

SCIENCE IN THE VIRGINIA GAZETTE, 1736-1780

A THESIS

SUBMITTED TO THE DEPARTMENT OF  
SOCIAL SCIENCE AND THE GRADUATE COUNCIL OF THE  
KANSAS STATE TEACHERS COLLEGE  
OF EMPORIA

IN PARTIAL FULFILLMENT OF  
THE REQUIREMENTS FOR THE DEGREE OF  
MASTER OF SCIENCE

BY

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AUGUST, 1960

Approved for the Major Department

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## CHAPTER I

### INTRODUCTION

The purpose of this study was to investigate one aspect of colonial American science--science in the Virginia Gazette. The study covered the period 1736-1780 when the Virginia Gazette of Williamsburg was, with the exception of one year, the only newspaper in Virginia. An attempt was made to find and discuss all the articles printed during this period on natural science. By finding what was printed about science in the Virginia Gazette, it was hoped some insights could be gained as to the amount of material printed about science in the colonial newspaper, which areas of science received attention in the newspaper, the degree of difficulty of the articles that were printed, and the coverage by the newspaper of the major events and personages of science during this period.

Newspapers and pamphlets were the main ways of spreading scientific information in America until the establishment of scientific societies and their issuance of journals. Therefore, a colonial newspaper should give an adequate coverage of eighteenth century science. Virginia was a British colony, however, and the information printed in the Virginia Gazette came almost entirely from England or the English American colonies with little from elsewhere in the world.

This study was organized according to the branches of natural science that were covered in the Virginia Gazette. It was divided into the areas of medicine, natural history, and the physical sciences.

Natural history during the eighteenth century included botany, zoology, and mineralogy, but nothing pertaining to mineralogy was found in the Virginia Gazette. The chapter on the physical sciences was divided into the areas of astronomy, electricity, and a final section of miscellaneous material. Although not a branch of science, a chapter on scientific societies was included in the study. An attempt was made in each chapter to group the material into European science, American science, and local or Virginia science.

The primary sources used in this study were the copies of the Virginia Gazette which were available on the microfilm issued by The Institute of Early American History and Culture of Williamsburg, Virginia. Information from secondary works on the period and subject was used to provide background and supplementary material.

## CHAPTER II

### THE VIRGINIA GAZETTE

Newspapers in colonial America were patterned after their English counterparts and were generally very similar in make-up and news coverage. Throughout most of the colonial period London served as a source of news, even that pertaining to other colonies. Reporting of events from Europe was channeled through London, also. This meant a delay from four to six weeks to over three months in bringing the published account to colonial readers, with a ship's transatlantic passage taking four to six weeks, and an additional two to six weeks required for news to reach London from European cities.<sup>1</sup>

Dependence upon London for news items reflected colonial interest in happenings in the mother country, as well as a reluctance on the part of the colonial editor to get fresh material. Printers also drew freely from magazines and books for material, copying these items without the consent of the writer and often without citing the author or source. There was little editorial comment or local news coverage in the modern sense. As the colonies matured and a number of newspapers were established in the leading towns, copies were exchanged. This brought an increase in the items reproduced from other colonial sources. Editors did receive some contributions from correspondents in other colonies and abroad. A local source of material was that voluntarily submitted,

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<sup>1</sup>Frank Luther Mott, American Journalism (New York: The Macmillan Company, 1941), pp. 48-50.

somewhat after the manner of current "letters to the editor," often running to great length with complicated and detailed essays on a variety of subjects.<sup>2</sup>

The Virginia Gazette was one of the first newspapers in the American colonies and the first in Virginia. William Parks founded the Maryland Gazette in Annapolis in 1727 to make Maryland the fourth colony, and the first in the South, to have a newspaper. The second Southern colonial newspaper was the Virginia Gazette, founded by the same William Parks. He moved his English Common Press into the first floor of a small brick building in Williamsburg in 1736 to establish the first public printshop in Virginia.<sup>3</sup> An earlier press had been set up in the colony in 1680 or 1682 through the efforts of John Buckner, a merchant and planter from Gloucester County, who also had arranged for the immigration of a trained printer, William Nuthead. The support of the General Assembly had been given to his efforts. After a short time this press was suspended for operating without a license. There was no further use of this or any press until 1736, because the Crown absolutely refused to give its approval.<sup>4</sup>

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<sup>2</sup>Alfred McClung Lee, The Daily Newspaper in America (New York: The Macmillan Company, 1937), pp. 36-39; and Mott, op. cit., pp. 3, 27, 50-51.

<sup>3</sup>Edwin Emery and Henry Ladd Smith, The Press and America (New York: Prentice-Hall, Inc., 1954), p. 62; and Mott, op. cit., pp. 40-41.

<sup>4</sup>Philip Alexander Bruce, Institutional History of Virginia in the Seventeenth Century (New York: G. P. Putnam's Sons, 1910), I, pp. 402-403; and Virginia Historical Society, "Letters of William Fitzhugh," The Virginia Magazine of History and Biography, I (April, 1894), p. 406.

Parks published the first issue of the Virginia Gazette on August 6, 1736, according to all available information. The first preserved issue is number 6, dated September 11, 1736, which suggests the validity of the date for the first issue.<sup>5</sup> Description of Parks's work suggests that he was a good printer. It has been said of his Maryland Gazette that: "His paper reflected good taste, literary skill and pride in the craft he had learned so well under the best English masters."<sup>6</sup>

Parks printed the Virginia Gazette until his death on April 1, 1750. Several months after Parks's death, William Hunter became editor of the Gazette and continued to print it until he died on August 12, 1761. Hunter's brother-in-law, Joseph Royle, took over the paper in behalf of himself and William Hunter's son, also called William. Royle printed the paper until 1765. Alexander Purdie followed Joseph Royle and printed the Gazette for one year by himself, before forming a partnership with John Dixon. Dixon and William Hunter, Jr., son of the former Gazette printer, operated the paper from 1775 to 1778, and Dixon and Thomas Nicolson from 1779 to April, 1780, when their printshop, along with the capital of Virginia, was moved to Richmond.<sup>7</sup>

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<sup>5</sup>Lester J. Cappon and Stella F. Duff (comps.), Virginia Gazette Index (Williamsburg: The Institute of Early American History and Culture, 1950), I, p. vi; and The Virginia Gazette of Williamsburg, 1736-1780, Issued on microfilm by The Institute of Early American History and Culture from originals and photostats loaned by other institutions (Williamsburg: 1950), Checklist of the Virginia Gazette.

<sup>6</sup>Emery and Smith, op. cit., p. 61.

<sup>7</sup>Cappon and Duff, op. cit., p. vi; and Microfilm of the Virginia Gazette, preface.



It is customary to refer to the Virginia Gazette, although there were at various times, one, two, and even three publications of the same title. References are made to the printers in order to distinguish which one is meant.

From 1736 to 1766, there was only one newspaper in Williamsburg, but on May 16, 1766, William Rind founded a second newspaper called Rind's Virginia Gazette. It was soon changed to The Virginia Gazette. William Rind published this second Gazette from 1766-1773. Upon his death, his widow, Clementina Rind, continued to print it for one year. John Pinkney took over this second Virginia Gazette upon the death of Clementina Rind, September 25, 1774, and printed the paper "for the benefit of Clementina Rind's estate."<sup>8</sup> Pinkney published the paper until February 3, 1776, when this second Gazette ceased. One significant change was introduced by Pinkney, when, starting with the December 6, 1775, issue, he printed his Gazette twice weekly.<sup>9</sup>

A third Virginia Gazette was founded in 1775 by Alexander Purdie, who had taken over publication of the original Gazette in 1765, and who was joined by John Dixon in the venture the following year. Purdie's Gazette was printed for only five years, from 1775 to 1779, when, at his death, John Clarkson, his nephew and also one of his printers, and Augustine Davis, assumed control of the paper. The last known issue of

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<sup>8</sup>Clarence S. Brigham, History and Bibliography of American Newspapers, 1690-1820 (Worcester, Mass.: American Antiquarian Society, 1947), p. 1161

<sup>9</sup>Microfilm of the Virginia Gazette, Checklist of the Virginia Gazette.

the third Virginia Gazette was December 9, 1780, and like Dixon and Nicolson, Clarkson and Davis transferred their shop and newspaper to Richmond.<sup>10</sup>

The various printers of the competing Virginia Gazettes are given below in chronological order:<sup>11</sup>

William Parks, 1736-50		
William Hunter, 1751-61		
Joseph Royle, 1761-65		
Alexander Purdie & Co., 1765-66		
Alexander Purdie & John Dixon, 1766-75	William Rind, 1766-73	
Dixon & William Hunter (Jr.), 1775-78	Clementina Rind, 1773-74	
Dixon & Thomas Nicolson, 1779-Apr., 1780	John Pinkney, 1774-76	Alexander Purdie, 1775-79
		John Clarkson & Augustine Davis, 1779-Dec., 1780

The Virginia Gazette followed the pattern of other papers in its method of news gathering. England, of course, was its main source of news and from London news of the rest of Europe was received. News received from London and printed in the Virginia Gazette was from two to four months old with the majority being two or two and one-half months old. From Paris, news items were from three to five months old when printed in the Gazette. By the time the Gazette was being published, intercolonial news was exchanged directly in most cases, but information concerning Philadelphia or Boston often would be received by way of London or Glasgow. The news from Boston and New York took about

<sup>10</sup>Brigham, op. cit., pp. 1158-62; Cappon and Duff, op. cit., p. vi.; and Microfilm of the Virginia Gazette, preface.

<sup>11</sup>Cappon and Duff, op. cit., p. vi.

one month to reach the pages of the Virginia Gazette, while that from Philadelphia required about one-half to one month.

Cappon and Duff state:

The Virginia Gazette contains little local news. The printers derived some news of other colonies and countries from travelers and their letters but more was copied from other newspapers.<sup>12</sup>

We can see in this method of news gathering that the colonial printer was limited in the scope of his material, as he was dependent on other newspapers or on correspondents for nearly all of his information. Evidently he printed what he had available from these sources and could not be too selective.

An evaluation of the Virginia Gazette during its early years has been given by John Esten Cooke. Of the four page weekly, he wrote:

It was a small, dingy sheet, containing a few items of foreign news; the advertisements of the Williamsburg shopkeepers; notices of the arrival and departure of ships; a few chance particulars relating to persons or events in the colony; and poetical "effusions," celebrating the charms of Myrtilla, Florella, or other belles of the period. Thus, "his Majesty's ancient and great Colony and Dominion of Virginia" had at last its newspaper; and if any event occurred of great interest or importance, the planters of the York or James were certain to hear of it in a week or two, though the incident had taken place as far off as the Blue Ridge or Valley. As to anything like free discussion of the government, that was not the fashion of the times, in newspapers; and the "Virginia Gazette" confined itself to the work of disseminating news.<sup>13</sup>

Professor Frank Luther Mott offered a somewhat more favorable appraisal of the Virginia Gazette:

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<sup>12</sup>Ibid.

<sup>13</sup>John Esten Cooke, Virginia, A History of the People (Boston: Houghton, Mifflin, and Company, 1890), p. 330.

. . . it was handsome typographically, and it was especially strong in its literary department. The "Monitor" essay series shows a mastery of light social satire unusual, if not unique, in colonial literature. Poetry, too, abounded in the Virginia Gazette, much of it, and probably much of the prose, coming from students and faculty of William and Mary College. Parks died in 1750; and William Hunter . . . conducted the paper for a little over a decade, maintaining its high literary and journalistic standing and increasing its advertising.<sup>14</sup>

The fact is that the Virginia Gazette filled a real need in the colony. It was a good newspaper for the times and added to the intellectual environment of the area surrounding Williamsburg. It included information about and advertisements from the entire colony. In that the government used them more and more for official notices, instead of depending entirely upon the parish churches as had formerly been the case, suggests that they were widely read.<sup>15</sup>

Many letters and essays were submitted to the Gazette by people in the surrounding area. Not until 1774 was a second newspaper founded outside Williamsburg. This was the Virginia Gazette or Norfolk Intelligencer. It lasted little more than a year. In the 1780's newspapers were established in Richmond, Winchester, Petersburg, Fredericksburg, and Alexandria.<sup>16</sup>

There were for a period of fourteen years, then, two Virginia Gazettes in Williamsburg, and for about one year as many as three.

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<sup>14</sup>Mott, op. cit., p. 41.

<sup>15</sup>James Kimbrough Owen, "The Virginia Vestry, A Study in the Decline of a Ruling Class" (Unpublished Ph.D. dissertation, Princeton University, 1948), p. 197.

<sup>16</sup>Brigham, op. cit., pp. 1112, 1116, 1129, 1134, 1140-1141, 1166-1167.

No comparative study has been made of the three papers, but their news sources were generally the same. Therefore, many of the same items were printed in both or all of the papers. This study includes material from all three newspapers. The fact that there were three different papers was helpful in cases where issues of one paper have been lost. The major variation that occurs is in contributions from local citizens. One of the important limiting factors in this study of the reporting of scientific information in the Virginia Gazette is the absence of many issues of the newspaper. The study is based on all known issues in the microfilm copy provided by the Institute of Early American History and Culture. Unfortunately, there are periods, some of considerable length, where no issues are available. A file of the Virginia Gazette owned by Thomas Jefferson and sold to the Library of Congress was completely destroyed by fire, December 24, 1851. "In the 1815 Catalogue of the Library Congress, p. 26, this early file is listed under 'Virginia Gazette from 1741 to 1783'," and evidently a fairly complete file was lost.<sup>17</sup>

The available issues of Parks's Virginia Gazette are not too many. Starting with issue no. 6 of September 6, 1736, the issues for the remainder of 1736 are preserved. The papers of 1737, 1738, and 1739 are nearly complete with only one issue missing in 1737, and two missing in each 1738 and 1739. The twenty-five year period from 1740-1765 has had few copies preserved; five in 1740; twenty-three in

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<sup>17</sup>Brigham, op. cit., p. 1159.

1745; twenty-one in 1746; fifty-one in 1751 and 1752; one in 1753, 1759, 1761, 1762, and 1763; two in 1754, 1756, and 1757; twenty-six in 1755; and none in 1758, 1760, 1764, and 1765. With the exception of 1751 and 1752, little can be derived from this period.<sup>18</sup>

Starting in 1765, when there were two newspapers being printed, there is a fairly complete number of issues preserved, but in many cases those available were able to fill in for missing issues of Purdie and Dixon. There are no issues of the Gazette for the first two months of 1766 as Purdie and Dixon started printing the paper on March 7, 1766, and Rind on May 16. The rest of the year is complete except for the last issue of the year. The year 1767 is also complete with the exception of the last issue. All but three issues for 1769, and eleven issues for 1770, are available in one or the other newspapers. A complete file of the paper is available for 1768, 1771 through 1777, and 1779, while there are only a limited number preserved in 1778 and 1780.<sup>19</sup>

This study is restricted in those cases where copies of the Gazette are missing. Especially harmful to the study is the great number of missing issues from 1740 to 1765. Nevertheless, enough information is available to get some interpretation of the newspaper coverage of colonial science in the Virginia Gazette.

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<sup>18</sup>Microfilm of the Virginia Gazette, Checklist of Virginia Gazettes.

<sup>19</sup>Ibid.

### CHAPTER III

#### MEDICINE

Discussion of medicine in the Virginia Gazette primarily concerned cures and remedies offered by quack practitioners, treatment of diseases, particularly smallpox, and reports on new and unusual medical cases. Local writings were augmented by extracts from newspapers and letters outside the colony, and some insights can be obtained regarding the importance of medicine and its development in Western society during the eighteenth century.

By far the largest number of science articles in the Virginia Gazette dealt with medicine and more particularly with smallpox. This could be expected in a society which was chiefly concerned with the practical and immediate uses of science. The newspaper provided its readers with arguments for and against inoculation for smallpox, a number of cures and new developments for treating diseases and ailments, news of epidemics both locally and in Europe, and occasionally the description of an unusual medical case.

The accepted treatment for most diseases included purging, bleeding, and large amounts of drugs, although there was a growing opposition to this type of treatment. Most of the medicines of the ancient masters were still used and people were reluctant to discard them.<sup>1</sup> "No branch of study," states Wolf, "was more bound by ancient

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<sup>1</sup>Abraham Wolf, A History of Science, Technology, and Philosophy in the Eighteenth Century (London: Allen and Unwin, 1952), pp. 494-95; and John Duffy, Epidemics in Colonial America (Baton Rouge: Louisiana State University Press, 1953), p. 8.

tradition than that of the art of healing."<sup>2</sup> Duffy related the feeling of John Oldmixon on this subject: "The Virginians have but few Doctors among them, and they reckon it among their Blessings, fancying the Number of their Diseases would increase with that of their Physicians."<sup>3</sup> The extreme faith in drugs, plus the high cost of them, invited large numbers of drug dispensers and quacks to concoct cures and remedies.<sup>4</sup> Also, the belief existed among many practitioners both in Europe and America, "that Americans required stronger doses of medicines."<sup>5</sup>

Added to this faith in traditional medicine was the lack of doctors, especially well trained ones, and the absence of licensing and regulation. Because aid from a doctor was scarce and expensive, most Americans were forced to use homemade and traditional remedies.<sup>6</sup> The Bridenbaughs, in describing the high caliber of medicine in Philadelphia, nevertheless point out the existence of a large number of quacks.

Lest this picture seem too bright, it must be remembered that quackery easily kept pace with the growth of legitimate medicine. There was no system of medical licensing, and nothing to prevent untrained apothecaries, barbers, or those who had failed in other lines of work from peddling their miraculous cures. The marks of the quack were his flamboyant advertisements,

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<sup>2</sup>Wolf, op. cit., p. 478.

<sup>3</sup>Duffy, op. cit., p. 8.

<sup>4</sup>Wolf, op. cit., pp. 494-95.

<sup>5</sup>Carl and Jessica Bridenbaugh, Rebels and Gentlemen, Philadelphia in the Age of Franklin (New York: Reynal and Hitchcock, 1942), p. 268.

<sup>6</sup>Bridenbaugh, op. cit., p. 276; Duffy, op. cit., pp. 7-10; and Fielding H. Garrison, History of Medicine (Philadelphia: W. B. Sanders Company, 1929), p. 406.



replete with fulsome testimonials, and his glowing promises to cure anything, but especially cancer and venereal diseases.<sup>7</sup>

The Virginia Gazette printed many advertisements and most of them fit the previous description of quack advertisement. Most of these have been left out of this discussion except where they add to the general description of science and medicine, such as the cure-alls of Constant Woodson. The following two advertisements will give some indication of the type printed in the Virginia Gazette.

Doctor Rowan, From London,  
Now at Mr. Robinson's in York,

Cures the scurvy, leprosy, ulcers, cancers, blotches, evil, old sores, green wounds, piles, fistulas, inside or out, without cutting, also deafness, and all inflammations in the head or eyes; he discharges all rheumatick and gouty pains out of the body and nerves, cures fevers, agues, yellow jaundice, scald heads, straightens crooked limbs, cures the headach [sic.] in a few minutes, cures the venereal with or without physick, discharges worms out of men, women, and children, and many other disorders too tedious to be inserted, though incurable to others, and on being conformable to directions. No cure no money.<sup>8</sup>

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Without entering into a long and tedious detail of the many disorders which (with the blessing of God) I am able to cure, and the operations I have performed in foreign countries, the happy experience of which has been authorized by certificates from Princes, Generals, Governours, and city corporations, and in particular from his Britannick Majesty King George III. . . .

I possess the most efficacious remedy to cure some sicknesses with which the country appears to me much afflicted, as all sorts of scurvy distempers. I cleanse the teeth with the utmost ease, and clear them of the scurvy in the gum, making the-teeth very white, without uneasiness to the patient. I cure distempers of the eyes, ears, and deafness, couching or taking away cataracts, though the

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<sup>7</sup>Bridenbaugh, loc. cit.

<sup>8</sup>Virginia Gazette (Purdie and Dixon), April 7, 1768.

person may have been deprived of sight or hearing for many years. Likewise I have an infallible remedy for all sorts of wounds, and scorbutick, schirrous, and scrophulous ulcers of all sorts, although of long standing, and though almost incurable.

I profess all sorts of operations in surgery and man midwifery, particularly women when in imminent danger of life.

All persons who live at too great a distance, or are prevented to come themselves by some desperate disorders, and that they have not proper convenience to send for me, by sending their urine they shall have proper advise, according to their disorders.

De Lacoudre, French Doctor,  
living in Norfolk.<sup>9</sup>

Medicines, medical books, and medical equipment were offered for sale in addition to the advertisements of doctors.

The subscriber, in Princess Anne county, having declined the practice of physick, surgery, and midwifery, has for sale a set of chirurgical instruments; also a collection of excellent treatises on physick, surgery, midwifery, and anatomy, by celebrated authors, among which are the famous Boerhaave's aphorisms, his chymistry, and his academical lectures, all as good as new; likewise some empty vials and gallipots. Any person in want of such may be supplied, very cheap, by

Christopher Wright<sup>10</sup>

A number of cures were included in the Virginia Gazette. These cures were mainly received from England, although local physicians also submitted papers prescribing treatments. Most of the cures told of cases in which a new drug or treatment had been tried, or accidentally tried, and had proved successful, while some were established cures submitted by trained doctors. Prevalent during this period were the cure-all drugs, medicines, and waters, some of which were local remedies while others reached world fame.

<sup>9</sup>Ibid., September 1, 1768.

<sup>10</sup>Ibid., August 15, 1766.

The use of medicinal waters to cure all disorders was common during the period. Virginia had a number of mineral springs, some of which were known for their cure of special ailments, while others would cure anything. J. F. D. Smyth, a traveler through Virginia in 1773, described the mineral springs near Petersburg:

About thirty miles higher up, on the side of this river, near one Ingram's plantation, there have been lately discovered some very valuable medicinal springs of mineral waters, which have already performed many most remarkable and astonishing cures on persons afflicted with various kinds of lameness, infirmity, and disease, who annually resort to these springs from an hundred and fifty miles around.<sup>11</sup>

Surprisingly enough, however, only one mention of such waters was made in the Virginia Gazette. This was in 1737, and it described the waters at Lough-Leighs in Ireland. These waters "perform such wonderful Cures for the Scurvy and Itch, Cancers, Scald-Heads, Sores, Scabs, Ulcers, and Venereal Disorders, that the People from all Parts of the Kingdom are flocking thither. . . . no Waters in Europe, are equal to these, both for internal and external Disorders."<sup>12</sup>

One of the best known cure-alls introduced by an American was senega or Seneca rattlesnake root (*Polygala senega*). John Tennent, of Virginia, wrote the first account of Seneca rattlesnake root and had it printed by William Parks in 1736.<sup>13</sup> Tennent advocated the use of senega

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<sup>11</sup>Wyndham B. Blanton, Medicine in Virginia in the Eighteenth Century (Richmond: Garrett and Massie, Inc., 1931), p. 9.

<sup>12</sup>Virginia Gazette (Parks), January 21, 1737.

<sup>13</sup>Garrison, op. cit., p. 376.

in the colonies and even made a trip to England in an attempt to have his new drug accepted. "Before the defects of his own character disgraced him, he won election to the Royal Society and a \$100 grant from the Virginia Assembly."<sup>14</sup>

Senega snake root was originally used in cases of rattlesnake bite due to the plant's resemblance in shape to a snake's rattle. Tennent in An Essay on the Pleurisy, parts of which were printed in the Virginia Gazette on March 4, 1737, showed the medical applications of senega and had the work circulated throughout Virginia. Copies of the forty-six page pamphlet were also sent to England and France.<sup>15</sup> A notice appeared in the Virginia Gazette on September 10, 1736, that An Essay on the Pleurisy had been printed and would sell for 1s. 10<sup>d</sup>. An advertisement for the pamphlet was in the issue of October 1, and Tennent's first article in defense of senega for the cure of the gout appeared in the October 8, 1736, issue of the Gazette.

His first article was a copy of his letter, "To the honourable Sir Richard Mead, M.D.," a London doctor. The main body of the letter is concerned with the usefulness of senega in curing the gout. In a second article, entitled An Essay on the Pleurisy, in the March 4, 1737, issue, he defended his pamphlet of the same name. An article against Tennent and his rattlesnake root appeared in the Gazette of June 10, 1737, and Tennent replied through the newspaper on July 15, and again

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<sup>14</sup>Brooke Hindle, The Pursuit of Science in Revolutionary America, 1735-1789 (Chapel Hill: University of North Carolina Press, 1956), p. 64.

<sup>15</sup>Blanton, op. cit., pp. 122, 128.

on December 16, 1737. This last article was a letter from Tennent while he was in London.

The Virginia Gazette ran a series of four articles in 1738 entitled "A Memorial, humbly addressed to the learned, impartial, and judicious World, by John Tennent, Practitioner in Medicine." The paper was written by Tennent after his return from England, and in it he not only presents his arguments for the use of Seneca rattlesnake root, but defends his actions in England.

Tennent was accused of scandal and misconduct in England, and acquired debts which he hoped could be paid for by a reward from the Virginia Assembly for his discovery. He received £100 of an expected £1000 from the Assembly and was later refused any compensation by the English Parliament. He returned to London in 1739 and further damaged his reputation by his association with the "famous quack," Dr. Ward. In an attempt to alleviate his debts, Tennent married a Mrs. Hanger and was arrested for bigamy for also "having kept 'one Mrs. Cary under the name of Mrs. Tennent'."<sup>16</sup> Some criticism in Virginia was directed against the title of the "American Doctor, who has discover'd a great Mystery," which Tennent used in England, but he stated that it was the best means of getting money for his work.<sup>17</sup> "Tennent's subsequent career was not a happy one, and much of his time seems to have been spent in writing pamphlets and broadsides in which he rehearsed his own story, excused his errors and denounced his enemies."<sup>18</sup>

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<sup>16</sup>Ibid., pp. 126-127. <sup>17</sup>Virginia Gazette (Parks), September 22, 1738.

<sup>18</sup>Blanton, op. cit., p. 126.

In the first part of the Memorial, Tennent discussed "impudent" people:

Impudence in this Case is very applicable, is but too true, with Respect to my free and open Publication of the Efficacy of the Seneca Rattle-Snake Root to this and the neighboring Colonies, subject to Pleuritick and Peripneumonick Diseases, that are Epidemical and very Mortal, and occur almost every Year; which has, from numerous Instances, been found a most successful Remedy in the Cure thereof.<sup>19</sup>

Tennent intermixed his medical information with criticisms and rebuttals, which at times made his writing confusing. Such criticism could be made of many of the writers in the Gazette.

Tennent was given recommendations in Virginia by William Gooch and William Byrd for his trip to England. After being reviewed in London, he was given credentials to the University of Edinburgh by Dr. Thomas Pellet, Dr. Richard Mead, and Dr. Monro.

We whose Names are under-written, do certify, That having examined and conversed with Mr. John Tennent, and having enquired into his Character, of which he has good Testimonials from Virginia, where he has lived and practised Physick for about Ten Years; We do find him well qualified for the Degree of a Doctor in Physick, and do therefore recommend him to the Professors of the University of Edinburgh, that he may be admitted to that Degree.

The. Pellet  
R. Mead  
Ja. Monro<sup>20</sup>

Tennent stated that these recommendations show "inconsistency with slanders," and this may indeed be true, although there were numerous cases of quacks who were able to fool the educated during this period.

<sup>19</sup>Virginia Gazette (Parks), September 22, 1738.

<sup>20</sup>Ibid.

Certainly the recommendations indicate he was well backed; William Gooch was the Governor of Virginia; William Byrd was very influential in Virginia, a member of the Council, and was known for his interest in science; Richard Mead was "Head of the Republic of Learning in Physick,"<sup>21</sup> and was apparently a very able and popular doctor as he "became the most prosperous practitioner of his time;"<sup>22</sup> Thomas Pellet was president of the College of Physicians.<sup>23</sup>

Equipped with his recommendations for a Doctor's Degree at Edinburgh, Tennent failed to attain the degree, but stated that they gave "diplomas mercenarily, to those who deserve them not."<sup>24</sup> Tennent also showed his bitterness against his medical opponents by referring to all who opposed Seneca rattlesnake root as quacks.<sup>25</sup>

The lengthy Memorial in the Gazette, which occupied most of the first two pages of the newspaper for four consecutive weeks, was an attempt to show the effectiveness of Seneca snake root in any disease involving a coagulation of the blood. Tennent stated that he had seen "Pleurisies, Peripneumonies, tertian and quartan Agues, Dropsies, Rheumatick and Paralytick Cases cured by it, and the Gout much relieved; and therefore hope I may say, without such an Imputation as Arrogance or Ostentation, that I have Reason to think I judg'd in this Matter rightly."<sup>26</sup> Tennent reasoned that the rattlesnake venom caused

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<sup>21</sup>Ibid.

<sup>22</sup>Garrison, op. cit., p. 390.

<sup>23</sup>Virginia Gazette (Parks), December 16, 1737.

<sup>24</sup>Ibid., September 29, 1738.

<sup>25</sup>Ibid.

<sup>26</sup>Ibid., October 13, 1738.

coagulation of the blood because a bitten man spits up coagulated blood. Further, stated Tennent, since all coagulation results from the separation of like from unlike materials, there is a relationship in the coagulation of all fluids. Tennent, by showing that coagulation can result from a number of actions, concluded:

. . . whence it appears, that tho' a Coagulation of the Blood will produce different Diseases according to the Circumstances of the Constitution when they arise; yet the Seneca Rattle-Snake Root promises to be serviceable in them, because of the Analogy prov'd between all Coagulations. In what Cases it will be of greater or lesser Service, Experience must determine.<sup>27</sup>

Following this reasoning, Seneca snake root could be used for many disorders even though the symptoms or effects of the disorders might differ. In his article on the gout, Tennent used the same reasoning as he had in the case of pleurisy; the coagulation of the blood in gout was the same as that in rattlesnake poisoning.

That since the Cure of the Gout (if the Expression may be allowed) consists in hindering the Union of those Particles, which form a tenacious Matter, that stagnates in and about the Joints; or in dividing and reducing it to a fit Minuteness; for the common Secretions when formed or united, the Rattle-Snake Root is the most likely Thing to effect these Operations, because it dissolves the Grumes and Coagulation of the Blood, caused by the Rattle-Snake's Venom . . . .<sup>28</sup>

Tennent, in the same article, stated that he believed senega to be effective also in curing consumption, dropsy, and rabies. Writing from England in 1737, he stated: "But now, since it is plainly proved by Experience, that the Rattle-Snake Root cures the Pleurisy, I suppose the next objection against it is, that it can cure nothing else."<sup>29</sup>

<sup>27</sup>Ibid., October 13, 1738.

<sup>28</sup>Ibid., October 8, 1736.

<sup>29</sup>Ibid., December 16, 1737.



Tennent further stated, "This Root is certainly one of the best Medicines in the world, and adapted to most Diseases which Virginia is subject to."<sup>30</sup> Another time he made the very bold claim that Seneca snake root "recovers the patient in any stage of diseases" and "will be of more extensive Use than any Medicine in the whole Materia Medica."<sup>31</sup>

Judging from the numerous censures of Tennent and his rebuttals to opponents in the Gazette, he apparently met with considerable opposition, although only one such article was printed. This one article was sent to William Parks by I. C. and was signed Philo-Mathesis. I. C. stated that Tennent makes "false suggestions" and "censures a Faculty" for their opposition to his Essay on the Pleurisy. I. C. argued that coagulations aren't similar, even those of pleurisy and rattlesnake venom; "for undoubtedly, if either the Fluids differ, or the interposing Matters differ in their component Parts, the Coagulum must certainly differ in a Reciprocal Ratio."<sup>32</sup> Tennent replied to I. C. that there is a difference in the composition of fluids, but during coagulation and the change from a liquid to a solid all materials react exactly alike.<sup>33</sup>

An article in defense of Tennent was printed in the Virginia Gazette on August 17, 1739. It was from the Pennsylvania Gazette, and was a letter from Thomas Bond in Paris. Thomas Bond stated that the senega sent to France had been tried by Jussieu, the well known French botanist, and others, and was found to be very effective for pleurisy.<sup>34</sup>

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<sup>30</sup>Ibid.

<sup>31</sup>Ibid., October 6, 1738.

<sup>32</sup>Ibid., June 10, 1737.

<sup>33</sup>Ibid., July 15, 1737.

<sup>34</sup>Ibid., August 17, 1739; This letter was sent to Benjamin Franklin by Phineas Bond. Ibid.

The Memorial by Tennent was by far the longest article found in the Virginia Gazette on science. His shorter Essay on the Pleurisy, plus his other three articles which appeared in the newspaper, were mainly a stating and restating of his concept of coagulation and the effectiveness of senega. Many of Tennent's difficulties apparently developed when he expanded the use of senega from a cure for rattlesnake bite and pleurisy to a cure-all. Even though senega wasn't all that Tennent claimed it to be, it was included as a new drug in the sixth Pharmacopoeia, which was printed in 1788.<sup>35</sup>

As mentioned, Tennent had been associated with another cure-all physician, Joshua Ward, while in England in 1739. Ward gained fame in England with a number of pills and powders for various diseases. His patients included many of the leading persons in England, among them George II. Blanton states that John Tennent damaged his reputation by his association with Ward in 1739, but Ward was protected from any action by the College of Physicians in regard to the Parliamentary Act of 1748, which "restricted the practice of medicine."<sup>36</sup> This would indicate a respect for Ward, at least among the non-medical group, far beyond 1739.<sup>37</sup>

One notice is made of Ward in the Virginia Gazette. This was a short article from York, England, which told about Ward's visit to his birthplace, Gisborough. It related the great enthusiasm shown by the people who sought his aid, the crowds being four or five hundred per

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<sup>35</sup>Garrison, op. cit., p. 392.      <sup>36</sup>Ibid., p. 386.

<sup>37</sup>Ibid., pp. 385-386; and Blanton, op. cit., pp. 129, 181, 213.

day. "And tho' he stay'd but a small Time, it's wonderful to think the many extraordinary Cures he made, and great Good he did there."<sup>38</sup> This article indicates the great public popularity of Ward. Apparently, then, criticism against him came from medical opponents and doctors.

Two articles appeared in the Gazette about Joanna Stephens and her cure for stones. The first was a short article which announced that Mrs. Stephens would be given £5000 for her cure, if the cure was approved by the group of physicians and surgeons appointed by Parliament.<sup>39</sup>

The second article covered more than a page of the Virginia Gazette and was "published by order of the Trustees named by Parliament for providing a reward to Joanna Stephens upon the discovery of a medicine for cure of the stone."<sup>40</sup> This was a detailed description of the preparation and usage of the "powder, decoction, and pills" of Mrs. Stephens. These unpleasant mixtures consisted of burnt egg shells, snails, herbs, soap, pig cresses, honey, wild carrot and burdock seeds, hips, hawes, and water.<sup>41</sup> Garrison stated: "In each one of her certified 'cures,' the stone was found in the bladder after death."<sup>42</sup>

The cure-alls of Tennent, Ward, and Stephens appeared in the newspaper in the 1730's, but such cures were not restricted to that early period. Constant Woodson of Prince Edward County, Virginia, had a proposed cure for cancer, and this resulted in four letters being

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<sup>38</sup>Virginia Gazette (Parks), December 2, 1737.

<sup>39</sup>Ibid., July 13, 1739.      <sup>40</sup>Ibid., October 5, 1739.

<sup>41</sup>Ibid.      <sup>42</sup>Garrison, op. cit., p. 386.

printed in the Virginia Gazette in 1766. The first letter was written by a Mr. Thomas Dosson, who testified to the marvelous work done by Mrs. Woodson in curing cancer. Dosson stated he had had cancer on his neck, "to the bigness of a pint bowl," and after trying a number of doctors was directed to Constant Woodson. "I accordingly applied to her," Dosson continued, "and soon obtained relief; I did not suffer so much in the whole cure as I did in 24 hours with others. She seemed to make a trifle of it; and she cured many others whilst I was with her."<sup>43</sup>

Dosson's letter appeared in Purdie and Dixon's Virginia Gazette in October, 1766, and the next testimonial for Mrs. Woodson appeared in Rind's Virginia Gazette in March, 1768, although it had been written in November, 1767. James Kirk was the sender of the second letter, and he related the cure of his wife's breast cancer.<sup>44</sup> Both Dosson's and Kirk's letters appeared in the advertisement section of the newspaper, so it is possible they could have been paid for.

Less than two months after Kirk's letter, one signed by Constant Woodson was printed in the newspaper. She asked any doctor who had failed to cure a cancer to send their patients to her; in particular she mentioned Dr. Brown of Southhampton and Dr. Walker of Hanover.<sup>45</sup> Dosson had mentioned a Dr. Hunter, who had been unsuccessful in curing his cancer, and Kirk had stated of his wife, "She applied to every

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<sup>43</sup>Virginia Gazette (Purdie and Dixon), October 17, 1766.

<sup>44</sup>Virginia Gazette (Rind), March 31, 1768.

<sup>45</sup>Ibid., May 12, 1768.

person of skill that she could hear of, and amongst the rest to Doctor FLEMING, and Doctor CABELL.<sup>46</sup> There are no indications as to why she singled out these few among "all Doctors in medicine," unless she was trying to draw away their patients, or was trying to counter claims against her ability to cure cancer.

The June 16 issue of the Virginia Gazette, one month after Mrs. Woodson's letter, contained a second letter by James Kirk. Kirk denounced Mrs. Woodson's cure of his wife and gave some indication that the first Kirk letter had been written by Mrs. Woodson. Kirk stated:

Whereas Constant Woodson, of Prince Edward county, hath lately published to the people of this colony, that she hath cured several women of the cancer, particularly Agness Kirk, of this county, and proposes to exert her utmost skill to cure all who are pleased to apply to her, that are troubled with that disease; and lest any person should be imposed upon by the false pretensions of an unskilful physician, to their loss and disadvantage, I have taken this method to inform the public, that her endeavours to cure Agness Kirk have proved ineffectual, and so far from producing a perfect cure (as Mrs. Woodson proposed) that she hath been much worse with that disease since she dealt with her than she ever was before, and also with others, which by two skilful and able physicians, is attributed to the improper medicines Mrs. Woodson applied for the recovery, insomuch that she hath been confined to her bed, in a languishing condition, for upwards of three months. Therefore to prevent the like inconveniencies to others I thought proper to acquaint the public with the above, as their real friend, and humble seryant,

JAMES KIRK<sup>47</sup>

A last item in the Virginia Gazette concerning Mrs. Woodson indicated her practice of curing cancer was continuing in 1770, and that her work was still held in high esteem, at least by this writer.

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<sup>46</sup>Ibid., March 31, 1768.

<sup>47</sup>Ibid., June 16, 1768.

On the 4th instant died, of that painful and lingering disorder a cancer, Mr. Anthony Hay, a master of the Raleigh tavern in this city. He underwent several severe operations, in his lip and face, for the disorder, at home; and at length went (unhappily too late) to Prince Edward, where he was some time under the care of Mrs. Woodson, famous for the cures she has made.<sup>48</sup>

Several more cures for cancer were submitted to the newspaper. Occasionally, a person would inquire through the Virginia Gazette for information about cancer.<sup>49</sup> Luther Martin and Mace Picket answered William Hansbrough and offered the names of people successful in treating cancer.<sup>50</sup> A letter from London contained an unusual, but interesting, cure written by "a Lady whose veracity it is said is not to be doubted." This remedy for breast cancer consisted of placing eight toads in muslin bags and applying them, like leeches, to the cancer. The toads would draw out the cancerous material and would drop off "in agonies, terrible to behold." One hundred twenty toads were used before the cancer was completely healed. The writer added that this had been successful, not once, but several times.<sup>51</sup>

Many mentions were made in the Virginia Gazette of fevers. The fevers referred to were sometimes identified as yellow fever, but generally were not identified and could have included yellow fever, malaria, dysentery, typhoid, typhus, or others of lesser severity.<sup>52</sup> Only two

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<sup>48</sup>Virginia Gazette (Purdie and Dixon), December 13, 1770.

<sup>49</sup>Virginia Gazette (Parks), September 1, and November 17, 1738.

<sup>50</sup>Virginia Gazette (Purdie), June 6, June 20, and July 11, 1777.

<sup>51</sup>Virginia Gazette (Purdie and Dixon), September 1, 1768.

<sup>52</sup>Duffy, op. cit., p. 202.

articles dealt with the description and care of fevers, the remainder told of areas suffering from fever.

The two discussions of fevers were both written by J. D., who apparently is John Dalgleish of Norfolk, Virginia.<sup>53</sup> Both articles were largely devoted to his beliefs on the practice of medicine.

In his first article, Dalgleish warns of the "supine negligence" by the people regarding the fever occurring in Norfolk and Princess Anne counties. This negligence, he stated, "may have been occasioned by the too confident and too long continued assertion of some that this fever is not catching."<sup>54</sup> Fever in humans, Dalgleish indicated, and distemper in animals were the same disease, although it could be cured easier in humans due to the simple stomach. Dalgleish concluded that he had been successful in finding a new cure for the fever, but didn't describe the cure.<sup>55</sup>

The accounts of fever printed in the Virginia Gazette were generally extracts from other newspapers or letters of news from ships, which had come from or had heard of the epidemics. The accounts were sometimes listed as separate news items, but usually were a sentence or two in the midst of shipping or general news. A ship reached Boston in October, 1738, with news of fever and smallpox on Antiqua Island in the

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<sup>53</sup>This assumption is based on earlier letters printed in the Virginia Gazette in which J. D. is referred to as John Dalgleish.

<sup>54</sup>Virginia Gazette (Purdie and Dixon), April 20, 1769.

<sup>55</sup>Ibid., November 8, 1770.

West Indies,<sup>56</sup> and another, in January, 1739, of yellow fever at St. Christophers in the West Indies.<sup>57</sup> A month later, at New York, news was received that the yellow fever continued at St. Christophers with many having died.<sup>58</sup> Other mentions of yellow fever or black vomit were: Florida, in 1739;<sup>59</sup> Kingston, Jamaica, in 1751, where five or six whites were dying per day;<sup>60</sup> Trinity and St. Pierre, Martinico, in 1771;<sup>61</sup> Dunkirk, in 1773;<sup>62</sup> and Bridgetown, in 1773.<sup>63</sup> References only to epidemical fever were: Dominica, in 1767;<sup>64</sup> Guadeloupe and the other French islands, in 1768;<sup>65</sup> the Isle of Man, in 1770; from which it was felt there was danger of it spreading to England;<sup>66</sup> Hispaniola, in 1771;<sup>67</sup> the Lewis Islands, in 1772;<sup>68</sup> Rockfort, Belgium, in 1773;<sup>69</sup> Seisensels, in 1773, where they had appealed to the government "to appoint nine days prayers to be put up to St. Stephen to stop its progress";<sup>70</sup> and New York, in 1777, among the Continental prisoners.<sup>71</sup>

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<sup>56</sup>Virginia Gazette (Parks), October 20, 1738.

<sup>57</sup>Ibid., March 9, 1739.

<sup>58</sup>Ibid., April 13, 1739.

<sup>59</sup>Ibid., January 18, 1740.

<sup>60</sup>Virginia Gazette (Hunter), December 19, 1751.

<sup>61</sup>Virginia Gazette (Purdie and Dixon), September 5, 1771.

<sup>62</sup>Ibid., March 11, 1773.

<sup>63</sup>Ibid., March 10, 1774.

<sup>64</sup>Ibid., December 10, 1767.

<sup>65</sup>Ibid., July 28, 1768.

<sup>66</sup>Ibid., February 7, 1771.

<sup>67</sup>Ibid., August 29, 1771.

<sup>68</sup>Ibid., January 14, 1773.

<sup>69</sup>Virginia Gazette (Rind), June 10, 1773.

<sup>70</sup>Ibid., April 22, 1773.

<sup>71</sup>Virginia Gazette (Dixon and Hunter), June 27, 1777.



One cure for the whooping cough was printed in the Virginia Gazette. It was a prescription by a Dr. Amson and is a good example of the treatment for illnesses in the colonial period. The following is the prescription:

It will be proper to begin with a Vomit, of an infusion in boiling water of Ipecacuanha, with the addition of Oxytel of Squills, and once in five or six Days to purge gently with a little Manna and Cream of Tartar, or the like; having Regard to the Age of the Child. For a Boy of 10 Years old, 25 Grains of Ipecacuanha with a Spoonful of Oxytel, will be a proper Dose.

It will be proper to work it off with Camomile Flower Tea, and to give, when it has done working, thirty or forty Drops of Elixir Paregoticum in a little Pennyroyal Tea and Mint Water, sweetened a Pleasure; and this is proper to be given every Night.

Give every Day, once in 2 or 3 Hours, a Spoonful of the following Mixture: Take two Drachms of Gum Ammoniac, dissolve them in a Pint of Pennyroyal Tea, strain it off, and add four Spoonfuls of Honey, and Half a Pint of the following:

Take two Hundred Woodlice, wash them in wine, then press out the Juice, and mix it with a Pint of White Wine, in which two Drachms of Saffron have been infused.<sup>72</sup>

These articles, mentioned above, give a representative view of the cures and remedies reported in the Virginia Gazette. Brief mention may be made of other occasional articles which were printed.

Two short articles dealt with a cure for snake bite; one, in 1739, related a Sweet Oil treatment presented to the Royal Society;<sup>73</sup> the second, in 1755, stated that Adder or Serpent Stone was actually burnt Hartshorn, and described its use.<sup>74</sup> An extract from Paris stated

<sup>72</sup>Ibid., September 27, 1776.

<sup>73</sup>Virginia Gazette (Parks), September 21, 1739.

<sup>74</sup>Virginia Gazette (Hunter), March 21, 1755.

that Monsieur Pereyre was successfully developing a "method of bringing persons born deaf to speak. . . ."75 A rather lengthy, but plainly-written article described a mad dog, the dangers of his bite, the symptoms of the resulting disease and the treatment for the disease.76

Landon Carter, a member of the Society for the Promotion of Useful Knowledge in Williamsburg, expressed his views on the Quarantine Laws of Virginia and on a means of preventing the Plague. Carter advocated fumigation due to its success in Russia and included a formula for fumigation powder. Also, in the article Carter briefly commented on the relationship between England and its American colonies.77

Many of the short extracts of letters printed in the Virginia Gazette were of unusual medical cases and hence would interest the reading public. Several unusual surgical cases were printed in the Gazette,78 as were several new surgical techniques.79

The disease which received the most attention in the Virginia Gazette was smallpox. Several things seem to account for this, one being the widespread distribution of the disease. Some epidemic area

75 Ibid., February 13, 1752.

76 Virginia Gazette (Rind), August 13, 1767.

77 Virginia Gazette (Purdie and Dixon), December 3, 1772.

78 Virginia Gazette (Parks), September 7, 1739; Virginia Gazette (Hunter), April 3, 1752; and Virginia Gazette (Purdie and Dixon), September 22, 1768.

79 Virginia Gazette (Hunter), December 19, 1751; Virginia Gazette (Purdie and Dixon), October 4, 1770; and Virginia Gazette (Rind), October 22, 1772.

in Europe and America seemed to be in existence at nearly all times to remind people of the devastating effects. It seems to have been feared more in America than in England. This was probably due to its sporadic outbreaks here, while it was constantly among the more crowded populous of England. According to the records of Dr. James Jurin of the Royal Society, from 1681-1723 the deathrate for smallpox in the area of London was one out of fourteen, while those having the disease were two out of eleven. The deathrate in America seems to have been lower, although the records of Dr. William Douglas gave the deathrate for the Boston epidemic of 1721 as one out of seven. This epidemic, however, was one of the worst during the colonial period.<sup>80</sup>

Smallpox spread from time to time throughout the American colonies. The areas that suffered most were the port cities, particularly Boston and Charlestown. The middle colonies seem to have been hardest hit by the disease, while New England had occasional epidemics. The least affected area, other than Charlestown, was the more sparsely populated Southern colonies, and Virginia had the least trouble with smallpox in that area. Virginia had minor outbreaks of the disease in the first few years of the eighteenth century, and in 1715, 1737, 1748, and 1768.<sup>81</sup>

A major controversy developed in the eighteenth century, both in Europe and America, over the practice of inoculation. In trying to combat a disease as deadly as smallpox, many remedies were tried.

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<sup>80</sup>Duffy, op. cit., pp. 16-22.

<sup>81</sup>Ibid., pp. 69-102.

Inoculation was one of the most successful methods. A type of immunity had been known about and used in the Near and Far East for several centuries or more before it was introduced into Europe. The first evidence of the introduction of inoculation into England was a description of the operation in letters from Greece and Turkey to several members of the Royal Society. Accounts of inoculation were printed in the Philosophical Transactions of the Royal Society by Dr. John Woodard in 1714 and by Hans Sloane the following year. Little popular support for inoculation was generated until Lady Mary Wortley Montagu, wife of the British ambassador to Turkey, had her son successfully inoculated in 1718 and her daughter in 1721. The practice spread among the upper class families, including that of George I, but at the same time opposition began to develop.<sup>82</sup>

There was opposition to inoculation for several reasons; one was religious beliefs. Duffy states, however, that acceptance of inoculation was largely accomplished by the support of the clergy, while the opposition based on religious principles came largely from the lay group.<sup>83</sup> The primary opposition came from those who felt that inoculation increased the danger of smallpox by spreading it and introducing it into areas not presently affected. "While most of the opposition was essentially irrational, the claim that inoculation could spread the smallpox was correct."<sup>84</sup>

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<sup>82</sup>Walter R. Bett (ed.), The History and Conquest of Common Diseases (Norman: University of Oklahoma Press, 1954), pp. 51-54; and Duffy, op. cit., pp. 24-26.

<sup>83</sup>Duffy, op. cit., pp. 30-32.

<sup>84</sup>Bett, op. cit., p. 52.

The opposition against inoculation gained strength during the 1720's due to the unrestricted practice of inoculators and deaths from inoculation in several important families. It has been the general assumption that inoculation fell into disuse from 1728-1743, although strong evidence has shown that the practice continued in England during the entire period.<sup>85</sup>

Inoculation was introduced to America in 1721 by Zabdiel Boylston and Cotton Mather during the epidemic in Boston. Approximately four hundred people were inoculated with only twelve deaths. The practice slowly spread, until the successful use of it by Dr. James Kilpatrick in Charlestown in 1738 brought a general acceptance. It was used in most of the colonies by 1750. "In England, where variolation was restricted to a relatively small percentage of the upper classes during the eighteenth century, the practice was of doubtful value; but in the British American colonies, where it was given a more extensive trial, it was an important factor in reducing smallpox fatalities."<sup>86</sup> Opposition to inoculation continued, however, throughout the eighteenth century, even among many who admitted its effectiveness. Outright opposition changed to a desire for the colonial legislatures to effectively regulate the practice.<sup>87</sup>

A number of extracts were printed in the Virginia Gazette concerning smallpox in Europe. The majority of these appeared in the

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<sup>85</sup>See Genevieve Miller, "Smallpox Inoculation in England and America: A Reappraisal," William and Mary Quarterly (October, 1956), Vol. XIII, pp. 476-492.

<sup>86</sup>Duffy, op. cit., p. 24.

<sup>87</sup>Ibid., pp. 23-42.

period 1768-1769 and concerned inoculation. Although inoculation had been used for quite some time, there was still a great deal of opposition to it in the 1760's. A note from London stated that an "eminent dissenting minister" refused to pray for the Prince of Wales because his inoculation for smallpox placed him in "hands of men, not God."<sup>88</sup> Another note from London stated that Dr. Rosty, of the College of Physicians in Paris, had introduced inoculation into France and had been visiting England to learn more about the method.<sup>89</sup> A month later, however, the College of Physicians in Paris voted 32-23 against the use of inoculation.<sup>90</sup> Later in the summer of 1768 an essay by Voltaire on smallpox inoculation appeared in the Gazette. Voltaire was the leading advocate for inoculation in France.<sup>91</sup> Voltaire condemned the French for their refusal to accept inoculation. He introduced his essay by stating:

It is inadvertently affirmed in the Christian countries of Europe that the English are fools and madmen: Fools because they give their children the smallpox, to prevent their catching it; and madmen, because they wantonly communicate a certain and dreadful distemper to their children, merely to prevent an uncertain evil. The English on the other side, call the rest of the Europeans cowardly and unnatural: Cowardly, because they are afraid of putting their children to a little pain; unnatural, because they expose them to die one time or other of the smallpox. But that the reader may be able to judge whether the English, or those who differ from them in opinion, are in the right, here follows the history of the famous inoculation which is mentioned with so much dread in France.<sup>92</sup>

In relating the development of the method of inoculation among the Turks

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<sup>88</sup>Virginia Gazette (Purdie and Dixon), May 16, 1766.

<sup>89</sup>Ibid., April 28, 1768.

<sup>90</sup>Ibid., May 26, 1768.

<sup>91</sup>Bett, op. cit., p. 53.

<sup>92</sup>Virginia Gazette (Purdie and Dixon), August 11, 1768.

and Persians, Voltaire exclaimed; "had the Lady of some French Ambassa-  
dour brought the secret from Constantinople to Paris the nation would  
have been for ever obliged to her." Voltaire concluded: "But are not  
the French fond of life, and is beauty so inconsiderable an advantage as  
to be disregarded by the Ladies? Perhaps our nation will imitate, ten  
years hence, this practice of the English if the clergy and the physi-  
cians will but give them leave to do it; or possibly our countrymen may  
introduce inoculation three months hence in France out of mere whim, in  
case the English should discontinue it through fickleness."<sup>93</sup>

Two final notes of opposition to inoculation from Europe, which  
appeared in the Virginia Gazette were: the burning of the house in  
Yaxley, England, which had been used for inoculation by Doctor Sutton  
and Doctor Bond;<sup>94</sup> and the discrediting of the method in Vienna due to  
the Archduke Ferdinand's slow recovery from inoculation.<sup>95</sup> Only the  
year before, the Empress at Vienna had proposed to reward the soldiers  
who had their children inoculated.<sup>96</sup>

The Virginia Gazette printed three articles on the successful  
inoculation of Czarina Catherine II of Russia. Catherine and her son  
were inoculated in 1768 by Dr. Thomas Dimsdale, an English physician.  
With the successful completion of Catherine's inoculation, one day  
church services were held in Russia, and Catherine was praised in the  
Virginia Gazette: "We think this ought to be told to the honour of the

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<sup>93</sup>Ibid.

<sup>94</sup>Ibid., June 23, 1768.

<sup>95</sup>Virginia Gazette (Rind), June 29, 1769.

<sup>96</sup>Ibid., September 15, 1768.

Empress, that in a country where the practice of inoculation was unknown that the Empress suffered the first experiment to be made upon herself; a noble instance of her Majesty's great resolution and firmness of mind, as well as uncommon attention to the welfare of her people."<sup>97</sup> Dimsdale received for this service the title of a "Baron of the Russian Empire," the rank of Major General in the Medical Corps, 2000 pounds for the expenses of his trip, 10,000 pounds for the inoculation, plus 500 pounds per year till his death.<sup>98</sup> In addition, Dimsdale was to head the planning of several inoculation hospitals in Russia.<sup>99</sup>

Other mentions of smallpox in Europe included the acceptance of Sutton's method of inoculation in the European settlements of Asia;<sup>100</sup> the successful inoculation of "his Royal Highness Prince William Henry, and the Princess Royal" of England;<sup>101</sup> the death of 16,000 persons in Naples from smallpox;<sup>102</sup> awards to Sir John Pringle for his leadership in introducing inoculation into England;<sup>103</sup> and the announcement that the royal family of France and their relatives were to receive smallpox inoculations in hope of setting a pattern for the rest of Europe.<sup>104</sup>

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<sup>97</sup>Virginia Gazette (Rind), February 9, and March 16, 1769.

<sup>98</sup>Ibid., March 23, 1769.

<sup>99</sup>Ibid., March 30, 1769.

<sup>100</sup>Ibid., October 13, 1768.

<sup>101</sup>Ibid., February 9, and March 16, 1769.

<sup>102</sup>Ibid., March 23, 1769.

<sup>103</sup>Virginia Gazette (Purdie and Dixon), April 6, 1769.

<sup>104</sup>Ibid., September 1, 1774.



The articles on smallpox which were more directly related to the area around Williamsburg were mainly concentrated in the period 1768-1772, as only six articles were found before 1768 and five after 1772.

The earliest of these articles to appear in the Virginia Gazette was an extract from Gentlemen's Magazine, August, 1736. It was written by a Dr. Bettenson, of Bath, England, and prescribed a treatment for smallpox. Dr. Bettenson advised the use of wine, from one to three quarts per day, as a means of strengthening the blood and carrying the pox away from the head and chest. He stated that "Bleeding and Purging have had ill Success in London," and "Giving the Blood more Life and Strength, is the only rational Way to secure People."<sup>105</sup>

Another extract from London told of a cure in which only toast and water were given to the patients.<sup>106</sup>

A third method of treatment came from Charlestown, South Carolina, where during the outbreak of smallpox they had been advised to use tar water, which "would cleanse their Bodies and thereby cause the Pock to be favourable." The tar water was a mixture of two quarts tar to two and one-half quarts of water, which after settling was to have been drunk a pint a day for a week, diminishing to one-fourth pint the second and third week. This, the writer claimed, had proven to be better than inoculation.<sup>107</sup> This is very similar to, and probably the same, cure proposed by William Byrd in a letter to Sir Hans Sloane in

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<sup>105</sup>Virginia Gazette (Parks), January 7, 1737.

<sup>106</sup>Ibid., June 3, 1737.

<sup>107</sup>Ibid., August 11, 1738.

August, 1737. It also appeared in the Pennsylvania Gazette on March 3, 1737.<sup>108</sup>

The first mention in the Virginia Gazette of inoculation appeared in October, 1737, and was an account of the successful use of this method in Philadelphia. Of the one hundred twenty-nine inoculated by Doctors Kearsley, Zachary, Hooper, Cadwallader, Shippen, Bond, and Sommans, only one died.<sup>109</sup>

A final item appeared during this early period which told of the continuance of smallpox in South Carolina and the subsequent passage by the Assembly of an act forbidding inoculation within two miles of Charlestown.<sup>110</sup> This law had been passed in 1738. Since opposition remained very strong against inoculation, even after its proven success, most of the colonies forbade inoculation at one time or another. Inoculation probably helped spread smallpox in some areas where the practice was carelessly handled. Most colonies, however, allowed inoculation by 1760, but passed laws to regulate the process.<sup>111</sup>

The outbreak of smallpox in Virginia in 1752 prompted R. W. to send a letter to the Virginia Gazette on the treatment of smallpox. In his letter, R. W. gave a history of smallpox, beginning with the Ethiopians, and a history of inoculation. An early method used by the Chinese was to place dried smallpox scabs in the nose and in this way

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<sup>108</sup>Duffy, op. cit., p. 82.

<sup>109</sup>Virginia Gazette (Parks), October 21, 1737.

<sup>110</sup>Ibid., April 13, 1739.

<sup>111</sup>Duffy, op. cit., pp. 37-40.

transfer the disease. This method was tried by Dr. Mead in England. The colonists had advantages over the European, claimed R. W., for they could first inoculate the Negroes; plus, they were less crowded. R. W. added, "People of Quality and Fortune in England have much embrac'd it, doubt not it will soon be universal." R. W. included a description of inoculation which he considered a very simple operation.

It's true there is very little Skill required in the Operation, being nothing more than making an Incision in that Part of each Arm where Issues are generally placed, and conveying into them some of the infectious Matter; but every prudent Person ought to have it done under the Inspection of a Practitioner in Physick, as Accidents may happen which require Judgement. And there ought to be some Regard had to the Quantity of Infectious Matter applied, the common Method of Practice has been, to open a well-ripen'd Pock, of a Person who has had the distinct Kind, and dip in it a Dossil of Lint, which when applied to the Incisions, seldom fails to procure the Disease.<sup>112</sup>

Not only was there disagreement whether or not inoculation should be used, but there was also disagreement over the particular method of transferring the disease. The method of transferring the disease varied, as did the means of preparing the patient for inoculation. In parts of the Far East an attempt to accomplish immunity was made by placing pox in the nose. By inhaling, the disease could be transferred. Another method advocated by some doctors and practitioners was to place the patient in direct contact with a person who had the mild form of smallpox. Inoculation, the most used method in Europe and America until vaccination, varied according to the amount of the infectious material placed in the incision, the form of smallpox from which the infectious

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<sup>112</sup>Virginia Gazette (Parks), March 12, 1752.

material was taken, and the stage of the disease when the infectious material was obtained. The method of transferring the disease by inoculation seems to have been preferred over the inhaling or direct contact method by the writers in the Virginia Gazette, although some indicated that all would work. An extract from the writings of Dr. Bromfield, "surgeon to her Royal Highness the Princess Dowager of Wales, and to St. George's and the Lock hospitals," contained arguments in favor of Dimsdale's method of preparing patients for inoculation, as opposed to Sutton's. The main opposition to Sutton was that he didn't vary the treatment according to the health and age of the patient. Bromfield also believed inoculation to be milder than the direct method for taking smallpox.<sup>113</sup>

Bromfield's preparation of the patient was very similar to Dimsdale's, which later appeared in the Virginia Gazette.<sup>114</sup> Their preparation called for emptying the stomach and bowels with several purges, followed by a very light diet free of meat and liquors. Dimsdale started this ten days prior to inoculation and included "preparative powders" consisting of calomel, powder of crab claws, and tartar emetic.<sup>115</sup> John Dalgleish opposed this type of preparation:

I vex not my young patients with the lancet, purges, meagre diet, etc. previous to inoculation, nor do I seize them afterwards

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<sup>113</sup>Virginia Gazette (Purdie and Dixon), November 12, 1767.

<sup>114</sup>Virginia Gazette (Rind), November 30, 1769.

<sup>115</sup>Virginia Gazette (Purdie and Dixon), November 12, 1769; and Virginia Gazette (Rind), November 30, 1769.

with false potions. If any dreg remains, it can be but a very little; nature imperceptibly dissipates it, or throws it out in a small superficial boil or two.<sup>116</sup>

John Dalgleish, of Norfolk, was the most frequent contributor to the Virginia Gazette on the subject of medicine. Six of his papers, plus several shorter items, were printed between April, 1768, and November, 1770; three of the papers dealt only with smallpox and the other three with fevers and contagious diseases in general. Dalgleish tried inoculation in 1760, when smallpox broke out in Petersburg, Virginia. He inoculated twenty persons who all recovered, and only a few were left with scars. He felt that both the natural method and inoculation worked the same. "I prepared and inoculated the young and old, the healthy and diseased. By this method the lives of individuals were secured, and the disease more effectually prevented from spreading."<sup>117</sup> Dalgleish stated that smallpox was "extremely variable as to quantity, which is dependent on the habit of body, constitution of season, &c for in its essence (compariably speaking) it is invariable."<sup>118</sup> Therefore, he listed four types of smallpox; the distinct or mild form, the coherent in which some die, the constuent in which many die, and the purple in which all die. The constuent he believed to appear frequently, the purple rarely. With smallpox and similar diseases, since there were many varieties and degrees of illness, Dalgleish thought that the formal

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<sup>116</sup>Virginia Gazette (Purdie and Dixon), April 14, 1768.

<sup>117</sup>Ibid.

<sup>118</sup>Virginia Gazette (Purdie and Dixon), November 17, 1768.

rules of medicine could not always be followed. In his first paper he stated: "A judicious deviation from formal rules in medicine sometimes proves to a practitioner valuable defiderata in the art of healing."<sup>119</sup> Evidently, he was criticized for this because he repeatedly restated and defended himself. He asserted in a later paper that his reason for "deviating" from the formal rules was "to prevent some patients from dying by my adhering to these rules. Experience . . . has proved me in the right. Think not, however, that I mean by this to cast the smallest reflection on any of my medical masters, or the excellent authors I have read on all the branches of medicine . . . ." <sup>120</sup> In other papers he added: "This is the more extraordinary, as I accomplished my plan in a part of the British dominions where Small pox is seldom seen and little known; and at a time when I had not so much as heard that any inoculators deviated from the general practice in England, which was published in the Virginia Gazette of April 11, 1760, some little time after I inoculated my first set of patients."<sup>121</sup>

In matters of importance we ought to choose what is for the good of mankind, in opposition to opinion and custom. I have already made my respects, not compliments, to my medical masters and instructors, in a former Gazette of yours. They cannot be displeased that they have qualified me to deviate occasionally from the theory, and modes of practice, of Hippocrates, of Mead, etc. and even their own, which were fashionable when I attended the medical schools. For instance, I left off judging the state of a case, and taking indications from the pulse principally in malignant fevers; and disregarded the modern doctrine of the septick principal or putrid ferment, finding it not justly founded; and as to the recent practice, in some parts of Europe, of using, or recommending,

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<sup>119</sup>Ibid., April 14, 1768.

<sup>120</sup>Ibid., April 20, 1769.

<sup>121</sup>Virginia Gazette (Rind), November 23, 1769.

cold water largely in fevers, it is founded on a mistaken idea that it was necessary to mitigate the smallpox. In this nondescript malady, which was truly malignant, had I filled patients with anti-septicks, or cold water, or covered them with blisters, in the higher degrees of the fever, they would have died under my hands, as they did under others.

Neither these slowly fatal ailments, nor those quickly fatal from infection, are to be subdued by dogmatical laws of human contrivance; they can be guided only by rules which coincide with the laws of nature, and the powers of animal life.<sup>122</sup>

Many of Dalgleish's desires for deviation in treating illnesses appear to be concerned with inoculation. Dalgleish repeatedly told of his successful experiments with inoculation and argued for its use.

The Virginia Gazette reported, in January, 1768, several cases of smallpox in Williamsburg. James Cooke, mayor of Williamsburg, announced on February 4, 1768, that three cases of smallpox had been reported in that town; two of the three had died.<sup>123</sup> The same day an unsigned letter from Norfolk appeared in the Gazette which told the precautions to take to keep smallpox from spreading.<sup>124</sup> The next week Mayor Cooke announced that the smallpox was "entirely eradicated."<sup>125</sup> These reports of smallpox were followed by an article opposing inoculation. The author, M. B., argued that inoculation kept smallpox alive in the colony and even the natural deaths from the disease could be traced to the practice. M. B. concluded: "at best inoculation in this colony a very stupid as well as destructive practice, unless it could be

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<sup>122</sup>Virginia Gazette (Purdie and Dixon), November 8, 1770.

<sup>123</sup>Ibid., January 21, January 28, February 4, 1768.

<sup>124</sup>Ibid., February 4, 1768. <sup>125</sup>Ibid., February 11, 1768.

pursued under strict regulations; which I imagine cannot ever be done so as to prevent the spreading of the infection."<sup>126</sup> A petition to the Virginia House of Burgesses asked that inoculation be stopped and in November, 1768, an investigating committee favored its regulation.<sup>127</sup>

A controversy over smallpox occurred in Norfolk during the summer of 1768. Apparently, John Dalgleish had tried to set up an inoculation hospital near Norfolk, but opposition forced him to abandon the plan. This had been in February, 1768. Later in June, several men in Norfolk wanted Dalgleish to inoculate their families and again a great deal of opposition was voiced.<sup>128</sup>

The first account of the trouble was printed on August 25, and covered one and one-third pages of the Gazette. It stated that Dr. Archibald Campbell had wanted to use his plantation for inoculation, but the danger of this had been exaggerated and some of the townspeople threatened to destroy his house. The opposition agreed to find a suitable house for inoculation, but failed to do so. The townspeople appealed in vain to the magistrates to halt the inoculation and on June 23, a group of people damaged the "doors and windows" of Campbell's plantation. Despite the opposition, Dalgleish inoculated several families at Campbell's on June 25. A "mob" immediately marched on Campbell's and demanded the inoculated persons be moved to the pesthouse. Cornelius

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<sup>126</sup>Virginia Gazette (Rind), March 10, 1768.

<sup>127</sup>Duffy, op. cit., pp. 99-100.

<sup>128</sup>Virginia Gazette (Purdie and Dixon), September 1, September 8, 1768.



Calvert, Campbell, and the others involved agreed to move their families if the pesthouse could be put in order, but the crowd forced them to leave immediately. The women and children had to go about five miles through a rain storm to reach the pesthouse. The writer concluded: "Were they men, or monsters in human shape, who have acted thus!"<sup>129</sup>

The next week Paul Loyal briefly described the incident at Campbell's, but mainly defended his own action. Loyal stated he intervened only to help settle the dispute, although one Norfolk source doubted his impartiality.<sup>130</sup> From his actions, it appears Loyal was a mediator. He directed the pesthouse, proposed a meeting between the two opposing groups, helped in the attempt to find a suitable place for inoculation, and was directed to find and list all the persons who had been inoculated.<sup>131</sup>

Three articles concerning this incident appeared in the September 8 issues of the Virginia Gazette. They merely restated the events which occurred at Campbell's plantation, although one did emphasize the cruel treatment of the women and children and the burning of Campbell's house. Two of the articles opposed inoculation, while it was somewhat doubtful which side the third favored. The one anonymous writer believed the main reason for Dalgleish's interest in inoculation was the great amount of money to be made from it. He stated that no one could deny the

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<sup>129</sup>Virginia Gazette (Rind), August 25, 1768.

<sup>130</sup>Virginia Gazette (Purdie and Dixon), September 8, 1768.

<sup>131</sup>Virginia Gazette (Rind), August 25, 1768; and Virginia Gazette (Purdie and Dixon), September 1, September 8, 1768.

importance of inoculation, but " . . . there is no great mystery in inoculation: The apparent success of Sutton, and some of his contemporaries, must convince them that no great skill in physick or surgery is necessary; nay even butchers, for the small price of threepence, have engaged in it."<sup>132</sup>

Dalgleish defended his policy of inoculation in the Virginia Gazette in October, 1768, the same month that he wrote his paper on contagious diseases. Dalgleish had been criticized for three incidents of inoculations. The first had been his apprentice, the second a man in Norfolk with smallpox, and the third at Campbell's. The apprentice was inoculated, stated Dalgleish, so he could assist with smallpox cases; besides, he had always inoculated his servants and apprentices "not only without censure, but without approbation, until the last time." In the second case, Dalgleish apparently received permission from the mayor to inoculate, but was "censured severely" by Lewis Hansford. Hansford was also involved in the Campbell plantation incident, but that time was on the side of Dalgleish.<sup>133</sup>

No more accounts of the trouble in Norfolk were printed in 1769, the main writing on medicine during this period being Dalgleish's three papers. The Norfolk feud was renewed in the Virginia Gazette in February, 1770, in a letter from A Customer. A Customer went over the events of the Campbell plantation incident and severely criticized

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<sup>132</sup>Virginia Gazette (Purdie and Dixon), September 8, 1768.

<sup>133</sup>Ibid., October 20, 1768.

Dalgleish's papers on smallpox. Summing up Dalgleish's papers, A Customer stated: "To criticise upon nonsense is folly." He added: "Neither Hippocrates, Galen, the great Boehaave, nor any other physician ever pretended to this art [inoculation]."<sup>134</sup>

Dalgleish answered the "vile misrepresentation of facts" by A Customer the following month. Again the events in Norfolk, which occurred nearly two years before, were reviewed in favor of inoculation.<sup>135</sup>

The last mention of the Norfolk trouble in the Virginia Gazette was a letter by Cornelius Calvert in January, 1772. Apparently, conflict continued after the Campbell plantation incident, for Calvert related that he had Dalgleish inoculate three of his Negro slaves in 1769. "A snake in the grass, hatched in Barbados," informed the "General" who attempted to organize a group to stop the inoculation. "That Day, in the Afternoon," Calvert continued, "Doctor Dalgleish was committed to Jail, and one of the Aldermen knocked down in the Street by two Ruffians; and at Night the Rioters came to my House demanding of me to drop former Suits, and an Indictment that was brought against them, which I refused to comply with. They then broke my Windows, and frightened my Wife and Children, one of whom then lay on her Deathbed."<sup>136</sup>

The court released the case of John Dalgleish, but Joseph Calvert was placed in the county jail. The rioters, Henry Singleton, William

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<sup>134</sup>Virginia Gazette (Rind), February 15, 1770.

<sup>135</sup>Ibid., March 15, 1770.

<sup>136</sup>Virginia Gazette (Purdie and Dixon), January 9, 1772.

Ward, George Crutchit, and John Fise, were convicted, fined, and had to "enter into a Recognizance in fifty Pounds each, with two Securities, each of them in twenty five Pounds; to keep the Peace, and be of good Behaviour, for the Space of a year."<sup>137</sup>

Calvert countered earlier arguments against inoculation involving money, by stating that it was the "mercenary Views" of the doctors who benefited from the pesthouse who opposed inoculation. He lists a Mr. Ramsey and Mr. Taylor as examples of this. Calvert concluded:

Where Villians can mob their first Magistrate, abuse his Wife and Children, and can get Rioters, Doctors, Magistrates, and a Clerk whose Children have received the Benefit of Inoculation, as Securities for their good Behaviour, it becomes every well meaning good Subject to make it publick.<sup>138</sup> Some may tamely sit down under it: I never shall.<sup>139</sup>

Two other articles appeared on inoculation during the trouble in Norfolk, one favoring and one opposing the process. The first, an extract from an English newspaper, stated that regulation of inoculation by the legislature was necessary. Although inoculation had been proved successful, it greatly increased the danger to people not treated, such as the poor. Inoculation also hurt the trade of a town. If practiced, the writer continued, the operation should be done away from towns and in inoculation hospitals.

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<sup>137</sup>Ibid.

<sup>138</sup>The securities were Joseph Hutchings, Samuel Boush, Maximilian Calvert, Thomas Newton, Sr., John Hutchings, Joseph Calvert, Thomas Newton, Jr., Mr. Ramsey and Mr. Taylor. Ibid.

<sup>139</sup>Ibid.

Inoculation is so gainful a harvest to apothecaries and surgeons in the country, that I believe one may say, without breach of charity, that they are always inwardly wishing for the small pox to come into towns where they live; . . . and there may be some just apprehension entertained that the distemper is sometimes purposely introduced into towns, in order to make way for the exceeding gainful practice of inoculation.<sup>140</sup>

The second article briefly discussed "Whether inoculation be permitted by the Divine Law?" Since man should preserve life, and inoculation had proven to do that, the writer believed inoculation was permitted by the divine law.<sup>141</sup>

After smallpox inoculation was regulated by the Virginia Burgesses, several advertisements appeared in the newspaper which indicate that some Virginians went to Maryland to be inoculated.<sup>142</sup> Several other articles appeared in the Virginia Gazette concerning smallpox. They included a public notice of smallpox in the family of Benjamin Harrison,<sup>143</sup> opposition to using taxes to build a pesthouse or inoculation hospital in Norfolk,<sup>144</sup> inoculation of the Virginia troops,<sup>145</sup> and a notice that no danger to business existed in Williamsburg from smallpox.<sup>146</sup>

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<sup>140</sup>Virginia Gazette (Rind), November 17, 1768.

<sup>141</sup>Ibid., December 14, 1769.

<sup>142</sup>Ibid., July 12, August 30, 1770; and Virginia Gazette (Purdie and Dixon), March 17, 1774.

<sup>143</sup>Virginia Gazette (Purdie and Dixon), September 24, 1772.

<sup>144</sup>Ibid., May 26, 1774.

<sup>145</sup>Virginia Gazette (Purdie), May 16, September 19, 1777; and Virginia Gazette (Dixon and Hunter), April 24, 1778.

<sup>146</sup>Virginia Gazette (Dixon and Nicolson), February 12, 1779.

A number of articles were printed in the Virginia Gazette which could not be placed under the topics of cures or smallpox. A statue in honor of Sir Hans Sloane was erected in the "Physic Garden" at Chelsea, England. Hans Sloane (1660-1753), was the first physician to be made a baronet, was a founder, secretary, and at the time this statue was erected (1737), president of the Royal Society. In addition, he was physician to the king, president of the Royal College of Physicians, and promoter of the "Physic Garden."<sup>147</sup>

A short extract told of discontent among the surgeons in Paris. The trouble occurred between members and non-members of the Academy of Surgery, due to the large number of rewards given by Louis XV to the members. The non-members wanted either to open the Academy to all surgeons of Paris or to abolish it. Louis XV, after receiving a petition stating these views, exiled eight surgeons and forbid one hundred more to lecture at St. Cosmo's school.<sup>148</sup> The scientific societies in Paris were restricted to people of influence and nobility the same as all aspects of French life, and many men of science were among the leaders in renouncement of the ancien regime.

Three extracts dealt with the College of Physicians in London. One told of choosing officers with Dr. Thomas Pellet being president for the third time;<sup>149</sup> another of the desire by some members to restrict

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<sup>147</sup>Virginia Gazette (Parks), December 2, 1737; and Garrison, op. cit., p. 389.

<sup>148</sup>Virginia Gazette (Hunter), January 2, 1752.

<sup>149</sup>Virginia Gazette (Parks), December 16, 1737.

fellowships to graduates of Oxford and Cambridge;<sup>150</sup> and the third, of the arrest of a Mr. Hilmer for practicing medicine without taking an examination and being approved by the College of Physicians.<sup>151</sup>

Four announcements of courses offered at the College of Philadelphia were printed in the October 17, 1771, issue of the Virginia Gazette. The courses included Dr. Kuhn's lectures on materia medica; Dr. Shippen's lectures on anatomy, surgery, and midwifery; Dr. John Morgan's lectures on the theory and practice of physic and the causes, symptoms and care of diseases; and Dr. Benjamin Rush's lectures and experiments on chemistry.<sup>152</sup>

Two notices of medical appointments made during the Revolutionary War told of Dr. John Morgan being appointed "director of the hospital, and physician, to the American army,"<sup>153</sup> and Dr. William Shippen, Jr., being appointed director general of all military hospitals.<sup>154</sup> Another notice stated that Dr. William Brown of Virginia, Dr. James Craike of Maryland, and Dr. Thomas Bond, Jr., of Philadelphia had been appointed "assistant directors general." Also, Dr. Benjamin Rush of Philadelphia and Dr. Walter Jones of Virginia were appointed "physician and surgeons general of the hospitals of the middle department,"<sup>155</sup> but William Brown replaced Dr. Jones who declined the appointment.<sup>156</sup>

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<sup>150</sup>Virginia Gazette (Hunter), August 8, 1751.

<sup>151</sup>Ibid., March 12, 1752.

<sup>152</sup>Virginia Gazette (Rind), October 17, 1771.

<sup>153</sup>Virginia Gazette (Purdie), November 10, 1775.

<sup>154</sup>Ibid., April 25, 1777.

<sup>155</sup>Ibid., June 27, 1777.

<sup>156</sup>Ibid., July 25, 1777.

## CHAPTER IV

### NATURAL HISTORY

One area of science which was very important in the eighteenth century was natural history. The age of exploration aroused an extreme desire among Europeans and Americans to search the unknown. This interest in strange or unusual plants, birds, and animals was illustrated by several descriptions of these in the Virginia Gazette.<sup>1</sup>

"Decades and centuries after the initial discoveries, the wonder still remained. New explorations and new knowledge seemed to expand the bounds of the unknown even faster than the limits of the known."<sup>2</sup> With these almost endless sources of new materials, the work in natural history centered around two activities: collection and classification.

Those who could not visit new places read about them and the demand for books on natural history increased. Some went a step farther than merely reading.

As western commerce and wealth increased, the more fortunate Europeans were enabled to enjoy the exhilaration of confronting the New World more directly than by reading about it and more pleasantly than by actually visiting it. These men could revel in the taste of an American bear, realizing that it was an exotic dish beyond the reach of most of their fellow men. They could import dried flowers, or bottled bugs, or chips of stone, and they did all of these things to the gratification of scientists as well as the satisfaction of their own collecting urge. They could also grow

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<sup>1</sup>Virginia Gazette (Purdie and Dixon), October 10, 1771; and Virginia Gazette (Rind), February 4, 1768, and June 17, 1773.

<sup>2</sup>Brooke Hindle, The Pursuit of Science in Revolutionary America, 1735-1789 (Chapel Hill: University of North Carolina Press, 1956), p. 11.



gardens of living plants, and these proved to be the most conspicuous means of enjoying the natural riches of the far corners of the earth. The Old World interest in gardens gave a decidedly botanical tinge to the development of American natural history.<sup>3</sup>

America offered a vast area of study with its many new species of flora and fauna. During the seventeenth and eighteenth centuries many Europeans traveled to America to study its natural history.<sup>4</sup> One such traveler mentioned in the Virginia Gazette was Peter Kalm. Kalm, a professor at Abo, Finland, and a former student of Linnaeus, was sent to America by the Royal Academy of Sciences at Stockholm. An account of the trip which occurred in 1748 was related in Peter Kalm's Travels in North America and told of many new and sometimes strange sights. Two years after his work was translated into English in 1770<sup>5</sup> the Virginia Gazette printed "An Account of some Vestiges of Cultivation and Antiquity which the French met with in their Attempt to trace out the Passage by Land from Canada to the South Sea, from Professor Kalm." Kalm told of de Verandrier's expedition across Canada and the discovery of some remains of an Indian civilization far superior to any of the contemporary tribes.<sup>6</sup>

In an earlier article, containing a letter from Kalm to a friend in Philadelphia, he described Niagara Falls. In describing the surrounding plant and animal life, the rock structures, and the falls,

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<sup>3</sup>Ibid., p. 13.

<sup>4</sup>Ibid., pp. 11-15.

<sup>5</sup>Ibid., pp. 34-35.

<sup>6</sup>Virginia Gazette (Purdie and Dixon), November 19, 1772.

Kalm explained: "The Hair will rise and stand upright on your Head, when you see this; I cannot with Words express how amazing this is!"<sup>7</sup>

Although much work was done in Virginia on natural history, only one article was found that was written by a local contributor. This was a paper on the weevil moth written by Landon Carter. It included a description of the moth, its life cycle, and means of preventing the moth from injuring wheat and corn.<sup>8</sup>

Only one other essay on natural history was printed in the Virginia Gazette. Entitled "On the Production of a Species of Insects," the essay displayed the knowledge of the writer while attempting to show the many interesting curiosities which could be found in the study of insects. The essay did give some indication of what was known about insects at this time, especially the "winged Tribe of Insects," or Lepidoptera.<sup>9</sup>

One should not overlook the study of botany and zoology in reference to medicine. Most of the study of plants, especially in the early eighteenth century, had as its goal the discovery of new medicinal drugs, such as senega. Ornstein has explained that one ". . . would hardly think of them [botany and zoology] as independent sciences, but as parts of medicine, more especially of pharmacy."<sup>10</sup> This would be

<sup>7</sup>Virginia Gazette (Hunter), May 9, 1751.

<sup>8</sup>Virginia Gazette (Rind), November 19, 1772.

<sup>9</sup>Virginia Gazette (Hunter), October 3, 1751.

<sup>10</sup>Martha Ornstein, The Role of Scientific Societies in the Seventeenth Century (Chicago: The University of Chicago Press, 1938), p. 11.

true of the seventeenth and most of the eighteenth centuries, but with the work of such men as Linnaeus and Buffon, botany and zoology began to emerge as separate sciences. The articles which dealt with botany and zoology in relation to medicine have been covered in Chapter III and will not be repeated here.

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## CHAPTER V

### THE PHYSICAL SCIENCES

#### I. ASTRONOMY

Most of the articles on astronomy in the Virginia Gazette were printed during the period 1768-1770. One important reason for this concentrated attention was the interest which developed in Europe and then in America over the proposed observations of the transits of Venus.

Compelling interest in the transits of Venus of 1761 and 1769 was due to the belief that the distance from the earth to the sun could be calculated by these observations. The need to find this distance was very important to eighteenth-century scientists who were trying to fill in Newton's universe and make this branch of science as exact as possible. The relative positions of the planets could be determined by the use of Kepler's Third Law; therefore, if the actual distance from the earth to the sun could be calculated, the rest of the planetary distances would be known.

Edmund Halley, the well-known English astronomer of the seventeenth century, had first shown that the solar parallax could be determined from the transit of Venus. The procedure proposed by Halley for determining the solar parallax was to record the inner contact during ingress and egress of Venus across the sun's surface, and then compare this time of duration with other observations. Another accepted variation of Halley's method was that of Joseph-Nicolas Delisle who believed that a comparison of contacts of either the ingress or egress

would be better. Delisle's method could be used in many more areas, because a view of the entire transit was not necessary, and also there would be less chance of weather obscuring part of the transit and ruining the hope of finding the solar parallax. Both procedures required very accurate measurement, both in time and in position of observation, as any error would greatly effect the calculation of the sun's distance.<sup>1</sup>

Besides determining the solar parallax the transit was important for several other reasons. The transit observations received support in many countries in an attempt to compete with other countries and to further national prestige. The Royal Society used this approach when trying to obtain funds from the Lords of the Treasury for the 1761 expedition to St. Helena. "One of the themes most stressed . . . was the competitive and nationalistic aspect of the undertaking."<sup>2</sup>

Most of the early information that was circulated on the transits, plus the results of the many observations, were channeled through scientific societies. The two most important societies in this and most scientific endeavors during this period were the Royal Academy of Sciences in Paris and the Royal Society in London. The French society, due to Delisle's work, appears to have been the leading promoter of the 1761 transit observations, but the work of the English was equally

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<sup>1</sup>Harry Woolf, The Transits of Venus, A Study of Eighteenth-Century Science (Princeton: Princeton University Press, 1959), pp. vii-20.

<sup>2</sup>Ibid., p. 81.

important. "The number of papers on the value of the solar parallax deducible from the 1769 transit was enormous; about two hundred were sent to the Academie des sciences, and probably as many as four hundred more to the remaining world-wide scientific bodies."<sup>3</sup> The important work done by the societies in this vast operation greatly helped their growth and their prestige.

Another important factor resulting from the transit observations was the increasing cooperation between the scientists of the various countries involved. There was a large interchange of communications, plus the aid in information and equipment given one group of scientists by those of another country.

The expeditions arranged to observe the transits considerably aided scientific fields other than astronomy. The South Seas expedition sponsored by the Royal Society, with the work of Cook, Solander, and Banks, is probably equally well known for its contributions to natural history, navigation, and exploration.<sup>4</sup> It is evident, then, that the transits contributed more to science than a more accurate measurement of the solar parallax. Woolf states:

The range and intensity of activity directly connected with the eighteenth-century transits of Venus were, by contemporary standards, enormous. It is quite likely that no other particular scientific problem in the eighteenth century brought so many interests to a single focus as the concern for the solar distance.<sup>5</sup>

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<sup>3</sup>Ibid., pp. 189-190.

<sup>4</sup>Brooke Hindle, The Pursuit of Science in Revolutionary America, 1735-1789 (Chapel Hill: University of North Carolina Press, 1956), p. 147; Woolf, op. cit., pp. 179-180; and Virginia Gazette (Rind), October 17, 1771.

<sup>5</sup>Woolf, op. cit., p. 23.

There was no evidence of any interest in the transit of Venus of 1761 in the Virginia Gazette. Since the 1761 transit was not visible in the colonies, only one observation was accomplished by Americans. John Winthrop led this group to St. Johns, Newfoundland, where they were able to observe the transit.<sup>6</sup>

Much more interest had developed in the American colonies by 1769 when the second transit of Venus occurred. The transit, although not the entire duration, was visible in the colonies in 1769. Also, there was a great deal of publicity circulated in advance of the transit.<sup>7</sup>

Newspapers throughout the continent were full of the event describing its course, its meaning, and the manner in which individuals could observe it. Everywhere, people collected smoked glasses and anything they could find in the way of magnifying equipment: spy glasses, perspective glasses, and tiny telescopes. Most of them did not bother with time pieces or with the problem of the sun's parallax, but they were anxious to see this rare event about which there was so much concern.<sup>8</sup>

Evidence of the widespread interest in the transit of Venus in 1769 was found in the Virginia Gazette, where one of the first accounts concerned Russian activities. Russian participation was officially initiated on March 3, 1767, by Catherine II in a letter to the Academy of Sciences in Petersburg. Catherine requested the Academy of Sciences to observe the transit, to locate the best observation points in the empire, and to use expert mariners if too few astronomers could be found to carry out the task.<sup>9</sup> Word was later received from Moscow that

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<sup>6</sup>Hindle, op. cit., p. 146; and Woolf, op. cit., pp. 93-96.

<sup>7</sup>Hindle, op. cit., p. 146.      <sup>8</sup>Ibid., p. 156.

<sup>9</sup>Virginia Gazette (Purdie and Dixon), September 17, 1767.

Catherine had provided 40,000 rubles for the Academy of Science to observe the transit at eight different locations in the empire and preparations were already underway. Also, due to the shortage of necessary astronomical equipment, more was being ordered from England and France.<sup>10</sup>

Reports of English preparations for the transit were limited in the Virginia Gazette to the outfitting of the ship Endeavor. The Endeavor, commanded by Captain James Cook, carried a Royal Society expedition to the South Seas where they would observe the transit.<sup>11</sup> "Some Gentlemen of Fortune, who are students in botany, are likewise going in her upon a tour of pleasure."<sup>12</sup> The expedition included Charles Green, a former assistant at the Greenwich Observatory, Joseph Banks, "a Gentleman of large fortune who is well versed in natural history," and Dr. Solander, a botanist who had studied under Linnaeus.<sup>13</sup> The departure of the expedition was noted in the November 24, 1768, issue of the newspaper.<sup>14</sup> Nothing more was mentioned about the

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<sup>10</sup>Ibid., February 4, May 12, 1768. Only seven observation stations are listed in Russia by Woolf, although there was more than one in St. Petersburg. The shortage of scientific equipment in Russia is indicated by the shipment of twenty-one telescopes, plus other equipment, to Russia from James Short of London. Woolf, op. cit., pp. 180-181.

<sup>11</sup>Virginia Gazette (Purdie and Dixon), September 15, 1768; and Virginia Gazette (Rind), October 27, 1768.

<sup>12</sup>Virginia Gazette (Purdie and Dixon), September 15, 1768.

<sup>13</sup>Woolf, op. cit., pp. 167-168.

<sup>14</sup>Virginia Gazette (Rind), November 24, 1768.



expedition until news of a letter from Banks was printed in the Virginia Gazette in August, 1771, with the extract from London dated May 11. The letter stated that many hardships had been encountered on the journey, but they had arrived at their destination in February, 1769.<sup>15</sup>

As noted, newspapers and magazines attempted to stimulate interest in the transit of Venus throughout the English Empire. In Virginia, two articles were printed in the Gazette in the early part of 1769. The articles, signed by T. V., "promised to show what advantages may be derived to astronomy from proper observations on the ensuing transit."<sup>16</sup> Hindle identifies T. V. as John Page of Rosewell, Virginia.<sup>17</sup>

These, and most of the other articles on the transit, were presented to the general reader of the Gazette in what has been described by one Gazette contributor as "a language quite unintelligible."<sup>18</sup>

In the first article Page briefly explained Kepler's formula for finding the proportional distances between the planets and then attempted to describe the importance of the solar parallax. Page stated:

Now the real distance to the sun will be known whenever the sun's horizontal parallax is known. The sun's horizontal parallax

<sup>15</sup>Virginia Gazette (Purdie and Dixon), August 8, 1771.

<sup>16</sup>Ibid., March 30, 1769.

<sup>17</sup>Hindle, op. cit., pp. 155-156, 158, 162-163. Hindle doesn't mention T. V., but attributes three articles to John Page [footnote 38, page 158, -- Virginia Gazette (Purdie and Dixon), June 1, 1769, June 29, 1769, and August 3, 1769]. The June 29 and August 3 articles are signed T. V., but the June 1 reference was signed by X. Y. Still, Hindle's description of Page's writings fit T. V.

<sup>18</sup>Virginia Gazette (Purdie and Dixon), June 1, 1769.

is the difference between the sun's place in the heavens, as seen from the centre and surface of the earth, or the difference between his true and apparent place, which is equal to the angle which the semidiameter of the earth subtends at the sun. When this angle is known the sun's distance is easily found, by trigonometry; but it is so small, on account of the sun's great distance from the earth, that the true quantity thereof cannot be estimated by an instrument or determined with the desired exactness by any other method, that has hitherto occurred to astronomers, than by observations on a transit of Venus.<sup>19</sup>

Page's first paper stressed the importance of the transit; his second paper was an attempt to describe the procedure for finding the sun's horizontal parallax. The second paper was a more detailed and complicated paper describing the best locations to observe the transit, how to observe the transit, and how to use the observations to calculate the solar parallax. Page also included information for the observation of the transit in Williamsburg, giving Benjamin Martin's figures for the times of ingress and middle of the transit. Williamsburg was not properly located to get an ideal observation of the transit because they wouldn't see the egress, but Page believed that any observation could be used to check others. The entire transit would not be visible at Williamsburg; therefore, only the ingress could be used to determine the sun's parallax. Page concluded the article with some current estimates of figures they would be seeking to improve. The sun's parallax was estimated to be 10.0', and if 10.0', the estimated distances of the various planets from the sun were Mercury 38,713,000 miles, Venus 72,333,000 miles, Earth 100,000,000 miles, Mars 157,369,000 miles, Jupiter 520,096,000 miles, and Saturn 954,006,000 miles.<sup>20</sup>

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<sup>19</sup>Ibid., March 30, 1769.

<sup>20</sup>Ibid., May 25, 1769. Woolf (p. 208-209) says if the parallax is 10.0' the distance from the sun to the earth would be 81,738,420 miles.

One week after T. V.'s second article in the Virginia Gazette, a letter from X. Y. was printed.<sup>21</sup> X. Y. acknowledged the importance of the transit, but disagreed with T. V. on several aspects of the transit observations. Since an accurate observation was necessary and very difficult, X. Y. felt only the best observations should be made public. X. Y. also criticized the method of determining the sun's parallax offered by T. V. Page had described both the duration and the ingress as means of determining the solar parallax, but since Williamsburg would not be able to view the duration he believed comparisons of the ingress to be just as effective. Calculating the parallax by observing only the ingress or egress had been the main procedure used in 1761, but since then observation of the total duration generally was felt to be more accurate. This was the reason for the expeditions to Lapland and the South Seas; the South Sea observation would provide the shortest duration and Lapland the longest.<sup>22</sup>

Wrote X. Y.:

But there are two particulars in that Gentleman's last piece which are by no means to be overlooked, as they appear to me very erroneous. The first is the method proposed for determining the solar parallax, by observing the beginning only compared with the beginning to an eye placed at the centre of the earth, which must be the calculated central beginning. Now this method, I presume, cannot be depended upon, except the tables upon which the calculation for the central ingress is built can be so, which no astronomers, as far as I can learn, pretend to say, and therefore no single observation whatever is to be looked upon as sufficient for this purpose: . . . .

. . . the other particular I intend to take notice of; for though the difference in time with us here may be, as he observes,

<sup>21</sup>Ibid., June 1, 1769.

<sup>22</sup>Woolf, op. cit., pp. 153, 176.

too small to determine the parallax with any precision, by his method in comparing it with the central one, yet it is probable it will answer well, when compared with observations made in other parts of the globe, and therefore it is to be hoped will be carefully, even here, attended to.<sup>23</sup>

The final criticism was the complexity of T. V.'s writing:

Though the intention of your correspondent in last week's, as well as a former paper, to explain this subject, be commendable, that Gentleman will pardon me for saying that such an attempt, in that compass, can answer no other end than show the learning of the writer . . . .<sup>24</sup>

This started a verbal duel between the two gentlemen. They restated their opinions, each criticizing his opponent's views on astronomy. These three articles between Page and X. Y. were written after the transit of Venus had occurred and much of the debate concerned Page's observations and the reliability of them; a reliability which X. Y. doubted. One point of criticism by X. Y. was Page's reliance on tables for determining his position and time for the transit in Williamsburg.<sup>25</sup> According to Hindle, Page was the only Virginian to observe the transit, or at least make it public, although the College of William and Mary had the necessary equipment.<sup>26</sup>

Four reports of observation of the transit of Venus were printed in the Virginia Gazette. The first of these in September, 1769, was the observation of Charles Messier in Paris. Messier, who had been a student of Joseph-Nicolas Delisle, had been unable to observe the first

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<sup>23</sup>Virginia Gazette (Purdie and Dixon), June 1, 1769.

<sup>24</sup>Ibid.      <sup>25</sup>Ibid., June 29, July 27, August 3, 1769.

<sup>26</sup>Hindle, op. cit., pp. 162-163.

external contact because of clouds, but recorded the "second contact" or internal contact of ingress. The article also mentioned Messier's observance of an eclipse of the sun and "eminences" on the edge of the moon.<sup>27</sup>

Two further articles dealt with the trip of Solander and Banks to the South Seas. The one related their conference with Sir John Pringle and King George III in which they discussed their discoveries.<sup>28</sup> The other stated, "Mr. Banks and Doctor Solander have made more curious Discoveries in the Way of Astronomy and Natural History than at any one Time have been presented to the learned World for the fifty Years past."<sup>29</sup>

The last report of the transit, from Mannheim, stated that from the observations they were able to calculate that the sun was 1,358, ( )09 [sic.] times larger than the earth and Venus was in a 23 to 25 ratio to the earth.<sup>30</sup>

Besides the transit of Venus, there were other heavenly phenomena which attracted the attention of people of the eighteenth century. Sun spots, the northern lights, and especially comets were some of the other events which interested the curious. Hindle points out that astronomy meant even more to a people who looked to it as proof of an orderly universe.

To the thinker, astronomy had an importance beyond utility and beyond the mere satisfaction of intellectual curiosity. In a

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<sup>27</sup>Virginia Gazette (Purdie and Dixon), September 7, 1769.

<sup>28</sup>Ibid., October 17, 1771.      <sup>29</sup>Ibid.

<sup>30</sup>Virginia Gazette (Rind), April 23, 1772.

sense, astronomy seemed the key to the wisdom of the ages. The concept of natural law, the rational religion of the time, the faith in human progress, and the swelling comprehension of infinity all seemed somehow to follow from the ordered nature of the heavens with its precisely predictable events.<sup>31</sup>

An indication of the widespread interest in astronomy is shown by the large number of articles in the Virginia Gazette written by local contributors. The longer, more detailed articles were from local contributors such as T. V. and X. Y. The extracts from letters and other newspapers were generally very short and not in the form of essays.

In one extract David Rittenhouse was praised for his new orrery by a "very ingenious and eminent philosopher in London." The writer said of Rittenhouse: "I had before heard much of his ingenuity; but this is quite wonderful, to be performed by an American, as it seems to exceed anything of the kind that has yet appeared in Europe."<sup>32</sup> A clock maker with little schooling, Rittenhouse was one of colonial America's best astronomers. Rittenhouse completed his first of several orreries in 1767.<sup>33</sup> The orrery, or model universe, was a popular attraction among the people of colonial America when displayed. "Excitement over the orreries helped to sustain the interest in astronomy aroused by the transit of Venus."<sup>34</sup> The observation of a comet by Rittenhouse was also reported in the Gazette.<sup>35</sup>

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<sup>31</sup>Hindle, op. cit., p. 167.

<sup>32</sup>Virginia Gazette (Purdie and Dixon), June 9, 1768.

<sup>33</sup>Frederick E. Brasch, "The Royal Society of London and Its Influence upon Scientific Thought in the American Colonies," Scientific Monthly, XXXIII (1931), pp. 463-464.

<sup>34</sup>Hindle, op. cit., p. 171.

<sup>35</sup>Virginia Gazette (Dixon and Nicolson), March 11, 1780.

A number of extracts told about astronomical observations. These included a report of differences between the almanac and the sun's actual rising;<sup>36</sup> Abbe Rochon's trip to Morocco to observe the eclipses of the moons of Jupiter;<sup>37</sup> a description of the aurora borealis from New Haven;<sup>38</sup> the appearance of sun spots;<sup>39</sup> the disappearance of the rings of Saturn;<sup>40</sup> an announcement of the conjunction of Jupiter and Venus;<sup>41</sup> the ideal position of Jupiter for observation;<sup>42</sup> and the lateness in the rising and setting of the sun.<sup>43</sup>

Several other extracts included an announcement by John Bertucci of Ancona, Italy, of a method to show that the earth and stars are alike;<sup>44</sup> a report by Monnier of Paris of his observations in Lapland;<sup>45</sup> the beginning of classes on the "zodiack and great sphere" by Dr. Long of Cambridge;<sup>46</sup> a description of l'Abbe de Rochon's improvements in astronomical navigation;<sup>47</sup> and an appeal to observe the beauty of Jupiter.<sup>48</sup>

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<sup>36</sup>Virginia Gazette (Purdie and Dixon), April 23, 1767.

<sup>37</sup>Ibid., December 10, 1767.

<sup>38</sup>Ibid., August 6, 1772.

<sup>39</sup>Ibid., October 8, 1772.

<sup>40</sup>Ibid., October 14, 1773.

<sup>41</sup>Virginia Gazette (Rind), March 31, 1774.

<sup>42</sup>Virginia Gazette (Purdie), February 10, 1775.

<sup>43</sup>Virginia Gazette (Dixon and Hunter), June 24, 1775.

<sup>44</sup>Virginia Gazette (Parks), January 7, 1737. <sup>45</sup>Ibid., May 6, 1737.

<sup>46</sup>Virginia Gazette (Rind), February 16, 1769.

<sup>47</sup>Virginia Gazette (Purdie and Dixon), September 12, 1771.

<sup>48</sup>Virginia Gazette (Rind), October 22, 1772.

In the same month as the 1769 transit of Venus a comet appeared over America. Tremendous public interest was created by this and another comet which appeared the following summer. First sighted in Europe and then in America, many reports on the comets were printed throughout the colonies.<sup>49</sup>

The report on the first of these comets started another series of letters to the Virginia Gazette similar to those on the transit. These exchanges brought confusion concerning the identity of the contributors involved and resulted in numerous denunciations regarding the ability and character of the contributors.

On September 4, 1769, an anonymous writer had observed the comet moving in a path towards the sun; he observed the comet, estimated its speed, and plotted its probable movement across the sky. The statement which created some controversy was his warning: "Should it come between us and the sun the tail will then probably extend to the earth, and therefore it becomes all to be prepared for consequences so alarming as those which must then follow."<sup>50</sup>

The same day in Rind's Virginia Gazette another account of the comet appeared. This writer who later identified himself as C. R. also described the comet and its movement.<sup>51</sup>

Two more articles on the comet appeared in the October 19 issue of the Gazette. The one unnamed writer assured the public that any

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<sup>49</sup>Hindle, op. cit., pp. 171-172.

<sup>50</sup>Virginia Gazette (Purdie and Dixon), September 14, 1769.

<sup>51</sup>Virginia Gazette (Rind), September 14, 1769.



danger from the comet was "about as likely to happen as that the sky should fall." He concluded his condemnation of the people who had been writing about the comet by stating: "Think of this, kind readers, as you ought, and you will not be terrified by the scribbling of every dabbler in astronomy; nor by the ridiculous predictions of your pretenders to astrology, which only tend to fill the world with ignorance and superstition."<sup>52</sup>

The second reply was also directed to the September 14 article in Rind's Virginia Gazette and was a satirical criticism signed by A. B. A. B. quipped:

The author, besides accurately determining its direction, has furnished such excellent materials, and pointed out such clear and easy methods for ascertaining its magnitude, place, and velocity, that I shall conclude X. Y. and T. V., notwithstanding all they have wrote upon "the subject of Venus' transit," know nothing of astronomy, or at least of the "doctrine of comets," if they do not determine them, and afterwards inform us whether this is a new, or an old comet, fix its period, and show us its true trajectory in a type. I almost think the piece was wrote with the design of engaging them in this business, and assisting them in the execution of it, though the great modesty of the author has hindered him from speaking out.

If the "second Newton," as A. B. refers to the writer, could offer any help to future astronomers; "It may caution them to shut their eyes, when they are taking observations . . . ."<sup>53</sup>

Another reference to this comet and particularly to A. B.'s letter was printed in the newspaper. The meaning of the letter, if it had any, was well hidden by the writer who appeared to be making fun of both A. B. and C. R.<sup>54</sup>

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<sup>52</sup>Ibid., October 19, 1769.    <sup>53</sup>Ibid.    <sup>54</sup>Ibid., November 16, 1769.

A third series of letters to the Gazette on astronomy started with another "strange appearance in the Heavens." The comet of 1770 was reported to the public by B. E. After observing the "luminous bar" [sic.] for several nights he determined it to be a comet. During the first observations which started on June 26, 1770, the comet moved from east to west, but on July 2, he observed it to move in an oblique to the east and the next night in an oblique to the south. In asking for an explanation of this phenomena, B. E. also criticized A. B. for his article the year before: ". . . what is a greater or more condemnable species of folly than an ill-timed flash of wit?"<sup>55</sup>

Several more men entered the debate in the ensuing months. One or more articles are missing here because reference is made to an article in the August 9 issue of the Gazette, and reference is made to several men, such as The Customer, although no articles by them were available due to the missing issues. By December, when the last article on the comet was printed in the Gazette, A. B., The Customer, B. E., Another Customer, The Constant Reader, and two C. R.'s had entered the debate concerning the comet and the more frequent criticism of the others.

The next preserved letter after B. E.'s of July 26, was by C. R., who sided with B. E. and The Customer while criticizing A. B. Also, C. R. stated that he had written the description of the comet in 1769 which A. B. had answered with his "false and impertinent wit."<sup>56</sup> In a

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<sup>55</sup>Ibid., July 26, 1770.

<sup>56</sup>Virginia Gazette (Purdie and Dixon), August 30, 1770.

second letter B. E. continued the debate; one of the main points in question being the proper way to state the ratio of the comet's velocity referred to in Rind's Virginia Gazette, September 14, 1769.<sup>57</sup> In relating the speed of the comet, the writer had stated it moved in a direction "which would have been nearly with a velocity as 1 is to 3, in the time of the motion of those seven stars."<sup>58</sup> This was also the main contents of a later article by B. E.<sup>59</sup> A letter from a second C. R. appeared claiming the first C. R. had impersonated him. He stated: "Thus under the fiction of C. R. every reader may as certainly see A. B. and The Customer endeavored to be concealed as if one and the same name had been written to each piece."<sup>60</sup> The first C. R. answered with evidence that he was the original C. R. by comparing the writings of several different articles. "Everyone knows with what sublimity of sentiment, and pompous majesty of style, I described the storm of September 1769, and my observations on the last year's comet bore such manifest marks of astronomical knowledge, and of blushing modesty, as made them deservedly the admiration of all who saw them, one only excepted, and he was A. B."<sup>61</sup>

In October, A. B. submitted a more friendly letter to the Virginia Gazette in regard to B. E. He provided information from Europe

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<sup>57</sup>Ibid., September 13, 1770.

<sup>58</sup>Virginia Gazette (Rind), September 14, 1769.

<sup>59</sup>Virginia Gazette (Purdie and Dixon), October 4, 1770.

<sup>60</sup>Ibid., September 20, 1770.      <sup>61</sup>Ibid., October 25, 1770.

on the observations of the comet and attempted to show the reasons for the differences between the data of B. E. and the Europeans.

For notwithstanding B. E. has treated me most illiberally, I thought it unjust to suffer him to fall under the imputation of want of abilities as an astronomer, or of inaccuracy as an observer, from the disagreement of his observations with the astronomers, when I could so easily reconcile them, and prove that there ought to have been that very difference.<sup>62</sup>

A final article on the comet revealed B. E. and C. R. to be the same person. B. E. or C. R. claimed authorship for the two articles on the comets (September 14, 1769 and July 26, 1770), and the two articles signed B. E. and C. R. (September 13, 1770 and October 25, 1770). He disclaimed writing the articles by the "fictitious" C. R. (September 20, 1770), and by the C. R. and B. E. in the August 30, 1770, and October 4, 1770, issues of the Gazette. He believed The Customer was also the Other Customer who had submitted a mild criticism of B. E. to the Gazette,<sup>63</sup> although he felt that neither A. B. nor The Customer had written the other B. E. and C. R. articles.<sup>64</sup>

As is evident, these men spent more time ridiculing and arguing on trivia than on a serious discussion of astronomy.

## II. ELECTRICITY

The study of electricity started gradually in the early eighteenth century and began to gather momentum in the 1740's and 1750's. Most of the early experimenters were fascinated by the strange

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<sup>62</sup>Ibid.

<sup>63</sup>Ibid., September 20, 1770.

<sup>64</sup>Ibid., December 13, 1770.

and little known "electric fluid." Although few understood any of the characteristics of electricity, it became a very popular fad in Europe and later in America to present lectures and demonstrate the sparks and shock which could be produced. It was probably at such a lecture by Dr. Adam Spencer that Benjamin Franklin was introduced to electricity, although the lectures may have been only one source of introduction.<sup>65</sup> "Electricity was in the air and no alert man could have avoided knowing about it."<sup>66</sup>

Certainly true is the fact that Franklin's contemporaries recognized him as the dominant individual in American science during the eighteenth century. No study of science or electricity in this era would be complete without mention of his name. Unfortunately, for this study, most of Franklin's scientific work was done in the 1740's and 1750's, a period in which very few issues of the Virginia Gazette have been preserved. Most of the extant articles in the newspaper on Franklin dealt with his political activities, but the articles which were printed in the 1770's concerning him do show the respect held for his scientific achievements. The following extracts all praised Franklin for his work in science.

Letters from Paris say: Mr. Franklin, celebrated for the experiments and discoveries in electricity which he made in

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<sup>65</sup> Carl and Jessica Bridenbaugh, Rebels and Gentlemen, Philadelphia in the Age of Franklin (New York: Reynal and Hitchcock, 1942), pp. 322-324; and Brooke Hindle, The Pursuit of Science in Revolutionary America, 1735-1789 (Chapel Hill: University of North Carolina Press, 1956), pp. 74-75.

<sup>66</sup> Hindle, op. cit., p. 75.

America, and carried to the utmost degree of perfection, was lately in this city, when the learned and ingenious flocked to see and to converse with him.<sup>67</sup>

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To steal from Heaven its sacred fire he taught,  
The arts to thrive in savage climes he brought;  
In the new world the first of men esteem'd;  
Among the Greeks a god he had been deem'd.<sup>68</sup>

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They write from Paris that the Royal Academy of Sciences there have elected Dr. Franklin, of Philadelphia, to fill the Vacancy made among their foreign Members by the Death of Baron Van Swieten, and that the King has approved and confirmed their Choice. There can be but eight of those foreign Members by the Constitution of the Academy; and as they are generally of the most distinguished Names for Science in the different Parts of Europe, the Honour of being enrolled among them is in higher Estimation.<sup>69</sup>

In answer to criticism of Franklin by a Mr. Wedderburne, the following appeared:

. . . a Man who is by his Learning an Ornament to his Country . . . and whom all Lovers of Science respect, however they may differ from him in their political Opinions. Dr. Franklin is perhaps the Person of the Age to whom philosophical Knowledge is most indebted. All our capital and found Notions on the interesting Subject of Electricity were hinted by him, and, which is no small Increase of the Merit, he has himself improved most of his Hints. He first had the grand and bold Thought of seeking among his electrical Globes for the Cause and Manner of the Formation of that awful Phenomenon, Lightning; and by discovering the Secret of Nature, and showing us how to exhaust and dissipate her formidable Shafts, he has provided for the Safety of Mankind, effected what was deemed even impious for Man to attempt, and completed the greatest Discovery of the Age.<sup>70</sup>

<sup>67</sup>Virginia Gazette (Purdie and Dixon), February 11, 1768.

<sup>68</sup>Virginia Gazette (Rind), June 2, 1774.

<sup>69</sup>Virginia Gazette (Purdie and Dixon), November 5, 1772.

<sup>70</sup>Ibid., May 5, 1774.

The extract of a letter from Paris stated:

When Dr. Franklin appears abroad it is more like a publick than a private gentleman, and the curiosity of the people to see him is so great, that he may be said to be followed by a genteel mob. A friend of mine paid something for a place at a two pair of stairs window to see him pass by in his coach, but the crowd was so great that he could but barely say he saw him.<sup>71</sup>

Part of a letter from Father Beccaria to Joseph Priestly also praised Franklin.

'I am sorry that the political world, which is very transitory, should take the great Franklin from the world of nature, which can never change or fail.' I own it is with peculiar pleasure, that I quote this passage, respecting this truly great man, at a time when some of the infatuated politicians of this country are vainly thinking to build their wretched and destructive projects on the ruins of his established reputation; a reputation as extensive as the spread of science itself, and of which it is saying very little indeed, to pronounce that it will last and flourish, when names of his enemies shall be forgotten. [Extract from the preface of first volume of Priestly on air.]<sup>72</sup>

One article which used Franklin's scientific work to indicate the political conditions stated:

We are well assured that Dr. Franklin, whose knowledge in philosophical sciences is universally allowed, and who has carried the powers of electricity to a greater length than any of his contemporaries, intends shortly to produce an electrical machine, of such wonderful force, that, instead of giving a slight stroke to the elbows of fifty or an hundred thousand men, who are joined hand in hand, it will give a violent shock even to nature herself, so as to disunite kingdoms, join islands to continents, and render men of the same nation strangers and enemies to each other; and that, by a certain chymical preparation from oil he will be able to smooth the waves of the sea in one part of the globe, and raise tempests and whirlwinds in another, so as to be universally acknowledged for the greatest physician, politician, mathematician, and philosopher, this day living.<sup>73</sup>

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<sup>71</sup>Virginia Gazette (Purdie), December 12, 1777.

<sup>72</sup>Virginia Gazette (Dixon and Hunter), July 25, 1777.

<sup>73</sup>Virginia Gazette (Purdie), December 12, 1777.

A final article on Benjamin Franklin told of the adoption by the Dutch of Franklin's method of reducing waves by the use of oil.<sup>74</sup> pp. 118

Franklin's exploratory experiments and work in the theories of electricity are well known and little explanation of them is necessary. Bridenbaugh adequately summarized Franklin's theoretical work.

Franklin and his associates had embarked upon the study of electricity in 1746 with small knowledge of what had been accomplished in Europe, but in less than five years they had drawn fully abreast of their distant colleagues. Benjamin Franklin in fact 'laid the foundations of modern electrical science' at Philadelphia in the years 1747-49. He conceived and formulated a unified theory of electrical action which explained all known phenomena in terms of a single electrical fluid, and he evolved the terminology to express that theory. More clearly and fully than any of his predecessors he elucidated familiar electrical phenomena and predicated new ones.<sup>75</sup>

One phase of Franklin's work which received attention in the Virginia Gazette was his experiments to show that lightning and electricity were the same. People had supposed the two to be the same for some time, but "what distinguished Franklin from his predecessors was the fact that he was able to design an experiment to test his hypothesis."<sup>76</sup> The first experiment which Franklin proposed was to place an insulated "sentry-box" on top of a building with a pointed iron rod extending up from the box. Franklin believed "fluid" could be drawn from the clouds and all the experiments for electricity could be performed by this "fluid." Franklin never performed this experiment himself, although he was the first to use the kite experiment in June, 1752. The experiments

<sup>74</sup>Ibid., June 30, 1775.

<sup>75</sup>Bridenbaugh, op. cit., p. 326.

<sup>76</sup>I. Bernard Cohen, "Benjamin Franklin" (Lives in Science, Scientific American; New York: Simon and Schuster, 1957), p. 118.



and ideas of Franklin on electricity were printed in the book Experiments and Observations on Electricity Made at Philadelphia in America and met with immediate enthusiasm and response.<sup>77</sup>

Five articles on electricity were printed in the Virginia Gazette in 1752, soon after Franklin's experiments became public. The first, an extract from Paris, told of two "electrical Experiments performed by our most consummate Naturalists, in Pursuance of those by Mr. Franklin, in Philadelphia, to find whether the tonitruous and electrical Matter be not analogous . . . ." In the first experiment, which was the first time Franklin's "sentry-box" experiment was tried,<sup>78</sup> Monsieur D'Alibard used an iron bar placed forty feet in the air and during a storm sparks were drawn from the bar. Monsieur de Lor performed a similar experiment placing the iron bar ninety-nine feet in the air with the attached wire inserted in rosin. No storm was occurring during this test, but he was able to get sparks from the wire when a cloud passed over. Both experiments, it stated, "evince that Thunder Clouds may be deprived of their Fire by Iron Bars fashioned and fixed as above."<sup>79</sup>

The second article related a similar experiment by several members of the academy in Bologna. In their attempt to draw electricity out of the sky by an iron rod, one man held the iron rod in his right hand; the second held a chain attached to the rod with both hands; and

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<sup>77</sup>Bridenbaugh, op. cit., pp. 323-326; Cohen, op. cit., pp. 112-119; and Hindle, op. cit., pp. 77-78.

<sup>78</sup>Bridenbaugh, op. cit., p. 325; and Cohen, op. cit., p. 119.

<sup>79</sup>Virginia Gazette (Hunter), October 27, 1752.

the third placed a silk string attached to the chain on his head. Each received a different "concussion" in different parts of the body.<sup>80</sup>

Three of the five articles appeared in the December 15 issue of the Gazette. One told of an iron cross on a church steeple which glowed during storms, while the other two told of experiments by Monsieur Torre who was successful in drawing sparks from an iron rod during a storm, and Monsieur le Noine who was able to draw electricity from the air without a rod. Monsieur le Noine merely stood on a cake of rosin, raised his hand over his head, and when an extremely heavy cloud passed over he was able to transfer a "most violent shock" to a person who touched him.<sup>81</sup>

A sidelight of Franklin's experiments, yet very important for the practical application of his knowledge of electricity, was the development of the lightning rod. Franklin publicly announced the idea of lightning rods and gave directions for their construction in Poor Richard's Almanack in 1753.<sup>82</sup> Lightning rods became widely used, although opposition to them, due to religious principles and the belief that they would attract more lightning, continued for many years.

Five articles were found in the Gazette citing examples and giving proof and support for the use of lightning rods. These included evidence of the need for rods on the houses, but a warning to use heavy enough wire to conduct the electricity;<sup>83</sup> the announcement of the

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<sup>80</sup>Ibid., November 17, 1752.

<sup>81</sup>Ibid., December 15, 1752.

<sup>82</sup>I. Bernard Cohen, Benjamin Franklin: His Contribution to the American Tradition (Indianapolis: Bobbs-Merrill, 1953), p. 199.

<sup>83</sup>Virginia Gazette (Hunter), September 19, 1755.

beneficial use of lightning rods in Boston;<sup>84</sup> the account of a storm showing the need for as many lead-off wires as rods;<sup>85</sup> the successful experiment with lightning conductors aboard a ship;<sup>86</sup> and the detailed description of how to install lightning rods.<sup>87</sup>

Before lightning rods, the first practical application of electricity had been in medicine. It was used mainly to cure paralysis.

Although Franklin on occasion participated in such therapy, he did not believe that the shock itself ever cured a case of paralysis. With shrewd psychological insight, he guessed that the reported cures arose from the desire of the patient to be cured rather than from the passage of electrical fluid.<sup>88</sup>

A man from Stockholm reported a series of cases in which he used electricity to cure deafness, toothaches, muscular disorders, arthritis, and lameness.<sup>89</sup> In London, a woman who had lost her speech and suffered from fits was successfully cured of both disorders after "two or three strokes in the mouth."<sup>90</sup> A cure for tongue palsy by electrical shock was also related.<sup>91</sup>

The use of electricity for healing was also described in advertisements in the Virginia Gazette of public demonstrations of

<sup>84</sup>Virginia Gazette (Purdie and Dixon), August 27, 1767.

<sup>85</sup>Ibid., September 27, 1770.      <sup>86</sup>Ibid., April 23, 1772.

<sup>87</sup>Ibid., February 19, 1767.

<sup>88</sup>I, Bernard Cohen, "Benjamin Franklin" (Lives in Science, Scientific American; New York: Simon and Schuster, 1957), p. 124.

<sup>89</sup>Virginia Gazette (Hunter), March 14, 1755.

<sup>90</sup>Virginia Gazette (Purdie and Dixon), May 23, 1766.

<sup>91</sup>Virginia Gazette (Hunter), September 19, 1751.

electricity. These electrical lectures or shows were apparently popular in colonial America. A Seneca chief, Kayashuta, was so fascinated by some electrical experiments in Philadelphia that he returned in hopes of seeing more "thunder and lightning produced by human art," and of attending Kinnersley's lectures on electricity at the College of Philadelphia.<sup>92</sup>

Only two articles were found in the Virginia Gazette which attempted to explain the nature of electricity. Both were by John Winthrop. A professor at Harvard and a member of the Royal Society, Winthrop has been described by Brasch as the "most profound scholar of the colony during the seventeenth and eighteenth centuries."<sup>93</sup>

In his articles, which were very similar in content, Winthrop gave Franklin credit for fully indentifying lightning and electricity. He described electricity as a "subtle and extremely active fluid, diffused thro' all bodies."<sup>94</sup> Winthrop also was concerned with the practical application of Franklin's discoveries regarding conduction and lightning rods. He explained:

Electricity may be accumulated in some above its natural quantity, and in others diminished below it. Bodies in the former case are said to be electrified, positively; in the latter negatively. So long as the electric fluid remains distributed in its natural state, it produces no sensible effects; but when it is unequally distributed, its operations are very manifest. When it is accumulated in any body,

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<sup>92</sup>Virginia Gazette (Purdie and Dixon), December 3, 1772.

<sup>93</sup>Frederick E. Brasch, "The Royal Society of London and Its Influence upon Scientific Thought in the American Colonies," Scientific Monthly, XXXIII (1931), pp. 453, 457.

<sup>94</sup>Virginia Gazette (Rind), August 11, 1768.

it endeavours to throw itself out into any neighbouring body which has less than its state; and that, with a violence proportioned to the inequality of the distribution and the quantity to be discharged. The discharge is attended with a flash, a report, and, if the quantity be large, the rending, melting or firing the body into which the discharge is made . . . .<sup>95</sup>

Winthrop believed this theory of lightning to be the "capital discovery of the present age." After explaining the nature of electricity and the properties of conductors, Winthrop concluded with a description for the construction of lightning rods and cited several incidents of their use.<sup>96</sup>

### III. MISCELLANEOUS

Excepting electricity, there was little else concerning physics or chemistry in the Virginia Gazette. One brief extract stated that a laboratory was being established "for the Use of his Royal Highness the Duke, who is going thro' a Course of Chymistry, under the Direction of Dr. Shaw."<sup>97</sup>

Three essays constituted the remainder of information printed in this general area, and the first of these is more of a discourse against excessive drinking than a scientific essay. This essay which attempted to explain "a Womens being burnt to Ashes after a very extraordinary Manner," proposed the hypothesis that a human body could catch fire from the heat resulting from the movement of the body. The writer warned against saturating the body fluids with "spirits" because the beating of

<sup>95</sup>Ibid.

<sup>96</sup>Ibid., September 6, 1770.

<sup>97</sup>Virginia Gazette (Parks), July 21, 1738.

the heart might act like "Flint and Steel upon Tinder, [and] at once cause a general Conflagration!"<sup>98</sup>

The second essay was a well written account on the nature of dew. The writer related three experiments he had performed to prove that the dew came from the ground and not the upper air. The three experiments were similar; in each, a cloth or piece of glass was placed on one level or different levels, and it was observed that the lower surface of the lower objects became wet first.<sup>99</sup>

A "Dissertation on the Four Elements" covered almost an entire page and was one of the best written science articles in the Virginia Gazette. Although primarily concerned with the "nature and properties of bodies," the writer, Philalethes, also praised the philosophy of his age. Reason and experimental observation, which he claimed the ancients had used only in a limited degree, had been lost.

A couple of centuries are scarce elapsed since the clouds of prejudice, which had so many years possessed the hearts of mankind, began to subside, and people were convinced that no vague hypothesis would lead them to the true knowledge of natural philosophy; accordingly they had recourse to experiments, and it is found that more discoveries have been made of late, since that method was introduced, than in the many preceding ages.<sup>100</sup>

Still, Philalethes gave the early scientists credit for their knowledge of the "doctrine of atoms." According to this doctrine, earth, air, fire, and water were the four elements to which all things could be

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<sup>98</sup>Ibid., June 24, 1737.

<sup>99</sup>Virginia Gazette (Hunter), October 3, 1751.

<sup>100</sup>Virginia Gazette (Rind), March 4, 1773.

decomposed--these were the basic elements. Most of the essay described the common properties of the four elements; attraction, of which there is cohesion, gravitation, electricity, and magnetism; mobility, the ability to change places; inactivity or inertia, the "tendency of matter to remain in its state, either of motion or rest;" solidity, the ability to "possess some place;" extension, the amount of space occupied by a body; and divisibility, the ability to be separated without changing the matter.<sup>101</sup>

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<sup>101</sup>Ibid.

Leach, "The Story  
of Thought in the  
17th Century," p. 337.

## CHAPTER VI

### SCIENTIFIC SOCIETIES

The scientific societies made many contributions to science in the eighteenth century. They were important for their stimulation of scientific work and research, for the collection and distribution of scientific information, and for attaining a prestige and intellectual environment in which scientists, and those interested in science, could best work.<sup>1</sup>

Scientific societies were established in Italy, England, and France in the seventeenth century and the practice spread in the early eighteenth century to Germany and Russia and later in the century to most western countries.<sup>2</sup> "There is nothing that has contributed so largely to the rapid progress which science has made since the Renaissance of learning in Western Europe as the growth of scientific societies and academies."<sup>3</sup>

The most important of these societies, at least in a study of eighteenth century American science, was the Royal Society of London.

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<sup>1</sup>The work of these societies in reference to astronomy is discussed in Chapter V.

<sup>2</sup>Michael Kraus, "Scientific Relations Between Europe and America in the 18th Century," Scientific Monthly, LV (September, 1942), pp. 260-261; and Martha Ornstein, The Role of Scientific Societies in the Seventeenth Century (Chicago: The University of Chicago Press, 1938), pp. 73, 91, 139.

<sup>3</sup>Frederick E. Brasch, "The Royal Society of London and Its Influence upon Scientific Thought in the American Colonies," Scientific Monthly, XXXIII (1931), p. 337.



The Royal Society was a leading contributor to scientific knowledge in Europe and several studies have shown the influence of the English society on the spread and growth of science in America.<sup>4</sup>

One main article appeared in the Virginia Gazette concerning the Royal Society. The Council of the Royal Society had expressed their appreciation to the King for his patronage and the King had established a new "Order of Knights Companions of the Royal Society." The article then related the history of the Royal Society which started in 1651 and noted the granting of their charter by Charles II in 1662. The Society was headed by a president, two secretaries, and twenty-one councilmen. There were at this time, 1773, four hundred fifty corresponding members. The corresponding members listed were D'Alembert [sic.], Linnaeus, Buffon, Bonnet, Euler, Jussieu, Bernouilli, Maisson, La Nauze, Ulloa, Baron Van Swieten, Voltaire, and the kings of Prussia and Poland.<sup>5</sup>

A number of shorter extracts about the Royal Society were printed in the Gazette. These included the translation of the Royal Society's Philosophical Transactions into French by de Bremond;<sup>6</sup> a prize to be given for the best answer to Rousseau's "Discourse against Re-Establishment of Arts and Sciences;"<sup>7</sup> the election of the Polish

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<sup>4</sup>See Ibid., pp. 336-355, 448-469; and Margaret Denny, "The Royal Society and American Scholars," Scientific Monthly, LXV (November, 1947), pp. 415-427.

<sup>5</sup>Virginia Gazette (Purdie and Dixon), June 10, 1773.

<sup>6</sup>Virginia Gazette (Parks), June 30, 1738.

<sup>7</sup>Virginia Gazette (Hunter), November 7, 1751.

king to membership in the Royal Society;<sup>8</sup> the death of Francis Fauquier, Lt. Governor of Virginia and Fellow of the Royal Society;<sup>9</sup> the election of Benjamin Franklin to the council of the Society;<sup>10</sup> the notice of a meeting of the Society in which Sir John Pringle was elected to the presidency;<sup>11</sup> and the presentation of a "monster's head" from China to the Society which was discovered to be an ox's skin stretched over a "large Cocoa Nut."<sup>12</sup>

Another of the important scientific societies during the eighteenth century was the Royal Academy of Sciences in Paris. An expedition sponsored by the Royal Academy of Sciences to travel to the North pole "to discover the True Form of the Earth," was reported in Stockholm where they were well received by the king.<sup>13</sup> The topics for the Academy's medals for 1738 and 1739 were announced; they were for 1738, "Of the Darkness and Transparency of Bodies" and "The Cause of the Fertility of the Earth;" and for 1739, "Whether the Air we breathe in goes into the blood?" and "Of the Cause of Heat and Cold in Mineral Waters."<sup>14</sup> Other brief extracts connected with the Academy of Sciences told of its expedition to Peru,<sup>15</sup> the presentation of six mariners

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<sup>8</sup>Virginia Gazette (Purdie and Dixon), March 26, 1767.

<sup>9</sup>Ibid., March 3, 1768.      <sup>10</sup>Ibid., May 26, 1768.

<sup>11</sup>Ibid., March 11, 1773.

<sup>12</sup>Virginia Gazette (Dixon and Hunter), September 23, 1775.

<sup>13</sup>Virginia Gazette (Parks), October 29, 1736.

<sup>14</sup>Ibid., February 24, 1738.      <sup>15</sup>Ibid., July 7, 1738.

compasses to the Society to help determine longitude at sea,<sup>16</sup> the approval of a rust preventative by the Academy,<sup>17</sup> the testing of instruments by the Marquis de Courtenvaux for finding longitude at sea,<sup>18</sup> and the demonstration of an instrument to "find exactly the height of objects inaccessible" by J. A. de Rue for the King and Queen of England.<sup>19</sup>

Many more European societies were mentioned in the Virginia Gazette. These articles told of the formation of the Society for Encouragement of Learning in London in 1736;<sup>20</sup> an attempt by the Academy of Belles Lettres in Amiens, France, to show that England was once part of the continent;<sup>21</sup> the formation of the Academy of Sciences in Corsica by a French army officer;<sup>22</sup> the study of hemp, a mechanical lift, and cattle feed by the Society of Arts in London;<sup>23</sup> an announcement by the Academy of Sciences and Belles Lettres in Mantua that its prize question for 1768 would be, "What is the most simple method of uniting the security of provisions with the freedom of commerce and the exportation of grain?";<sup>24</sup> the establishment of prize funds by the king for the

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<sup>16</sup>Virginia Gazette (Purdie and Dixon), May 20, 1773.

<sup>17</sup>Ibid., July 28, 1774.

<sup>18</sup>Ibid., September 17, 1767.

<sup>19</sup>Virginia Gazette (Rind), November 4, 1773.

<sup>20</sup>Virginia Gazette (Parks), October 22, 1736.

<sup>21</sup>Virginia Gazette (Hunter), June 27, 1751.

<sup>22</sup>Ibid., August 8, 1751.

<sup>23</sup>Virginia Gazette (Purdie and Dixon), March 7, 1766; June 4, 1767; and November 29, 1770.

<sup>24</sup>Ibid., May 12, 1768.

Society of Sciences in Copenhagen;<sup>25</sup> and the announcement by the Academy of Sciences, Belles Lettres, and the Arts, in Lyons, that their prize question for 1776 would be "Whether the electricity of the atmosphere has any influence on the human body?"<sup>26</sup>

As the popularity of scientific societies increased, an attempt was made to establish such a society in the English colonies of America. A forerunner of what was to become the most important scientific society in early America, the American Philosophical Society, Held at Philadelphia, for Promoting Useful Knowledge, was initiated by Benjamin Franklin in 1743. Like most of the early societies in America, interest and participation soon lessened and the organization ceased to function. The American Philosophical Society, Held at Philadelphia, for Promoting Useful Knowledge was formed in 1768 as a result of a merger between the two existing Philadelphia societies. Since most of the important American workers in science became members of this society, it was soon the nucleus of scientific activity in America.<sup>27</sup>

The Virginia Gazette's first article concerning the American Philosophical Society was a short extract from Glasgow. It reported that news had reached Scotland of the progress of the Society:

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<sup>25</sup>Virginia Gazette (Rind), May 26, 1768.

<sup>26</sup>Virginia Gazette (Purdie), February 10, 1775.

<sup>27</sup>Brasch, op. cit., pp. 450-451; Carl and Jessica Bridenbaugh, Rebels and Gentlemen, Philadelphia in the Age of Franklin (New York: Reynal and Hitchcock, 1942), pp. 334-339; and Brooke Hindle, The Pursuit of Science in Revolutionary America, 1735-1789 (Chapel Hill: University of North Carolina Press, 1956), pp. 73-74, 121-139.

This is the first literary Establishment beyond the Atlantick Ocean, and gives a striking Proof of the Greatness and Prosperity of our Colonies, for Men seldom or never form themselves into Societies of that Kind where Ease and Affluence are not eminently enjoyed.<sup>28</sup>

Another article told of the new members elected to the American Philosophical Society.

We are requested to insert the following. At a meeting of the American Philosophical Society, on Friday the 21st instant, the following new members were elected: The right honourable the earl Stanhope, the honourable lord Mahon, and Samuel Moore, esquire, of London. The honourable John Ellis, esquire, the honourable Bryan Edwards, esquire, and doctor William Wright of Jamaica. Bernard Roman, esquire, and George Gould, esquire, of Pensacola. Doctor James M'Clurg, and doctor Walter Jones, of Virginia. John Jones, esquire, of Maryland. Doctor William Bryan, and doctor Jonathan Elmer, of New Jersey. Doctor John Perkins of Boston. Messieurs James Bringburst, Benjamin Morgan, Sharp Delany, and doctor Thomas Bond, of Philadelphia.<sup>29</sup>

Part of Benjamin Rush's speech to the American Philosophical Society was printed in the Virginia Gazette. The speech was entitled "On the natural History of Medicine among the Indians, and a comparative View of their Diseases and Remedies with those of civilized Nations." The extract in the Gazette contained very little on diseases among Indians, being largely concerned with the welfare and development of America.<sup>30</sup>

The final mention of the American Philosophical Society was the appointment of a committee to study the effects of the "severe and long continued" winter of 1779.<sup>31</sup>

<sup>28</sup>Virginia Gazette (Purdie and Dixon), February 11, 1773.

<sup>29</sup>Virginia Gazette (Rind), March 17, 1774.

<sup>30</sup>Virginia Gazette (Purdie and Dixon), July 21, 1774.

<sup>31</sup>Virginia Gazette (Dixon and Nicolson), April 8, 1880.

An extract from the minutes of the American Society held at Philadelphia for Promoting and Propagating Useful Knowledge was printed in 1770 and described a new machine to be used for pumping out ships.<sup>32</sup>

Possibly of local interest to the readers of the Virginia Gazette was the work of the Virginia Society for Promoting Useful Knowledge. The society was founded in May, 1773, in Williamsburg under the leadership of eight men, particularly John Page.<sup>33</sup> A notice appeared in the Gazette stating that a Philosophical Society of one hundred members had been formed "for the Advancement of useful Knowledge in this Colony." Officers for the group were John Clayton, president; John Page, vice-president; Samuel Henry, secretary; St. George Tucker, assistant secretary; and David Jamison, treasurer.<sup>34</sup>

Soon after the founding of the society, the objectives of the group were submitted to the public.

The Object of their Hopes is to direct the Attention of their Countrymen to the Study of Nature, with a View of multiplying the Advantages that may result from this Source of Improvement. . . . It is therefore the Intention of this Society to rescue from Oblivion every useful Essay, and they hope that the Efforts of their Members will furnish them with a Collection which may at once both amuse and instruct.

. . . Hence, those who are engaged in different Pursuits may receive from the casual Observation of others such Information respecting their own Inquiries as might otherwise have escaped their Attention.

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<sup>32</sup>Virginia Gazette (Purdie and Dixon), February 22, 1770.

<sup>33</sup>Hindle, op. cit., pp. 213-214.

<sup>34</sup>Virginia Gazette (Purdie and Dixon), May 13, 1773.

. . . Virginia furnishes a Field both spacious and almost untrodden. Who can tell what may accrue to the Inhabitants from an Acquaintance with the Nature and Effects of the Climates and Soils? The Minerals, Fossils, and Springs, in which the Country abounds, may yield the greatest Emolument both to their Owners and the Publick. The Multiplicity of Vegetables and Animals may conduce to the Purposes of Commerce and the Comforts of Life, in Modes with which, at present, we are not acquainted.<sup>35</sup>

An attempt to illustrate the importance of the new society and to get public support for it was printed in August, 1773. The writer, Academicus, cited examples of the work of other societies in promoting the pursuit of knowledge and listed various contributions the society could make to agriculture, commerce, navigation, and natural history in Virginia.<sup>36</sup>

In the elections of the Virginia Society for its second year, John Page was chosen president; George Wythe, vice-president; James Madison and Robert Andrews, secretaries; David Jameson, treasurer; and James Madison, curator. At the same meeting a reward and medal were voted to John Hobday for his threshing machine.<sup>37</sup> This was the first medal awarded by an American scientific society for a practical invention, and as far as the Virginia Society was concerned, was the only concrete evidence of its accomplishments.<sup>38</sup>

The Virginia Society for Promoting Useful Knowledge soon declined in importance, as noted in an article by John Page on the fourth

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<sup>35</sup>Ibid., July 22, 1773.

<sup>36</sup>Ibid., August 5, 1773.

<sup>37</sup>Ibid., June 16, 1774.

<sup>38</sup>Hindle, op. cit., pp. 213-215.

anniversary of the Society, May, 1777. The Society had met for the first time in two years and decided that with the war, and the difficulty of getting the large group together, a committee of nine should carry on the business of the organization and select papers for a journal, which it was hoped would soon be printed.<sup>39</sup> This meager attempt was not enough, however, to revitalize the organization.<sup>40</sup>

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<sup>39</sup>Virginia Gazette (Purdie), May 16, 1777.

<sup>40</sup>Hindle, op. cit., p. 215.



## CHAPTER VII

### SUMMARY AND CONCLUSIONS

The Virginia Gazette, as shown, contained many articles on science. These articles varied from scholarly essays to short notes of scientific interest and covered most areas of science. The extant issues of the Gazette provided a representative view of science from 1736-1780.

The printers of the Gazette apparently included in their newspapers whatever news was available; therefore, their being unable to obtain material might explain the absence of the work of many eighteenth century scientists, especially non-English. Another reason for the absence of many scientific accounts was the large number of missing issues. As noted earlier, except for the years 1745, 1746, 1751, 1752, and 1755, the issues of the Gazette from 1740-1765 are almost entirely missing. It was during this period that Benjamin Franklin did his important scientific work with electricity. Also, the gap of missing issues possibly accounts for some of the lack of articles on natural history. For, during this period such work as John Clayton's Flora Virginica, a description of the plants of Virginia, was printed, and in Europe, Linnaeus was developing his new system of classification.

The letters and essays submitted to the Virginia Gazette by local contributors constitute a major part of the articles on science, especially in the areas of astronomy and medicine. These letters and essays were generally of greater length than the extracts from outside Virginia.

Most of the local writers were characterized by a complex and poorly organized style of writing. Also, they had a difficult time holding to their topic and would often devote most of their article to displaying their knowledge or publicly voicing a debate. The articles by John Tennent, John Dalgleish, T. V., and X. Y., and the numerous writers on the comets of 1769 and 1770 are good examples of this type of writing.

The newly developing society and the individual's concern for life probably provide an explanation for the numerous articles on medicine. The articles on smallpox and inoculation were concentrated in the periods 1737-1738 and 1768-1772 which coincide with outbreaks of the disease in Virginia. The people of Virginia had comparatively little trouble with smallpox, but the threat of the disease caused great concern as witnessed by the Norfolk trouble where few actual cases of smallpox were involved.

Of the many cures printed in the Virginia Gazette, very few were written by men whose work survived the judgment of later generations. Most would be classified as quacks. Many people were convinced of the merit of these practitioners although many of their cures seem absurd and even repulsive. The writings of the quacks in the Virginia Gazette were always very persuasive, being backed by successful cures and testimonials, plus an assurance of the writers knowledge.

There were few articles on astronomy other than those on the transit of Venus in 1769 and the comets of 1769 and 1770. The articles on the transit of Venus in 1769 are evidence of its importance to the eighteenth century astronomer, and the attempt by Virginians to create

an interest in the transit show the wide spread attention devoted to the event. Few issues of the Gazette were available when the first transit of Venus occurred in 1761, although it is likely that few, if any, articles appeared in the Virginia Gazette about it since it was not visible in the colonies and there was very little organization and attention given to the event compared to that in 1769.

The articles on electricity were concerned mainly with experiments based on the work of Benjamin Franklin although no accounts of his work were printed in the Virginia Gazette. John Winthrop's two articles on the theory of electricity certainly must be placed among the best written and most informative articles found in the Gazette on science. These two articles, plus the "Dissertation on the Four Elements," provided a good representation of the status of scientific development in the eighteenth century.

The lack of discussion of chemistry in the Virginia Gazette is partly explained by the fact that the modern chemistry of Lavoisier, Priestley, and others was not initiated until the late eighteenth century and most of the controversy which developed would have been after 1780.

The area of science where surprisingly little appeared in the Virginia Gazette was natural history. For a society which had such an interest in collecting, growing, and discovering more about their surroundings, there was very little written in the Gazette. Yet, Americans had many works on natural history printed in Europe. This was one field, however, in which many untrained persons in America

participated and served merely as collectors for scientists in Europe. Linnaeus and all the other great names of botany during the eighteenth century are also missing from the Virginia Gazette. It might be added that most secondary sources on American colonial science devote more to natural history than any other field of science.

In conclusion, the Virginia Gazette did not print any continuous coverage of events in science, yet enough was printed for its readers to be informed to a limited degree of the developments in science. The articles which were extracts or short accounts did not have the completeness of a pamphlet or a journal, yet for scientific information probably better served the lay community than the longer treatises.

(cont.) The **BIBLIOGRAPHY** of George Washington  
and of his family, 1732-1800.

Compiled by the Library of Virginia in the 1960s. Reprinted  
in 1971.

Washington, George  
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Washington, George

## BIBLIOGRAPHY

### A. PRIMARY SOURCES: NARRATIVES

- Bell, Whitfield J., Jr. (ed.). "Nicholas Collin's Appeal to American Scientists," The William and Mary Quarterly, XIII (October, 1956), 519-550.
- Burnaby, Andrew. Travels through North America. New York: A. Wessels Company, 1904.

### B. BOOKS

- Bell, Whitfield J., Jr. Early American Science: Needs and Opportunities. Williamsburg: The Institute of Early American History and Culture, 1955.
- Bett, Walter R. (ed.). The History and Conquest of Common Diseases. Norman: University of Oklahoma Press, 1954.
- Blanton, Wyndham B. Medicine in Virginia in the 18th Century. Richmond: Garrett and Massie, Inc., 1931.
- Bridenbaugh, Carl and Jessica. Rebels and Gentlemen, Philadelphia in the Age of Franklin. New York: Reynal and Hitchcock, 1942.
- Brigham, Clarence S. History and Bibliography of American Newspapers, 1690-1820. Worcester, Mass.: American Antiquarian Society, 1947.
- Bruce, Philip Alexander. Institutional History of Virginia in the Seventeenth Century. 2 vols. New York: G. P. Putnam's Sons, 1910.
- Butterfield, Herbert. The Origins of Modern Science. New York: The Macmillan Company, 1951.
- Cohen, I. Bernard. Benjamin Franklin: His Contribution to the American Tradition. Indianapolis: Bobbs-Merrill, 1953.
- \_\_\_\_\_. Some Early Tools of American Science. Cambridge: Harvard University Press, 1950.
- \_\_\_\_\_. The Birth of a New Physics. Garden City: Doubleday and Company (Anchor Books), 1960.

- Cooke, John Esten. Virginia, A History of the People. Boston: Houghton, Mifflin, and Company, 1890.
- Crowther, James Gerald. Famous American Men of Science. New York: W. W. Norton and Company, Inc., 1937.
- Duffy, John. Epidemics in Colonial America. Baton Rouge: Louisiana State University Press, 1953.
- Emery, Edwin and Henry Ladd Smith. The Press and America. New York: Prentice-Hall, Inc., 1954.
- Garrison, Fielding H. History of Medicine. Philadelphia: W. B. Saunders Company, 1929.
- Gorton, David Allyn. The History of Medicine. New York: G. P. Putnam's Sons, 1910.
- Hindle, Brooke. The Pursuit of Science in Revolutionary America, 1735-1789. Chapel Hill: The University of North Carolina Press, 1956.
- Jaffe, Bernard. Men of Science in America: the Role of Science in the Growth of Our Country. New York: Simon and Schuster, 1944.
- Lee, Alfred McClung. The Daily Newspaper in America. New York: The Macmillan Company, 1937.
- Mason, Stephen F. A History of the Sciences. London: Routledge and Kegan Paul Ltd., 1953.
- Miall, Louis Compton. The Early Naturalists; Their Lives and Work, (1530-1789). London: The Macmillan Company, 1912.
- Mott, Frank Luther. American Journalism. New York: The Macmillan Company, 1941.
- Moulton, Forest Ray and Justus J. Schifferes (eds.). The Autobiography of Science. Garden City: Doubleday and Company, Inc., 1946.
- Ornstein, Martha. The Role of Scientific Societies in the Seventeenth Century. Chicago: The University of Chicago Press, 1938.
- Peattie, Donald Culross. Green Laurels. The Lives and Achievements of the Great Naturalists. New York: Simon and Schuster, 1936.
- Reed, Howard S. A Short History of the Plant Sciences. New York: The Ronald Press, 1942.

- Smallwood, William Martin and Mabel S. C. Natural History and the American Mind. New York: Columbia University Press, 1941.
- Stillman, John M. The Story of Early Chemistry. New York: D. Appleton and Company, 1924.
- Ward, Duren J. H. Landmarks of Science from Columbus to Spencer. Privately printed, 1956.
- Wiener, Philip P. and Aaron Noland (eds.). Roots of Scientific Thought. New York: Basic Books, Inc., 1957.
- Wolf, Abraham. A History of Science, Technology, and Philosophy in the 16th and 17th Centuries. London: Allen and Unwin, 1950.
- \_\_\_\_\_. A History of Science, Technology, and Philosophy in the Eighteenth Century. London: Allen and Unwin, 1952.
- Woolf, Harry. The Transits of Venus, A Study of Eighteenth-Century Science. Princeton: Princeton University Press, 1959.
- Youmans, William Jay (ed.). Pioneers of Science in America. New York: D. Appleton and Company, 1896.

#### C. PUBLICATIONS

- Scientific American. Lives in Science. New York: Simon and Schuster, 1957.

#### D. INDEXES

- Cappon, Lester J. and Stella F. Duff (comps.). Virginia Gazette Index, 1736-1780. 2 vols. Williamsburg: The Institute of Early American History and Culture, 1950.

#### E. PERIODICALS

- Brasch, Frederick E. "The Royal Society of London and Its Influence upon Scientific Thought in the American Colonies," Scientific Monthly, XXXIII (1931), 336-355, 448-469.



- Denny, Margaret. "The Royal Society and American Scholars," Scientific Monthly, LXV (November, 1947), 415-427.
- Dunbar, Gary S. "The Development of Science in Colonial America," The Social Studies, L (April, 1959), 123-128.
- Kraus, Michael. "Scientific Relations Between Europe and America in the 18th Century," Scientific Monthly, LV (September, 1942), 259-272.
- Miller, Genevieve. "Smallpox Inoculation in England and America: A Reappraisal," The William and Mary Quarterly, XIII (October, 1956), 476-492.
- Virginia Historical Society. "Letters of William Fitzhugh," The Virginia Magazine of History and Biography, I (April, 1894), 391-415.
- Woolf, Harry. "British Preparations for Observing the Transit of Venus of 1761," The William and Mary Quarterly, XIII (October, 1956), 499-518.

#### F. UNPUBLISHED MATERIALS

- Owen, James Kimbrough. "The Virginia Vestry, A Study in the Decline of a Ruling Class." Unpublished Ph.D. dissertation, Princeton University, 1948.

#### G. NEWSPAPERS

- Virginia Gazette. John Clarkson and Augustine Davis (eds.), May, 1779-December, 1780.
- Virginia Gazette. John Dixon and William Hunter, Jr. (eds.), January, 1775-December, 1778.
- Virginia Gazette. John Dixon and Thomas Nicolson (eds.), February, 1779-April, 1780.
- Virginia Gazette. William Hunter (ed.), January, 1751-January, 1761.
- Virginia Gazette. William Parks (ed.), September, 1736-September, 1746.
- Virginia Gazette. John Pinkney (ed.), September, 1774-February, 1776.
- Virginia Gazette. Alexander Purdie (ed.), February, 1775-October, 1778.

Virginia Gazette. Alexander Purdie and John Dixon (eds.), March, 1766-  
December, 1774.

Virginia Gazette. Clementina and William Rind (eds.), May, 1766-  
September, 1774.

Virginia Gazette. Joseph Royle (ed.), February, 1762-October, 1765.