry Wotton, in the tradition of Sidney; it is Sir Kenelm Digby.[22]

As this reference would indicate, along with others to the Earl of Arundel, Nathaniel Bacon, and Sir John Ogle,[23] Peacham is writing after the fact. His book reflects the emergence of the

[20] *The Compleat Gentleman,* "To the Reader." The italics are mine.

[21] In the order given, the quotations are on pp. 19, 19–20, 18.

[22] Page 108.

[23] Pages 107, 126, 231.

virtuoso in the early century as a conscious and distinct type. Phenomena of this kind can never, in a sense, be "explained," since any set of causes presupposes an earlier set of causes; but we can notice certain factors of the time which must have contributed.

Most important was the increase of wealth and leisure. Without the enclosures and the destruction of the monasteries, American gold and silver, monopolies and joint stock companies, the virtuoso could not have existed. It was not merely that portrait galleries and cabinets of "rare and curious coins" required, as Peacham noticed, "mightie treasures of money."[24] So did a life of learned leisure, and we have Sir Hugh Plat, the son of a wealthy merchant, to remind us that the virtuoso movement may have owed as much to the city as to the court.

The increase of leisure had other causes beside wealth. The expansion of governing offices in the previous century had come to an end,[25] and the defeat of Spain was followed by a long period of peace. Under such conditions, study would naturally become the refuge of many men whose fathers had spent active lives in the service of the state. Cause and effect are illustrated by Prince Henry. It was because "his Highness perceived the Nobility and Gentry of England too much given to ease" that he planned a courtly academy to occupy their time with various studies, including, no doubt, the antiquities and painting so congenial to Henry himself.[26] We should also remember that the court of King James never inspired the loyalty or the devotion to public service conspicuous under Elizabeth, so that as opportunities for an active life declined, so did the desire. It is significant that Peacham's gentleman does not live at court but on his country estate, ready, if need be, to serve his king, but in the meanwhile occupied with "learned Pleasure and delight."[27] The recommendation of drawing and painting is illuminating:

[24] Page 105.

[25] See L. C. Knights, *Drama & Society in the Age of Jonson* (1937), pp. 327–328.

[26] The quotation is from a letter by Edmund Bolton, reprinted in John Gutch, *Collectanea Curiosa* (1781), I, 213. For the authorship, which Gutch incorrectly attributes to Balthazar Gerbier, see T. W. Jackson, in *Collectanea,* first series, ed. C. R. L. Fletcher (Publications of the Oxford Historical Society, vol. V, 1885), p. 278. For Henry as a virtuoso, see below, §3.

[27] Cf. C. S. Gordon in the introduction, p. xv. The quoted phrase is on p. 123.

I am bound also to give it you in charge *for your exercise at leasure,* it being a quality most commendable, and so many wayes usefull to a Gentleman. For should you (*if necessity required*) be employed for your Countries service in following the warre, you can describe no plot, manner of fortification, forme of Battallia . . . without the helpe of the same.[28]

Behind Peacham's phrase, a quality most commendable to a gentleman, lies a social factor which gave special appeal to studies for reputation. No one can read his book without recognizing that aristocracy is on the defensive. In a revealing passage he recommends the study of heraldry so that you may "discerne and know an intruding upstart, shot up with the last nights Mushroome, from an ancient descended & deserved Gentleman."[29] Many a remark betrays a class-consciousness which Elyot and Ascham had less need to affirm. "For the companions of your recreation, consort your selfe with Gentlemen of your owne ranke and quality. . . . To be over free and familiar with inferiors, argues a baseness of Spirit, and begetteth contempt."[30] Special forms of learning, hardly obtainable without wealth and leisure, take on the urgency of class distinction in an age notorious for intruding upstarts and ambitious merchants; so that knowledge of painting, blazon of arms, coins and statues become the marks of a gentleman:

The first use then hereof (I mean your learning,) as an Antidote against the Common plague of our times, let it confirme and perswade you, that as your understanding is by it ennobled with the richest dowry in the world, so hereby learne to know your owne worth and value.[31]

The snob-appeal which helped to create the movement was still present at the Restoration, when Obadiah Walker thought that a gentleman's time was best employed on "ingenious Studies" like antiquity, natural history, astronomy, "such as poorer Persons are not able to support."[32]

Another factor, and by no means the least, was the disease of the age. Whoever he is, says Burton, who is carried away with

[28] Page 124. The italics are mine. Both motives can be found in Elyot, *The Governour,* ch. viii, but he assumes the "necessity" as a matter of course.

[29] Pages 160–161.

[30] Pages 39–40.

[31] Page 222.

[32] *Of Education, Especially of Young Gentlemen* (1699 ed.), p. 35. The first edition is 1673. Cf. the quotation below, §5, from Addison; and the more detailed discussion of virtuoso affectation, below, end of §4.

melancholy, and "for want of employment knows not how to spend his time" (the two are connected, and the second, as we noticed, was often the case of the Stuart gentleman, by choice or necessity), ". . . I can prescribe him no better remedy than this of study, to compose himself to the learning of some art or science."[33] This remedy was not original with Burton. Timothy Bright, for example, had recommended studies "of a milder and softer kinde," though without mention of particular subjects.[34] What Burton did here, as so often through his book, was to adapt theory to contemporary life, by applying the studies long familiar to the Italian, and just then being discovered by the English, virtuosi, to the cure of melancholy.

So it is that a year before Peacham, we find in *The Anatomy of Melancholy* not only the first document of the English movement, but the fullest index I know to its range of taste.[35] Subjects like poetry, history, and languages are mentioned, but the opening paragraph speaks at once of statues, jewels, marbles; Italian and Dutch painting; heraldry and coats of arms; old coins and relics; Roman antiquities in general. And after that, the bulk of the section is devoted to scientific pursuits that were not popular for another generation, and which indeed were only touched on briefly by Peacham: natural history; chemistry ("our Alchemists, methinks, and Rosy-Cross men afford most rarities and are fuller of experiments"); and above all, "the Mathematicks, Theorick, or Practrick, parts" ("what more pleasing Studies can there be?")—astronomy, geometry, algebra ("so ravishing, so easy withal & full of delight"); and the mechanical inventions—fire-works, water-works, cranes and pullies, "diving boats," and "a chariot to move without an animal." The rise of virtuosity, its frame of mind and its actual studies, are clearly associated with Jacobean melancholy.

Yet Burton's section also reminds us that the movement rests ultimately on the spread of Italian influence and the accumulation of Renaissance scholarship. The following passage exposes the

[33] *The Anatomy of Melancholy* (1621), part 2, sect. 2, memb, 4, ed. Floyd Dell and Paul Jordan-Smith (1927), p. 458. The connections between melancholy and Jacobean unemployment are brought out by Knights, *Drama & Society,* pp. 323–332, especially p. 328.

[34] *A Treatise of Melancholy* (1613 ed.), in ch. 37, pp. 297–298. The first edition is 1586.

[35] Part 2, sect. 2, memb. 4, pp. 453–463.

important rôle of the grand tour in transplanting to England the studies of the virtuosi:

> Who will not be affected . . . to see those well furnished Cloisters and Galleries of the Roman Cardinals, so richly stored with all modern Pictures, old Statues and Antiquities? . . . Or in some Princes' Cabinets, like that of the great Duke's in Florence, of Felix Platerus in Basil, or Noblemen's Houses, to see such variety of attires, faces, so many, so rare, and such exquisite pieces, of men, birds, beasts, &c.[36]

This direct contact was supplemented by the volumes of *elogia,* combining engraved reproductions of famous portraits with short biographies, and by the "accurate diaries" and "pleasant itineraries" which, from Hoby and Thomas White to Moryson, Coryat, and Sandys, whom Burton mentions, brought classical antiquities and Italian cabinets to the attention of English readers.[37] When the factors explored above had produced the need and desire for a life of learning, Italian tastes had been assimilated. And, moreover, the materials were available. It is significant that Burton's bibliography is largely made up of modern books, some indeed just coming from the press. The Renaissance scholars had opened up new fields of study, easier and more delightful than the logic and philosophy of the schoolmen, so that the folios of men like Cardan and Gesner and Gerard were ready to supply the libraries of the virtuosi. Not until a Clavius had done the grubbing and written the textbook could algebra become "so ravishing, so easy withal & full of delight." And it was not simply a matter of books. Actual scholars became available, ready to accept a pension in exchange for instruction; and we must not forget that Oughtred and Harriot, Thomas Allen and Tradescant had their share in creating such virtuosi, or potential virtuosi, as Arundel, Northumberland, and Buckingham.[38] The cultural lag of England in the Renaissance simply meant that the indispensable fusion of courtesy and scholarship did not occur there before the seventeenth century. From about 1590 to 1640 we can watch the English amateur gradually catching up with his Italian predecessor, mainly on the side of

[36] Page 454. Cf. Peacham, p. 104.

[37] See Lewis Einstein, *The Italian Renaissance in England* (1902), pp. 134–139, for an account of Hoby and White, and for a typical source, Fynes Moryson, *An Itinerary Containing his Ten Yeares Travell* (1907–08), I, 188, 192–193, 292–293, 300; III, 371, 372.

[38] See below, §3.

painting and antiquities, but with some attention to the fields of science mentioned by Burton, and later to become the predominant interest in the great period of virtuosity from 1640 to 1680.

§ 3. *The Growth of the Movement, 1590–1640*

The first record of the English virtuoso dates from 1598 when Richard Haydocke translated Lomazzo's treatise on painting and carving.[39] His purpose, he said, was "the increase of the knowledge of the Arte; which . . . never attained to any great perfection amongst us (save in some feawe of late)." As this suggests, Haydocke wanted to stimulate an incipient movement going beyond courtly appreciation to actual painting and the collection of pictures as a learned pursuit. Thus he begs for a "diligent observation of the excellency of Ancient workes; indevouring by all meanes to purchace them, and refusing no coste, when they may bee had. In which point some of our Nobility, and divers private Gentlemen, have very well acquited themselves; as may appeare, by their Galleries carefully furnished, with the excellent monuments of sundry famous ancient Masters, both Italian and Germane." This would apply, among others, to Leicester, Lord Lumley, and the Earl of Northumberland. Eight years later appeared *The Art of Drawing with the Pen, and Limming in Water Colours,* by Henry Peacham himself, written "for the benefit of many young Gentlemen, who were my Schollers for the Latin and Greek Tongues," and containing a hopeful list of actual, or potential, patrons of art, notably Prince Henry and the Earl of Arundel.[40] Before his death in 1612 the former had laid the foundation for the superb gallery of painting which his brother completed; and his collections included books, statues, and "a cabinet of ten thousand medals, not inferior to most abroad, and far superior to any at home."[41] It was Arundel, however, who was the real father of

[39] *A Tracte Containing the Artes of curious Paintinge Carving & Buildinge, written first in Italian by Jo. Paul Lomatius painter of Milan, and Englished by R. H. student in Physik* (Oxford, 1598). The passages I quote just below are on sigs. ¶v and ¶v^{v}. For an account of the book, with extensive quotations, see Frederick Hard, "Richard Haydocke and Alexander Browne: Two Half-forgotten Writers on the Art of Painting." *PMLA,* LV (1940), 727–741.

[40] I quote from a later edition published with *The Compleat Gentleman* in 1661, and called *The Gentleman's Exercise,* preface "To the Reader" (sig. Qq 3), and in ch. ii (p. 310).

[41] Evelyn, *Diary and Correspondence,* III, 305, from a letter to Pepys, Aug. 12, 1689.

virtuosity in England, famous for "a very rich collection as well of medals, as other intaglios,"[42] but most famous for his marbles. It was he who gave "this angle of the world" its first sight of ancient statues, about 1614, and for the rest of his life "continued to transplant old Greece into *England.*" The tribute is Peacham's, and he goes on to mention the similar collections of Digby and King Charles.[43] It might be suspected that Charles only reflected an interest which Arundel and Digby pursued, and being a king, felt it necessary to adorn his palaces with painting and sculpture. But that was not the case. He was himself a virtuoso, though without sufficient leisure to live like one: "he was well skilled in things of Antiquity, could judge of Meddals whether they had the number of years they pretended unto; his Libraries and Cabinets were full of those things on which length of Time put the Value of Rarities."[44] Under such a king, and such an Earl Marshall as Arundel, the movement was bound to spread. When a new edition of *The Compleat Gentleman* appeared in 1634, it contained a new chapter—"Of Antiquities." Two years later the studies of the virtuosi were embodied for the first time in a formal curriculum. At the Musæum Minervæ of Sir Francis Kynaston, a courtly academy for nobles and gentlemen, the arts of action were fully supplemented by the arts of leisure—sculpture and painting, heraldry and blazon of arms, knowledge of antiquities, coins and medals.[45] One can scarcely doubt that when, in spite of letters patent and a great seal, Kynaston's academy failed to take root and the House of Lords was again petitioned, on May 4, 1640, to erect a courtly academy, the same studies would have found place, for the petitioner was the Earl of Arundel.[46] Certainly by that date the virtuoso had become familiar enough for popular satire. The antiquary of Shakerley

[42] *Ibid.,* p. 300.

[43] *The Compleat Gentleman,* pp. 107–108. It is worth noticing that Peacham had contact with both Prince Henry, to whom he presented in 1606 a rendering of the *Basilicon Doron* into Latin verse, and Arundel, whose sons he took abroad in the capacity of tutor. *The Compleat Gentleman* was dedicated to William Howard, the second son of the Earl.

[44] Richard Perrinchief, *The Royal Martyr: or, The Life and Death of King Charles I* (1676), section on *"His Skill in all Arts,"* pp. 252–254. This life was first published in *The Workes of King Charles the Martyr* (1662).

[45] Sir Francis Kynaston, *The Constitutions of the Musæum Minervæ* (1636), pp. 4–5.

[46] *Great Britain. Journals of the House of Lords,* IV, 80.

Marmion is no longer the pedantic scholar charactered by Earle in 1628. He is the gentleman-collector of ancient rarities—"the portraitures of the Sibyls, drawn five hundred years since by Titianus of Padua," "the great silver box that Nero kept his beard in," "the urn that did contain the ashes of the emperors."[47]

That the virtuoso was called an antiquary in 1641 indicates how meagre as yet was his connection with science. The twenty-three pages devoted by Peacham to geography, astronomy, and geometry, compared with one hundred and nine for heraldry and the fine arts, fairly indicates the relative appeal. In one circle, however, natural philosophy was of equal interest. This was the School of Night, which could be called the first school of virtuosi in England; for although Raleigh and the Earls of Derby and Northumberland were men of action and courtiers, they were also men of learning and patrons of professional scholars, of mathematicians, astronomers, and alchemists.[48] Indeed, in the case of Raleigh and Northumberland what had been an *avocation* became in fact a *vocation* when they were faced with years of leisure in the Tower of London. "Their prison was an academy where their thoughts were elevated above the common cares of life; where they explored science in all its pleasing forms, penetrated her most intricate recesses, and surveyed the whole globe."[49] Northumberland in particular assembled an array of scholars—the "three magi" of the "Wizard Earl" were Thomas Harriot, Walter Warner, and Thomas Hughes—to discuss the laws of optics and the theory of numbers, sunspots and the satellites of Jupiter; to cast horoscopes, and experiment in his improvised laboratory on the transmutation of metals, the elixir of life, and perpetual motion. The same pursuits were followed by Sir Thomas Aylesbury (1576–1657), "a learned man, and as great a lover and encourager of learning and learned men, especially of mathematicians (he being one himself), as any man in his time."[50]

[47] *The Antiquary* (1641), act II, in R. Dodsley, *A Select Collection of Old English Plays,* ed. W. C. Hazlitt, vol. XIII (1875), pp. 450–451.

[48] See M. C. Bradbrook, *The School of Night* (1936), especially pp. 7–11, 37–43.

[49] John Wallis, quoted in E. B. De Fonblanque, *Annals of the House of Percy* (1887), II, 332, n. 3. Pages 331–332 mention the facts I give in the next sentence. For a longer account, see Henry Stevens, *Thomas Harriot and his Associates* (1900), pp. 93–113.

[50] Anthony Wood, *Athenae Oxonienses,* ed. Philip Bliss (1813–1820), in vol. II, *Fasti,* pt. i, col. 305. And see in general the article by Agnes Clerke in the *Dictionary of National Biography.*

Besides Harriot and Warner, his dependents included Thomas Allen (1542–1632), the antiquary and scientist, who left him part of his valuable manuscripts, and the rest to a more famous virtuoso, Sir Kenelm Digby.[51] Aylesbury had once been secretary to the Duke of Buckingham, who also has a place in the movement more important than we might expect. Though Buckingham had little time for scholarship, "he understood the arts and artifices of a court, and all the learning that is professed there, exactly well," which by 1625 included the learning of the virtuosi.[52] His enthusiasm for painting is well known (his galleries were among the best of the age), but his interest in science, stimulated by Aylesbury, and reflected in his patronage of Allen and John Tradescant, is often forgotten. In 1625 he directed Tradescant to "deal with all merchants from all places, but especially from Virginia, Bermudas, Newfoundland, . . . and the East Indies, for all manner of rare beasts, fowls and birds, shells, furs, and stones." As he quotes this passage, R. T. Gunther adds a comment that brings out its full significance:

> This association of Tradescant with the Duke of Buckingham, of a born collector, "a painful industrial searcher and lover of all nature's varieties," with a sympathetic and wealthy patron, was an event of far-reaching importance. Their alliance resulted in the first Museum of Natural History in London, . . . the exemplar of all others in England, and eventually that of the British Museum.[53]

In this period, however, natural history made little appeal in comparison with alchemy or mechanics, and especially the latter. It is safe to say that before 1640 practical or "mixed" mathematics was the major field of virtuoso science, partly because it was here that the most startling advances had been made, though principally for reasons we shall come to later on. One of Hakewill's arguments for the superiority of the moderns over the ancients was their "many singular *artificiall inventions,* for the *use, ease, delight,* or *ornament* of mankinde, as a number of *Mechanicall, Mathematicall,*

[51] Article on Allen by Charles H. Coote in the *D.N.B.*

[52] Clarendon, *The History of the Rebellion and Civil Wars in England,* ed. W. D. Macray (1888), I, 38.

[53] *Early Science in Oxford,* vol. III (1925), p. 282. Pages 280–292 are the best account I know of the Tradescants and their connection with Ashmole. See also, for some further details, Foster Watson, *The Beginnings of the Teaching of Modern Subjects in England* (1909), pp. 207–211.

& *Musicall* Instruments, *Grottes* or *Water-workes,* specially those in the Duke of *Florence* his dominions, and at S. *Germans* one of the *French* Kings houses." And the next pages are filled with singular inventions for delight, the famous clock at Strassburg, the wooden eagle and iron fly of Regiomontanus, "the instrument of perpetuall motion, invented by *Cornelius* a *German* here in England."[54]

Though he devoted part of his leisure to writing on botany and compiling vast notes on the "Secrets of Metalls, Minerals, Animals, Vegetables, Stones, Pearls, &c," Sir Hugh Plat (1552–1608) was the first gentleman in England to concern himself mainly with mechanics. In 1594 he published

The Jewell House of Art and Nature. Conteining divers rare and profitable Inventions, together with sundry new experimentes in the Art of Husbandry, Distillation, and Moulding.

As the title suggests, the book is too utilitarian to be the work of a pure virtuoso (Plat's father, we remember, was a city mechant), and indeed there was not then an audience for a volume of rare inventions alone, as Plat recognized himself when he spoke of the profitable practice satisfying thousands, while the novelty might "*delight the delicat eares of a few.*"[55] But in the midst of useful machines, one comes on others of a different kind—like the "*conceipted drinking Glasse wherein many sortes of fish will seeme to swim up and downe.*"[56] Forty years later, in a book of exactly the same type, John Bate's *The Mysteryes of Nature and Art* (1634), the emphasis is reversed. In the first two sections a few useful pumps are flanked by scores of mechanical toys, wooden birds and iron flies, and parlor tricks like "*a conceited pot, which being filled with water, will of it selfe run all out.*"[57] The third section is on drawing, painting, and engraving. Bate was writing for a new audience, for Peacham's complete gentlemen, who delighted not only in painting but mechanics as well—the wonderful art of pulleys and cranes and waterworks—and could even create automata.[58]

[54] *An Apologie, or Declaration of the Power and Providence of God in the Government of the World* (1635), bk. 3, ch. 10, sec. 1, pp. 312–314. The first edition is 1627. On Cornelius Drebbel, see just below, note 59.

[55] From the preface, sig. B2^{v}.

[56] Part i, p. 78.

[57] Page 2.

[58] Pages 73–76.

The same audience was large enough by 1633 to warrant the translation of Leurechon's *Récréation Mathématique:*

Mathematicall Recreations, or, A Collection of Many Problems, Extracted out of the Ancient and Modern Philosophers, as Secrets and Experiments in Arithmetick, Geometry, Cosmographie, Horologiographie, Astronomie, Navigation, Musick, Opticks, Architecture, Statick, Mechanics, Chemistry, Water-works, Fire-works, &c.

As the title implies, and the dedication affirms, the whole aim is simply "to satisfie the curious, who delight themselves in these pleasant studies, knowing well the Nobilitie, and Gentrie rather study the Mathematicall Arts, to content and satisfie their affections, in the speculation of such admirable experiments as are extracted from them, than in hope of gaine to fill their Purses." This taste for ingenious puzzles and surprising inventions, reflected also by Burton, was not limited to literature. From about 1607 to his death in 1634, Cornelius Drebbel fascinated the court circles (even King James became his principal benefactor) by a series of extraordinary machines—"a ship in which one could row and navigate under water," instruments to "make it rain, lighten, and thunder . . . so that you would have sworn it came in a natural way from heaven," glasses "in which people saw themselves reflected seven times," and above all, his famous perpetual motion.[59]

Further evidence might be found for the rising concern with science, but not enough, I suspect, to invalidate Bacon's judgment that "natural philosophy, even among those who have attended to it, has scarcely ever possessed, especially in these later times, a disengaged and whole man (unless it were some monk studying in his cell, or some gentleman in his country-house)."[60] That was written in 1620, but it applies in general to the whole period of virtuosity down to 1640. After that, however, scientific interest steadily

[59] From the excellent note on Drebbel in *England as Seen by Foreigners,* ed. W. B. Rye (1865), pp. 232–242 (the inventions are listed on pp. 234–235). The perpetual motion was described by Thomas Tymme in *A Dialogue Philosophicall . . . Together with the Wittie Invention of an Artificiall Perpetuall Motion, Presented to the Kings Most Excellent Maiestie* (1612), and was mentioned by Burton in his section on studies for delight, p. 462, as well as by Hakewill, quoted above, note 54. In Rye, pp. 164–167, is a list of "curiosities of art, objects of vertu, costly tapestries, pretty inventions and conceits" which the Duke of Saxe-Weimar noticed in 1613 in the royal palaces.

[60] *Novum Organum,* bk. I, sec. lxxx, in *Works,* IV, 78–79. Cf. III, 499.

increased until, by the 1660's, it had displaced both painting and antiquities as the major interest. For this development Bacon himself was largely responsible; and indeed, as this essay will often demonstrate, it was Bacon who unwittingly stimulated a movement he fundamentally condemned. When his program gained its first hearing in the 1640's, the virtuosi not only found their own kind of study recommended, the observation of facts and the collection of specimens to form a vast history of natural and mechanical arts; they found also a glowing appeal for co-operation from men of wealth and leisure, with the assurance that no special training was necessary (great intellects like Bacon's would interpret the phenomena and induce the scientific laws).[61] As Evelyn pointed out to Maddox, a gentleman might "sweetly pass his time" in furnishing "the *desiderants* of philosophy."[62] It is thus only a step from Evelyn's own enthusiasm in the 1640's for mechanical inventions and Italian cabinets of natural rarities, to his friendship in the 50's with Baconians like Wilkins and Boyle, on to his active support, a decade later, of a Royal Society dedicated to collecting "faithful *records* of all the Works of *Nature,* or *Art.*"[63] And what is true of Evelyn is true in general of the virtuosi, for we know that by 1667 natural philosophy had "begun to keep the best Company, and refine its Fashion and Appearance, and to become the Employment of the *Rich,* and the *Great,* instead of being [as it still largely was in Bacon's time] the Subject of their *Scorn.*"[64]

To promote this expansion of interest, Sprat wrote a special section of his *History of the Royal Society* to show why natural philosophy was a "proper Study for the Gentlemen of our Nation."[65] Now that men of the lower ranks fill our army and navy, gentlemen are at liberty, he says, "to enlighten and adorn" their country with the studies of peace, and since, for the most part, they live on country estates, "the Leisure which their Retirements afford them, is so great, that either they must spend their Thoughts

[61] All these points, often stated singly, can be seen together in the preface to the *Parasceve,* appended to the *Novum Organum,* in *Works,* IV, 251–252.

[62] Above, §1 and note 12. The italics are mine.

[63] Sprat, *The History of the Royal Society,* p. 61.

[64] Sprat, p. 403. On the increasing social prestige of science, see R. K. Merton, *Science, Technology and Society in Seventeenth-Century England,* published in *Osiris,* IV, part 2 (1938), 385–387, 402, and *passim.*

[65] Part III, sec. xxxiv, pp. 403–412. The quotations just below in my text are on pp. 405, 406, 409.

about such Attempts, or in more chargeable and less innocent *Divertisements.''* As for the choice of studies, academic learning, valuable enough for professions, is not useful for gentlemen, and too difficult to give pleasure.

> Their Minds should be charm'd by the allurements of *sweeter* and more *plausible Studies;* and for this purpose *Experiments* are the fittest: Their *Objects* they may feel and behold, . . . their *Method* is intelligible, and equal to their Capacities.

When we add to this appeal the patronage of Charles, himself a dabbler in science, and the deliberate efforts of Oldenburg and Boyle to ''invite generous men'' to contribute whatever ''natural and artificial curiosities'' they can observe in England, we need not wonder that the objects of virtuoso attention shifted from art to science.[66] When Shadwell took up the same theme for satire in 1676 which Marmion had treated a generation earlier, he found that the virtuoso had changed his spots: Veterano the ''antiquary'' had become Gimcrack, the ''scientist''—for which in good part Bacon was responsible. Later in the century Francis Brokesby thought a schoolmaster should relieve the toil of learning Latin by occasional experiments ''which with their strangeness or novelty cause admiration and thence delight; such as some of those in Lord *Verulam's* Natural History.''[67] In that ironic distortion of the real spirit and purpose of Baconian science we strike to the very core of the sensibility which we have still to explain and still to analyze more closely.

[66] Boyle, *Works,* VI, 215.

[67] *Of Education* (1701), p. 95.