

NETWORKS AND PROFESSIONALIZATION: A HISTORY OF THE
VIRGINIA ACADEMY OF SCIENCE, 1923-1995

by
Charlotte Webb

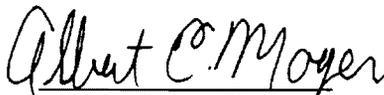
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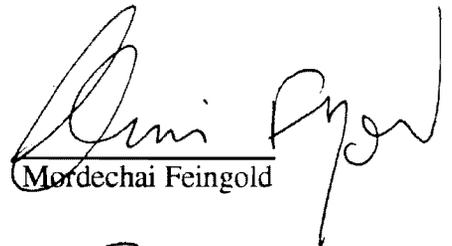
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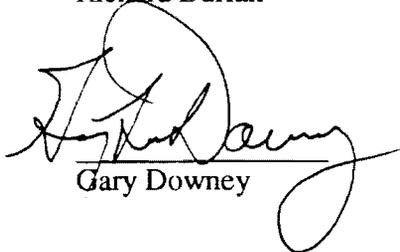
Science and Technology Studies

APPROVED:


Albert Moyer, Chairman


Richard Burian


Mordechai Feingold


Gary Downey


Richard Hirsh

September 3, 1997
Blacksburg, Virginia

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1923-1995

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Albert Moyer, Chairman

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(ABSTRACT)

In 1923, scientists and science educators gathered in Williamsburg at the College of William and Mary for the first meeting of the Virginia Academy of Science. Representing a variety of scientific disciplines and heralding from virtually every institution of higher education in the Commonwealth, the 135 charter members eagerly supported the establishment of an association to facilitate professional development.

Virginia scientists were not unique in chartering an academy to promote professionalism. Over the past century and a half in the United States, organizations at the national and state levels played critical roles in professional advancement. Offering camaraderie, encouraging research, and in some cases, providing a publication outlet, scientific organizations often function as the nucleuses of professionally supportive scientific networks.

This dissertation traces the development of the Virginia Academy of Science from 1923 to 1995. Looking discriminately at the past, this study emphasizes the sociology, economics, and politics of the Virginia Academy as well as the Academy's interaction with the larger Virginia society. In so doing, the dissertation examines both Academy's more obvious role in shaping the ideas and institutions of science in twentieth-century Virginia and its less-recognized impacts on individuals and ideology. Incorporating recent

perspectives from the disciplines of science and technology studies, this dissertation reveals how the Virginia Academy of Science molded and in turn was molded by the complex of contemporary practices, interactions, and beliefs on state and national levels. In other words, the analysis considers the ways in which the Academy has been and still is both reflective of and a shaping influence on Virginia culture.

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INTRODUCTION

Framing an Academy of Science, 1922-1995

Part I: General Overview

In April of 1922, the Association of Virginia Biologists (AVB) gathered on the campus of Randolph Macon Women's College in Lynchburg for its second annual meeting. Reacting to the Commonwealth's overall lack of moral and financial support for science education, research, and participation in national professional meetings, the Association considered extending its membership to other scientific disciplines in the region through the establishment of a state academy of science. A primary force in this direction was biologist and first president of the Association, Ivey F. Lewis of the University of Virginia, who, as a member of the North Carolina Academy of Science, understood the vital role an academy of science could play in defining and legitimating scientists' professional status. After much discussion, the AVB authorized its Executive Committee to begin formation of an academy of science for the Commonwealth.¹ Responding to an invitational letter drafted by Lewis, members of various scientific disciplines within the Virginia institutions of higher education convened in Williamsburg at the College of William and Mary on April 26, 1923, for the first annual meeting of the Virginia Academy of Science (VAS) and the final meeting of the Association of Virginia Biologists.²

¹Organization and Proceedings of the Virginia Academy of Science, 1923-1924, p. 5. The Executive Committee consisted of President W. D. Hoyt of Washington and Lee University, Vice President Donald D. Davis of William and Mary, Secretary-Treasurer W. L. Dolley of Randolph Macon College in Ashland, Horace E. Hayden of University of Richmond, and J. I. Hamaker of Randolph Macon Women's College.

²Throughout the text, I will use interchangeably the terms Virginia Academy of Science, Virginia Academy, and the acronym VAS. I will also alternate between Association of Virginia Biologists and its acronym AVB.

Virginia scientists were not unique in chartering an academy to facilitate professional development. Over the past century and a half in the United States, organizations at the national and state levels have played a critical role in career advancement. Offering camaraderie, encouraging research, and in some cases, providing a publication outlet, scientific organizations often function as the nucleus of a scientific network. The establishment of professional groups indicates not only an acute awareness by scientists of the need to formalize their relationships among colleagues but also between themselves and the public.³ In the eyes of the public, organizations indicate a level of expertise and authority that implies professionalism and hence the need for public resources and support.⁴ Thus, organization serves to move scientists into positions of significance and authority--an authority stemming from the privileged relationship they are assumed to have with specialized information about the natural world.

Indeed, the dominant view among the lay public is that scientists hold positions of authority in society because they reveal truths about nature and offer ways that society might use such truths to accomplish practical objectives and respond to the human desire to

³For an overview of the scientific societies of early America, see Ralph S. Bates, Scientific Societies in the United States (New York: 1958) and Alexandra Oleson and Sanborne C. Brown, eds., The Pursuit of Knowledge in the Early American Republic: American Scientific and Learned Societies from Colonial Times to the Civil War (Baltimore: 1976). See, also, Bruce Winchester Stone, "The Role of the Learned Societies in the Growth of Scientific Boston, 1780-1848" (Ph.D. dissertation, Boston University, 1974). For information on the early, leading American scientific societies, see, for example, the Boston Society of Natural History, The Boston Society of Natural History, 1830-1930 (Boston: 1930). For a history of the New York Academy of Science, see Simon Baatz, Science in the Metropolis (New York Academy of Sciences, 1990). For general overviews see Nathan Reingold, Science in Nineteenth-Century America (London: MacMillan, 1966); also, Charles E. Rosenberg, "Science and Social Values in Nineteenth-Century America: A Case Study in the Growth of Scientific Institutions" in Arnold Thackrey and Everett Mendelsohn, eds., Science and Values: Patterns of Tradition and Change (New York: Humanities Press, 1974).

⁴For a detailed example of this phenomenon, see Bruno Latour, The Pasteurization of French Society, translated by Alan Sheridan (Cambridge, Mass.: Harvard University Press, 1986).

predict and to control.⁵ It logically follows that individual scientists or groups of scientists attain expert status and therefore acquire authority in correspondence to their personal success in professional work. Probably the most powerful example of such achieved status and authority is the figure of Albert Einstein, who moved from his humble position as a patent clerk in Bern to a man whose opinion and support was sought not only in matters of science but also on moral and political fronts, from support for Zionism to the development of atomic weaponry. While I do not deny that such investigatory success is and should be a major reason behind expert status, in this dissertation I will focus on the other factors--rhetorical, political, and especially organizational--which also play a significant role in the determination of who speaks for the physical world and what, in turn, such spokespersonship means for the scientific enterprise on all levels.

Beginning in the first half of the nineteenth century, scientists at educational institutions, along with dedicated amateurs, began to carve out a professional niche for themselves--one that would bring them to a par with practitioners in established fields such as medicine, law, or religion.⁶ The appearance of exclusive groups such as the Boston Society of Natural History, the New York Academy of Sciences, and the Academy of Natural Sciences of Philadelphia attests to these early efforts. By the second half of the nineteenth century, the American Association for the Advancement of Science (AAAS) and especially the National Academy of Science (NAS) were prominent vehicles to status--establishing and promoting authority by encouraging both technical skills and professional

⁵For an introduction to the dominant view, see Paul R. Gross and Norman Levitt, Higher Superstition: The Academic Left and Its Quarrels with Science (Baltimore: The Johns Hopkins University Press, 1994).

⁶For a study of this period, see Robert V. Bruce, The Launching of Modern American Science, 1846-1876 (New York: Alfred A. Knopf, 1987), p. 4. See also, A. Hunter Dupree, Science in the Age of the Federal Government (Baton Rouge: 1967).

attitudes and by convincing the public of the legitimacy of scientific work.⁷ Of the two organizations, Sally Gregory Kohlstedt writes, the founders of the AAAS were determined to create a democratic association “with the potential to coordinate scientific inquiry and to establish science as a true and visible profession in the United States.”⁸ The NAS, on the other hand, was less interested in democratizing science and more interested in elevating its elite status through encouraging its advisory role to the federal government.⁹

Indeed, the gradual expansion of science through national, state, and local associations, the rise of scientific schools within colleges and universities, the appearance of professional journals, the development of organized research activity, and the creation of federally affiliated science agencies such as the United States Coastal Survey and the United States Lighthouse Board represented a new and heightened awareness of and support for

⁷See Sally Gregory Kohlstedt’s The American Association for the Advancement of Science, 1848-1860 for a detailed analysis of the early years of the AAAS. For an analysis that covers the later years of the AAAS, see

“Review” of Burton J. Bledstein, The Culture of Professionalism: The Middle Class and the Development of Higher Education in America (New York: W. W. Norton & Company, Inc., 1976) in Social Science Quarterly 58 (March 1978), p. 737. Bledstein’s work is useful to this history in that he is interested in the ways in which the values and ideas of aspiring professionals affected their professions and lives. See also, A. Hunter Dupree, “The National Academy of Sciences,” in eds., Alexandra Oleson and John Voss, The Organization of Knowledge in Modern America, 1860-1920 (Baltimore: Johns Hopkins University Press, 1979), pp. 342-363. For discussions on professionalism, see George H. Daniels, “The Process of Professionalization in American Science: The Emergent Period, 1829-1860,” Isis 58 (1967), pp. 151-166; Jay Harrison Abrams, “Professionalism in Public Organizations: The Case of the Research Scientist” (Ph.D. dissertation, State University of New York at Albany, 1975); William J. Goode, “Community within a Community: the Professions,” in American Sociological Review 22 (1957), pp. 194-200; John J. Beer and W. David Lewis, “Aspects of the Professionalization of Science,” in Daedalus 92 (1963), pp. 754-84; Daniel Kevles, The Physicists: The History of a Scientific Community in Modern America (Cambridge, Mass.: Harvard University Press, 1987 (1971)).

⁸Sally Gregory Kohlstedt, The Formation of the American Scientific Community: The American Association for the Advancement of Science, 1848-60 (Urbana: University of Illinois Press, 1976), pp. 59-77.

⁹In his Pulitzer prize-winning account, The Launching of Modern American Science, 1846-1876 (New York: Alfred A. Knopf, 1987), Robert V. Bruce discusses the differences between the AAAS and the NAS and in particular the unique way that each organization mirrored an important characteristic of modern American society.

scientific endeavors in a professional arena. As Robert Bruce concludes in The Launching of Modern American Science, during the mid-nineteenth century, “[A]merican science came to see itself and society came to see it as an established profession.”¹⁰ By 1876, organized, discipline-based, national societies--as opposed to all-inclusive organizations--appeared and soon were characterized by unique criteria of admittance, accompanied by a rhetoric of authority and expertise, that strengthened professional boundaries.¹¹ In her recent book To Foster the Spirit of Professionalism, Nancy Smith Midgette explains that these disciplinary organizations “formulated professional career parameters that included a graduate degree, original research and publication, [and] employment utilizing specialized scientific knowledge. . . .”¹²

It is not surprising that such discipline-based organizations sprang up first in the northeast--after all, the quantity and quality of institutions of higher learning in the north was much higher than elsewhere in the nation during the nineteenth and even the early twentieth century. It was not difficult, back then, for scientists in these areas to become active members in professional groups. However, for those living in more geographically isolated areas and in areas with fewer institutions of higher learning, such as the south, access to the desirable professional organizations was difficult.¹³ Indeed, many of the

¹⁰Robert V. Bruce, The Launching of Modern American Science, 1846-1876 (New York: Alfred A. Knopf, 1987), p. 4.

¹¹For general information, Bernard J. Bledstein, The Culture of Professionalism: The Middle Class and the Development of Higher Education in America (New York: W.W. Norton & Company, Inc., 1976). See also Ralph S. Bates, Scientific Societies in the United States (New York: 1958). See, John F. Fulton, “Science in the American University, 1636-1946,” in Bulletin of the History of Medicine 20(1946). See, Nathan Reingold, Science in America Since 1820 (New York: Science History Publications, 1976).

¹²Nancy Smith Midgette To Foster the Spirit of Professionalism (Tuscaloosa: University of Alabama Press, 1991), p. 5.

¹³For this history, I consider the southern states to be the South Atlantic states of Delaware, Maryland, Virginia, West Virginia, North Carolina, South Carolina, Georgia, and Florida; the East South Central

academic scientists in the south found their desire to attend professional meetings and participate in their discipline on a national level primarily thwarted by inadequate education and poor research facilities and, to a lesser extent, by lack of funding and transportation. Struggling to satisfy their professional needs and keenly aware of their ascribed, second-class status, southern scientists--in an effort to shift this balance--turned inward, forming their own communities.¹⁴

Slowly, southern scientists organized local societies. An early example of such an organization was the Elisha Mitchell Scientific Society (EMSS) formed in 1883 by four biologists at the University of North Carolina, Chapel Hill, according to Francis Preston Venable, to “ward off the deadening effect that isolation was bound to have upon our scientific work.”¹⁵ While the “isolation” of which Venable speaks refers in small part to the geographic distance between most southern universities and the sites of national organizations, it also reveals the unfriendly and often elitist environment that the national associations presented to those seeking recognition from areas of the country that were not considered intellectually superior. Beginning in 1902 and continuing through 1936, southern scientists--isolated as they were from the halls of power on the national stage--chartered statewide, interdisciplinary academies of science to fill the professional void.¹⁶

states of Kentucky, Tennessee, Alabama and Mississippi; and the West South Central states of Arkansas, Louisiana, Oklahoma, and Texas.

¹⁴Barnard-Millington Symposium, University of Mississippi (Oxford: 1981). Wilbur Cash, The Mind of the Old South (New York: Vintage Books, 1941). Ronald L. Numbers and Janet S. Numbers, “Science in the Old South: A Reappraisal,” Journal of Southern History 48(May, 1982), pp. 163-184.

¹⁵In Nancy Smith Midgette, “In Search of Professional Identity: Southern Scientists, 1883-1940,” The Journal of Southern History VLIV, 4(Nov., 1988), p. 605 taken from Francis Preston Venable, “Historical Sketch of the Elisha Mitchell Scientific Society,” JEMSS, XXXIX (April 1924), p. 119.

¹⁶See, for example, W. S. Bayley, “The Place of State Academies of Science among Scientific Organizations,” Science (June 1, 1923), pp. 623-29. Harry J. Bennett, “The First Half-Century of the Louisiana Academy of Science, 1927-1977,” PLAS 45(December 1982), pp. 8-88. Wright A. Gardner, “The Organization of the Alabama Academy of Science,” JAAS 3(1932), pp.7-9. J. M. Robinson, “The Alabama

These academies offered scientists the opportunity to interact with colleagues throughout the state, discuss local and national research, and publish in a journal. Scientists could discuss local and state-wide concerns, providing intellectual and pedagogic interchange within the region.

Prior to World War I, scientists in five southern states--Texas, Oklahoma, North Carolina, and Maryland--established academies of science. After the war, Tennessee, Kentucky, Arkansas, South Carolina, Alabama, Georgia, Virginia, and Florida followed suit. As the south inched toward greater industrialism and economic stability, southern state institutions of higher education were the direct beneficiaries, receiving greater funding, which facilitated expansion and attracted more experienced, specialized, and well-educated faculty. Likewise, state academies of science grew in number and strength. Within universities and colleges themselves, a heightened emphasis on research and community service served the academies well, as increasingly state academies became involved both in the development of material resources--specifically to the ways in which science and technology might contribute to a more affluent, industrial, and commercial society--and of educational resources. The role of the state academies remained important in the period between the two world wars, particularly when the Great Depression rendered the various states incapable of funding scientists' attendance at or connection with national professional bodies.

Academy of Science in the Postwar Era," JAAS 18 (December 1946), pp. 83-85. L. B. Ham, "Early History: The Arkansas Academy of Science," PAAS 1(1941), pp. 3-6. W.E. How, Jr., "History of the South Carolina Academy of Science," BCAS 1(1935), pp. 2-3. J.T. McGill, "The Tennessee Academy of Science," JTAS 8(January 1933), pp. 22-33. Harold E. Wilcox, "State Science Academies," Journal of Southern Research 3 (November-December 1951), pp. 24-25. Allan D. Charles, "A History of the Georgia Academy of Science" (Master's thesis, Emory College, 1968).

The Second World War, with its heavy emphasis on weapons technology--the apex of which was the development of radar and nuclear bombs--boosted the financial base of science throughout the United States. Following the war, southern states experienced phenomenal economic growth, dramatically improving support for scientific practice--a support brought about in part by the demand from returning veterans for the G.I. bill, who had seen for themselves what science and technology could accomplish. Colleges and universities, which for so long had suffered from insufficient funding, found themselves positioned to hire more scientists, establish modern research facilities, and create rigorous graduate programs.¹⁷ In addition, both private and public sector industries offered many opportunities for scientists to expand their professional activities and horizons. Well-funded at home and increasingly self-assured, southern scientists moved out into the national professional scene.¹⁸ With such different sources of professional support now available, academies of science found themselves with a diminished role in the professional lives of their members. As the academies were supplanted as the primary avenue for the professional advancement of southern science practitioners, these organizations were forced to look in other directions for alternate missions.

Beginning in the 1950s and continuing through the 1990s, one important direction chosen by state academies was science education; a second, environmental conservation. By and large, state academies of science focused on secondary-school science education.¹⁹ Science fairs, junior academies of science, scholarship awards, and visiting scientist

¹⁷John T. Wilson, Academic Science, Higher Education, and the Federal Government, 1950-1983 (Chicago: University of Chicago Press, 1983).

¹⁸See, for example, James C. Cobb, The Selling of the South: The Southern Crusade for Industrial Development, 1936-1980 (Baton Rouge: Louisiana State University Press, 1982).

¹⁹See, for example, Scott L. Montgomery, Minds for the Making: The Role of Science in American Education, 1750-1990 (New York: Guilford Press, 1994).

programs were established by means of private, state, and federal funding in the hope of encouraging an early interest in science among the young--one that might carry over into a career. Efforts at environmental conservation took many avenues, depending on the needs and the structures of the individual states. Academies formed local action committees and began political lobbying, which along with the tools of public opinion polls, encouraged an awareness among the general citizenry and politicians in particular of the choices to be made on environmental issues. In some cases, publications addressing specific problems or areas brought the combined expertise and authority of an academy to bear on specific issues.

It would be a mistake, however, to assume that academies of science completely abandoned their fundamental structure and initial function: to provide scientists with individual and regional professional standing through annual meetings at which scholarly efforts could be presented and through publication outlets. Rather than focusing on mature scientists, however, the academies recognized the vital role they could play in offering graduate students and young professors the opportunity to present their research in a friendly, yet professional, environment. Additionally, established scientists might continue to present papers at the academy, thereby ensuring priority for research that would be published later in a national journal.²⁰ In this manner, academies continued their traditional role of supporting the development of “professionalism” and of fostering relationships among scientists within the borders of their states.

²⁰Nancy Smith Midgette To Foster the Spirit of Professionalism (Tuscaloosa: University of Alabama Press, 1991), p. 9.

It is abundantly clear that southern state academies of science--from North Carolina's, which was established in 1902, to Florida's, which began in 1936--were born of professional needs on the part of the mature scientist. The Virginia Academy of Science is no exception: indeed, its general history often parallels that of other southern state academies of science. But each academy has its own story--one that mirrors the unique development of science in its particular state. The variety of academic disciplines, the rise of institutions in which scientists play an active role in teaching and research, and the differences among the states in their need to support technical and scientific entrepreneurs helped to shape the nature of the scientific community in each region. That community, in turn, brought into being its own academy on a timetable corresponding to needs dictated by what one might call local conditions.

Part II: Justification of the Dissertation

This dissertation looks critically to the past, emphasizing the sociology, economics, and politics of the Virginia Academy of Science and the Academy's interaction with the larger Virginia society. Rather than focusing exclusively on the scientific theories and practices--an internalist approach--employed by members of the VAS, this study will examine the social mechanisms by which such scientific practices are mobilized or validated--a contextualist approach.²¹ In so doing, the dissertation will analyze both the Academy's more obvious role in shaping the ideas and institutions of science in twentieth-century Virginia and its less-recognized impact on individuals and ideology. Incorporating recent historiography and science studies perspectives, this study will reveal how the

²¹For an overview of various historiographical approaches in the history of science, see Helge Kragh, An Introduction to the Historiography of Science (Cambridge: Cambridge University Press, 1987). See also Charles C. Gillispie, "Recent Trends in the Historiography of Science," in Bulletin of the History of Chemistry (1994), pp. 19-26.

Academy molded and in turn was molded by the complex of contemporary practices, interactions, and beliefs on state and national levels. In other words, the analysis will consider the ways in which the Academy has been and still is both reflective of and a shaping influence on Virginia culture.

The story of the Virginia Academy of Science merits telling for at least three reasons. First, a history of the Virginia Academy is an important facet of the wider history of national professionalization. All state academies represent critical links in the developing profession of science in the United States. In fact, the state academies represent a venue of scientific activity that frequently is overshadowed by more visible national organizations--organizations that are the object of traditional historical scrutiny--along with prominent discoveries, inventions, and "great people." In fostering scientific activity, the VAS helped to establish and has continued to try to reinforce the scientific infrastructure of Virginia.

Second, a history of the Virginia Academy of Science is reflective of Virginia culture, revealing how the particular patterns of scientific development in Virginia were shaped by the larger environment of the Commonwealth, with the region's unique sponsorship of and reaction to the development of the modern industrial society. At the same time, the development of the VAS cannot be properly considered without close attention to the individuals whose work wove the connections between their institution and their state as both changed over time. A history of an academy of science is a history of people. The ways in which the Academy has evolved afford an opportunity to consider the ways in which Virginia culture has changed. And as changing times produce new environments and different needs, so, too, people become different and that difference is reflected in the Academy. In the process of continually legitimating itself, the VAS has had to constantly justify its social purposes, and, in doing so, it has had to appeal to the general

cultural values of the Commonwealth. As Bruce Sinclair writes in Philadelphia's Philosopher Mechanics: A History of the Franklin Institute: "Institutions are particularly valuable subjects for analysis. They reflect the rhetoric which surrounds self-conscious social inventions; and their successes and failures reveal what lies behind pronouncements. In other words, institutions expose much about a culture . . ." ²² Sinclair warns, however, that the historian must be cautious in taking at face value the assessments of the participants in an institution, for too often the passionate involvement of the participants clouds an ability to offer a clear account of the evolution of their organization.

Third, not only has the Virginia culture shaped the Virginia Academy of Science over the past seventy-five years but the Academy itself has been and continues to be a shaping influence on the Commonwealth. The Jeffersonian tradition in which the Commonwealth was steeped and to which Virginians still pay at least lip service emphasized the virtues of an agrarian existence and of the belles lettres. As interested as Jefferson himself was in the science of his time, his emphasis on agrarianism and on the virtues of country life were, in the long run, antithetical to the needs of the young American scientific community as it turned its attention toward the development of both basic science and of industrial technologies. Mr. Jefferson, as he is still referred to in the Commonwealth, cast a long shadow, and the tradition that was developed in his name was fully exploited by the so-called political Byrd machine beginning in the 1930s.²³ The Byrd machine and those political figures who were its heirs were both responsible for and responded to a Jeffersonian, agrarian spirit within Virginia that was not committed fully to the pursuit of science, either in scientific research or as the arm of a nascent technology.

²²Bruce Sinclair, Philadelphia's Philosopher Mechanics: A History of the Franklin Institute, 1924-1865 (Baltimore: The Johns Hopkins University Press, 1974), p. ix.

²³Chapter One will offer an overview of Harry Byrd and his political "machine."

Yet despite this powerful heritage, the Virginia Academy of Science developed into a strong institution, and its leadership helped to shape both professional lives and scientific inquiry in Virginia. Equally as important, the Academy helped to form the expectations that citizens should hold for science in the region and, given the temper of the times during the early years of its existence, was relatively successful in this mission.

A history of the Virginia Academy of Science, then, involves issues important to various audiences. For historians and sociologists, an in-depth examination of a statewide, interdisciplinary community of scientists over the past seventy-five years provides an excellent case study for exploring the changing norms of a scientific community. In addition, historians and sociologists concerned with the professionalization and institutionalization of science will find further fuel for the continuing discussion over how best to analyze the web of negotiations that defines a scientific network. Science policy-makers will gain insight into their own positions as they view the changing relationship between Virginia's scientific community in the form of the VAS and the state government over the decades.²⁴ For to paraphrase the words of A. Hunter Dupree and to set them in the context of this dissertation, the relationship of the government to science has been a meeting point of Virginia political practices and the state's intellectual life.²⁵ If this were the case when the fledgling VAS came into being--during which time Virginia scientists sorely needed professional support--it is even more so in the 1990s, when the degradation of the environment and the drive to shore-up the economy of the state have sharply divided the

²⁴This relationship is very revealing, and it is singularly important in the 1990s, when political battles over certain aspects of science policy, notably in environmental policy-making, have thrown the opposing camps into sharp focus in the public eye.

²⁵The original quote is from A. Hunter Dupree, Science in the Federal Government (Mass: Harvard University Press, 1957), p. 2 and it reads: "The relationship of the government to science has been a meeting point of American political practice and the nation's intellectual life."

people of Virginia. Finally, in recognizing the subtle and diverse roles played by the Virginia Academy over the past seventy-five years, the members themselves will have the opportunity to reflect on their organization, its pattern of action and results. In the 1990s, as the century winds down, such reflection seems particularly appropriate for the Virginia Academy of Science. What role does it wish to play as the Commonwealth prepares for its entry into the twenty-first century?

Part III: Historiography and Methodology

This dissertation involves concerns that are relevant not only to the disciplines of history, sociology, and policy studies but also to many other fields. It is clear that while certain disciplines may provide necessary conceptual apparatus for analyzing the VAS's development, any single discipline's apparatus will not be sufficient to respond to the multiple foci of the topic. This dissertation--with its emphasis on the process rather than the product of science and the social and political environment both surrounding and within the Virginia Academy of Science--requires using a contextualist perspective with an historiography and methodology that is able to address questions relevant to a variety of fields. The interdisciplinary field of Science and Technology Studies (STS or science studies)--with its integration of history, sociology, and philosophy of science--provides such analytical tools and frameworks.

Indeed, a common link among the diverse tools and analytical frameworks of science studies is the principle that science and technology must be viewed in context--be it social or cultural, historical or sociological, *etcetera*. At its foundation, STS is an amalgam of contextualist perspectives with roots in each of the three basic disciplines. In addition to

this contextualist core, science studies practitioners hold that science and its attendant features are, to a degree, socially constructed. Karin Knorr-Cetina and Michael Mulkay offer a straightforward definition of social construction in their introduction to Science Observed, writing: "The inclination to adopt what can loosely be described as a constructivist perspective is characterized by a concern for the processes by which outcomes are brought about through the mundane transactions of the participants."²⁶ Such a perspective calls for the process of doing science to be studied with as equal vigor as the product. In considering the development of the Virginia Academy of Science, it is clear that the "mundane interactions" of the members of the society result in not only intended but also unintended outcomes: in other words, the linkage between process and product becomes especially important to analyze.

Historiography

Traditional internalist interpretations stemming from Martha Ornstein's highly persuasive 1928 Role of Scientific Societies in the Seventeenth Century see the institutional transformation of science as deriving solely from monocausal intellectual forces. Over the past sixty-eight years, these interpretations have influenced the conceptual and methodological frameworks governing research on scientific organizations in all areas of inquiry. For example, Ralph Bates' 1958 Scientific Societies in the United States--still the standard directory of American scientific institutions--follows directly in the Ornstein tradition by citing the internal, intellectual practices of the scientific enterprise as primarily responsible for the development and growth of the professional groups.²⁷ More recently,

²⁶Karin Knorr-Cetina and Michael Mulkay, "Introduction: Emerging Principles in Social Studies of Science," in Karin Knorr-Cetina and Michael Mulkay, eds., Science Observed: Perspectives on the Social Studies of Science (London: Sage Publications, 1983), p. 8.

²⁷Martha Ornstein, The Role of Scientific Societies in the Seventeenth Century (Chicago: The University of Chicago Press, 1928 [1913]); Ralph S. Bates, Scientific Societies in the United States (New York: 1958).

John C. Greene's 1984 American Science in the Age of Jefferson justifies institution building by adhering to the traditional view as well: in order for scientists to achieve organization, a certain level of research and scientific inquiry must be in place.²⁸ Over the past two and a half decades, however, a considerable body of scholarship has accrued which proposes that the primary reasons for the institutional development of science are located in the social dimensions of religion, politics, education, and the economy.

Roger Hahn's publication in 1971 of The Anatomy of a Scientific Institution: The Paris Academy of Sciences, 1666-1803 marked a shift away from the internal historiographical tradition of Ornstein by firmly introducing the concepts of social history into the literature on the organization of science.²⁹ According to Hahn, social forces act as conditioning factors and therefore should be considered vital to explaining scientific organizations. Although his focal point was the Paris Academy, Hahn's influence, like Ornstein's, permeated the literature on scientific organizations. Thomas L. Haskell, in his 1977 work on the American Social Science Association (ASSA), exemplifies this historiographical move by focusing on the ways in which changing scientific and cultural norms, important individuals, and already-established institutions shaped the direction taken by the ASSA.³⁰ While the "Hahn tradition" incorporated the social dimension, it still

²⁸John C. Greene's American Science in the Age of Jefferson (Ames: Iowa State University Press, 1984). For a similar perspective, see Brooke Hindle's much earlier The Pursuit of Science in Revolutionary America, 1735-1789 (Chapel Hill: University of North Carolina Press, 1956). See also Raymond Stearns, Science in the British Colonies of America (Urbana: University of Illinois Press, 1970).

²⁹Roger Hahn's The Anatomy of a Scientific Institution (Berkeley: University of California Press, 1971).

³⁰Thomas Haskell, The Emergence of Professional Social Science: The American Social Science Association and the Nineteenth-Century Crisis of Authority (Urbana: University of Illinois Press, 1977). For other literature of this tradition, see, among others, Sally Gregory Kohlstedt, The Formation of the American Scientific Community: The American Association for the Advancement of Science, 1848-60 (Urbana: University of Illinois Press, 1976); Robert Bruce, The Launching of Modern American Science, 1846-1876 (New York: Alfred A. Knopf, 1987); Alexandra Oleson and Sanborne Brown, eds., The Pursuit of Knowledge in the Early American Republic: American Scientific and Learned Societies from Colonial

relied upon explanations which rested in part on the power of the internal, intellectual demands of science itself; in other words, the historiography resulting from Hahn's seminal work actually straddled the divide between the forces at work in the internal and the external realms affecting the subject of study.

Recent literature such as David Lux's "Societies, Circles, and Academies," Nancy Smith Midgette's To Foster the Spirit of Professionalism, and Simon Baatz' Science in the Metropolis: The New York Academy of Sciences place the institutional development within a broader, externalist context of culture, religion, education, economics, and politics.³¹ For these historians, the social dimension is not only a conditioning force, but often is the determining one. Midgette, for example, explores the overall growth of science in the south and the gradual professionalization of southern scientists. Using the southern state academies of science as a point of entry into this subject, she traces the changing relationship between the academies and the scientists as mandated by causes within the general social structure of the twentieth-century south. Baatz bases his account on the premise that science and culture exist in a symbiotic relationship, with neither having primacy over the other. Furthermore, an understanding of this relationship rests on acknowledging the historical contingency of each event in question. Thus, the development of a group such as the VAS should be approached with the nature of not only the scientific practices, but also the political, religious, educational, and economic contexts firmly in focus.

Times to the Civil War (Baltimore: Johns Hopkins University Press, 1976). Also, see Carl Berger, Honour and the Search for Influence: A History of the Royal Society of Canada (Toronto: University of Toronto Press, 1996).

³¹ David Lux, "Societies, Circles, and Academies" in Peter Barker and Roger Ariew, eds., Revolution and Continuity (Washington, D.C.: The Catholic University of America Press, 1991); Nancy Smith Midgette, To Foster the Spirit of Professionalism (Tuscaloosa: University of Alabama Press, 1991); and Simon Baatz, Science in the Metropolis (New York: New York Academy of Sciences, 1990).

This historiographical tension--the internal versus external--is embodied in the positions, choices, and actions of the various members of the VAS as they worked to develop a vigorous institution. I contend, as do many Academy members, that a history of the Virginia Academy of Science entails the history of not only the immediately apparent concerns--science education, environmental conservation, and scientific achievements, to name a few--but also the more subtle social and cultural currents of the broader Commonwealth. It follows, therefore, that religion, politics, economics--those external factors that determine a region's social context--are interwoven in the Academy's history. Yet when asked to comment on the impact of a particular social factor on the course of the Virginia Academy, members often will argue against an outside influence--not willing to concede that internal decisions often incorporate positions that are, indeed, the result of the external contexts in which they lived, worked, and developed the Academy.

A goal, then, will be to reveal how factors cast by Academy members as wholly internal often embody external considerations. For example, after reading historian Harry Stagger's unpublished master's thesis that chronicles the development of the VAS, a prominent member criticized the author for spending too much time discussing race--a topic, the critic remarked, that did not critically influence the Academy's actions during massive resistance.³² It seems highly improbable that in Virginia--the state that provided the military leaders of the Civil War and stood for Massive Resistance during the Civil Right's era--this position could be entirely accurate. Indeed, one may argue that this pundit's dismissive comment embodies a political position. Science Studies practitioner Adam Serchuk writes in the introduction to his dissertation on utility-scale windpower in the United States that his research will "tell a yet untold story, while maintaining that an

³²Boyd Harshbarger, handwritten note on front page of Harry Stagger's Master's thesis located in Special Collections, Virginia Tech.

adequate explanation of historical causality demands the relation of much larger stories at the same time.”³³ This dissertation holds a similar goal, and will take the middle road in terms of historiography: that is, it will consider both the internal factors at play during the birth and growth of the VAS and the often-powerful external forces. This is a history of the Virginia Academy of Science. Virginia offers a different environment for its academy, and many of the scientists themselves are Virginians. This approach to organizations, then, will reflect their time, place, and personalities, and the resulting, often-subtle, network of interactions.

Methodology

How best to understand the organizational and behavioral components of the scientific enterprise known as the Virginia Academy of Science? The Academy might be seen as the center of a large web of negotiations ranging, for example, from the simple interaction between two members of the council to the lobbying of the General Assembly for a state science museum to the response to a controversial decision by the Governor to cut funding for science education. All such negotiations contribute to the continued existence of the Academy as well as to the level of apparent power, or the lack thereof, that it wields within the Commonwealth. These issues require a methodology that will support a contextualist historiography and facilitate both unpacking the historical development of the myriad of negotiations and tell the complex and rich story of the VAS in its first three-quarters of a century.

As a methodological framework, this dissertation loosely employs the social constructivism of Michel Callon and Bruno Latour to offer a simple and clear way of

³³Adam Serchuk, “Federal Giants and Wind Energy Entrepreneurs: Utility-Scale Windpower in America, 1970-1990” (Ph.D. dissertation, Virginia Polytechnic and State Institute, 1995).

visualizing the relationships among all parties directly or indirectly involved in the development of the Virginia Academy of Science. Callon and Latour suggest that an enterprise--such as an academy of science--is at its foundation a network of people and things--resources--held together by their interactions. Further, any enterprise is merely part of a larger network. Explains Latour: "The word network indicates that resources are concentrated in a few places--the knots and the nodes--which are connected with one another--the links and the mesh: these connections transform the scattered resources into a net that may be seen to extend everywhere."³⁴ Furthermore, all scientific enterprises are "Janus-headed"--that is, they present themselves to the public as unswaying in purpose, reliable, and in complete agreement, while simultaneously experiencing within the confines of their organization, uncertainty, controversy, and debate. It is through dissecting the latter, suggest Callon and Latour, that a more comprehensive account may be constructed. The "uncertainty, controversy and debate" within the VAS are clearly revealed in interviews and by the archival documents. Upon careful analysis, these sources show, for example, conflicts over resources and positions within the network of people and things.

For purposes of analysis and to illuminate the greatest portion of this network possible, I will redefine the traditionally inscribed boundary between "internal" and external" that enters into considerations of an institution such as the Virginia Academy of Science. I will attempt to describe the changes that take place within a single network of scientists and science educators in Virginia, as this network operates within the VAS and as the VAS operates within the larger network of scientists in power within the state. In other

³⁴Bruno Latour, Science in Action (Cambridge: Harvard University Press, 1987), p. 180. For further discussion of this approach, see, among others, Bruno Latour, "Give Me a Laboratory and I Will Raise the World," in Karin Knorr-Cetina and Michael Mulkay, eds., Science Observed: Perspectives on the Social Studies of Science (London: Sage Publications, 1983); Bruno Latour and Steve Woolgar, Laboratory Life: The Social Construction of Scientific Facts (London: Sage Publications, 1979); and Michel Callon, John Law, and Arie Rip, eds., Mapping the Dynamics of Science and Technology (London: MacMillan, 1986).

words, I will position the Academy within the larger network of players in Virginia who are all seeking to establish their voice as most authoritative on matters of science.

In the process of positioning the VAS, I will analyse the reasons for one group of Virginia scientists acquiring the status of expert over another.³⁵ Expert status is granted by both the scientific community and the general public when a scientist or group of scientists is able to uncover irreducible truths about nature and offer mechanisms by which various social groups can accomplish objectives that they view as desirable, either for themselves or for the culture as a whole. Expert status is also granted when scientists successfully engage in the politics of expertise, transmitting scientific or putative truths to appropriate audiences. Since the complexity of the science on which many contemporary developments depends is sufficient to prevent the audience from reaching a genuine understanding on its own, many people make a decision simply to believe what they are told by the authoritative figure--a leap of faith, as it were. This dissertation treats the latter form of expert status as well. Expert status in this form is particularly interesting, and as the dissertation progresses and issues arise where such authority is claimed by the Academy, this dissertation will attempt to discover what causes the Academy to win or lose in the game of claiming the pulpit on behalf of its position.

In re-constructing its history, this dissertation will consider both the internal and external interactions of the Academy. The complex web of interactions among people and groups, between the Academy and the Commonwealth, between entrepreneurs and

³⁵For a general discussion on experts, see, Thomas L. Haskell, ed., The Authority of Experts: Studies in History and Theory (Bloomington: Indiana University Press, 1984). See also Nico Stehr, Knowledge Societies (London: Sage Publications, 1994), especially Chapter 7; Guy Benevise, The Policy of Expertise (Berkeley: Glendessary Press, 1972); Alvin Gouldner, The Future of Intellectuals and the Rise of the New Class (New York: Seabury Press, 1979); Anthony Giddens, The Class Structure of the Advanced Societies (London: Hutchinson, 1973).

professors--all of these lay bare a rich pattern of relationships that illuminate the Academy, science, and the Commonwealth of Virginia itself over a period of enormous change both within Virginia and the nation as a whole.

Part IV: Structure and Scope

The formal, time-linked boundaries of this dissertation are given by the life of the Academy--1923 to the present. This narrative opens in Williamsburg, Virginia, at the College of William and Mary on April 26, 1923, during the first annual meeting of the Virginia Academy of Science, encompasses the growth and development of this organization, and concludes with the activities taking place within the VAS and its external ties in the year 1995. The dissertation obviously also limits its scope to the Virginia Academy of Science. Comparisons to other southern academies of science are brought in only when they serve the end purposes of this dissertation and throw into relief certain events, causes, and responses within the Virginia Academy.

The first part of this dissertation introduces the early history of the Virginia Academy of Science. Chapter One uses personal correspondence, oral interviews, annual Council "Minutes," national and state academy proceedings, state academy journals, newspaper articles, and secondary literature to cover the VAS members' early efforts to professionalize through the society. From 1923 to 1939, politician Harry Byrd and his famous "Byrd Machine," the Great Depression, and the New Deal charted the course of Virginia history, and this chapter will consider the ways in which these politicians and events influenced the Virginia Academy of Science. Because of the impact of the evolutionism/creationism debate on southerners in general, a portion of the dissertation will

devote special attention to the reaction within the VAS to this extremely contentious subject. The work of Virginia Academy historians George Jeffers and Harry Staggers play an important role in this chapter. Broader historical studies by Ronald Heinmann, Louis Rubin and Virginius Dabney provide a context for viewing these events and responses.

From 1940 through 1952, the Virginia Academy of Science weathered World War II as well as the drastic economic changes the conflict initiated. The war's disruptions themselves challenged the survival of the VAS, but changes to the Virginia landscape during the immediate postwar period were perhaps more dramatic and set the scene for radical change in the collective Commonwealth and to the community of Virginia scientists. Chapter Two focuses on the efforts of the Academy to function during the war and in the subsequent booming post-war economy. Of prime importance in this section will be the Virginia Academy's focus both on maintaining its scientific integrity and in moving toward targeting science education as a major component of its mission.

Chapter Three considers the Virginia Academy of Science from 1953 to 1963--a ten-year period marking one of the south's, and in particular Virginia's, most tumultuous eras. Indeed, the decade following the Supreme Court's Brown versus Board of Education decision resulted in the overturning of a social order that had held the South in an iron grip from the concluding days of Reconstruction. By this time, the Academy was deeply committed to changing the nature of science education: thus the fury unleashed within the Commonwealth by the integration decision found members caught in the middle of a controversy that many clearly abhorred. On the socio-economic front, Virginia also found herself on the brink of massive change as supporters of agrarianism clashed with an ever-growing demand that the Commonwealth join the rest of the southern states in committing

itself to progressivism. As was true with massive resistance, such upheaval was mirrored within the membership of the Academy.

By 1963, with the election of Mills Godwin as Governor, change came to Virginia with a magnitude that the heirs of Jefferson and Byrd hardly would have predicted. Chapter Four focuses on this period from 1963 to 1976. The State Science Museum for which VAS members had long lobbied was chartered and a Science Advisory Committee to the Governor was established. Relationships with industry strengthened, reflecting an awareness of the business community of the valuable contributions made to research and development in the Commonwealth by organized scientists. This connection between science and business was an important one in the Godwin years, ushering in a new era in which the shift away from the agrarian and rural image of Virginia was to become permanent. A probable harbinger of things to come was the slow decline in VAS membership.

If the “Godwin Revolution” were characterized by an increased emphasis on the value of science as viewed by state politicians, the period dealt with in Chapter Five, 1976 to 1989, was its opposite. State government--so anxious to embrace science when various environmental crises drove the politicians--lost interest in the Science Advisory Committee, and some politicians became, in their own view, at least, scientific experts themselves. As membership in the VAS declined, interest grew in the Junior Academy--the organization initiated by the VAS in 1941 to foster enthusiasm in the sciences among the state’s youth. These events produced an undercurrent of tension within the Council, the governing unit of the VAS, which held fast to its original conceptions of what the Academy should be, despite an increasingly evident erosion in the prestige and the power of the Academy. The decline in participation in the Academy by scientists at the larger and more prestigious

research universities within the Commonwealth was a critical shift, with long-term and negative implications--not unrealized by the leadership--for the Academy.

Chapter Six covers the period from 1989 to 1995 and brings this dissertation to its conclusion on a rather bleak note. Both on the federal and at the state level, funding for science declined, presenting a challenge to scientists within the state. In many educational institutions, employment opportunities for academic scientists were not available any longer, creating an environment in which both bright, young men and women drifted from post-doctoral appointment to post-doctoral appointment and the State government pushed universities to limit graduate enrollments--the very enrollments that supported the research efforts on which the universities' reputations depended. And while the Academy's efforts at creating interest in science in middle and secondary school youngsters remained quite successful, Virginia students--like their counterparts across the nation--did not distinguish themselves on standardized tests. Yet there remains the possibility that in this troubling environment, the VAS may be able to find a new and important role for itself as the supporting center for the disenfranchised, young, "would-be" academic scientists. Certainly the need for professional support is as great now as it was in the early days of the VAS; perhaps it is even greater. The challenge for the future is clearly at hand. It remains to be seen if and how the Academy will rise to meet it.

CHAPTER ONE

Weaving a Network:

Creating a Machine in the Time of Harry Byrd, the Depression, and the New Deal, 1920-1939

Responding to the perceived need for a state-based professional society to further the cause of science within their region, Virginia scientists and science educators in 1923 established the multidisciplinary Virginia Academy of Science. Over the next decade and a half, the leaders of the VAS laid a strong foundation for the nascent organization. Recognizing early that an academy of science is, at its base, a network of people and things--resources--held together by their interactions, the founders worked hard to create firm connections among such resources. In the course of "weaving" a viable scientific "net," religion, politics, and economics--those external factors that determine a region's social context--inevitably became part of the Academy's history.

Part I. Setting the Stage: Virginia, 1920-1939

In 1962, scientist George Jeffers wrote in his unpublished history of the Virginia Academy of Science:

. . . the Virginia Academy of Science flourished from the start. True, the circumstances surrounding its inception were more propitious; the nation had but recently emerged victorious from World War I and was caught up in a wave of economic expansion and development; its people were in the process of throwing off provincialism and--albeit reluctantly--assuming the role of world leadership. Internally, the old wounds of the Civil War gave trouble only when irritated and older modes of thinking were giving place to

the concept of a greater national unity; and Virginia in common with other Southern States was coming to regard the South as a region of great potentialities. Finally, the new prosperity released the pent-up intellectual energies of a vigorous people, thereby creating the kind of climate in which science and the arts could flourish.¹

While there is considerable validity to this description, in significant measure it brushes over national, regional, and Virginia-specific problems and prospects that were to affect greatly the community of scientists within the Commonwealth. At the national level, the Senate had returned the Treaty of Versailles to President Wilson on March 20, 1920, with a formal notice of its inability to ratify the document that would have, in fact, laid on the shoulders of America the cloak of "world leadership" of which Jeffers speaks.² Considering the subsequent Crash of 1929 and the Great Depression, much of the apparent economic development of the 1920s, especially in the south, arguably was hollow. And in Virginia's Tidewater, the tremendous expansion of the area following the United States' entry into World War I came to a sudden and calamitous end when peace broke out and the influx of Federal dollars abruptly stopped.

Economic change in the Commonwealth was not accompanied by marked social change. Black Americans in Virginia found themselves caught between the Democrats who, as heirs of the Confederacy, remained in support of a variety of repressive measures--including the poll tax--and the Republicans, who had declared themselves a "lily white" party in order to dig out from under the white voters' memories of Reconstruction. While Virginia was more prosperous than most other southern states, the poverty inflicted by Reconstruction was still apparent, most clearly in the form of labor-intensive work,

¹George Jeffers, "History of the Virginia Academy of Science," unpublished manuscript. 1962. Special Collections, Virginia Tech.

²Samuel Eliot Morison, The Oxford History of the American People (New York: Oxford University Press, 1965), p. 883.

sharecropping, and low-wage industry. Higher education in Virginia was offered along fairly rigid class and gender lines, with remarkably few opportunities for the middle class and almost nothing for aspirants from the blue collar ranks. As far as transportation was concerned, the roads in the Commonwealth were notoriously poor. Finally, the rural areas of the state had dominated and would dominate the political process for many years, exercising a frugality in fiscal matters that amounted to a veto over measures that might have allowed the state a more vigorous social development.³ It is against this backdrop of economic and political tensions--the latter in many ways personified by the changing character of Virginia-born politician Harry Flood Byrd--that the Virginia Academy of Science began its development.

Geographic Regions: Location, Identity and Opportunity

In addition to the Tidewater region⁴--home of Hampton Roads with its complex of military installations and the presence of the largest private employer in the state, Newport News Shipbuilding and Drydock--Virginians commonly spoke, and still speak, of three other geographic regions. Precise boundaries do not exist for these areas, although Virginians generally seem quite comfortable with this ambiguity. Southside is located between the James River and the Virginia-North Carolina line and east of the Blue Ridge Mountains; in common parlance, however, this designation often is restricted to a smaller area, excluding the Norfolk side of Tidewater and the upland counties. Southwest Virginia

³For an overview of Virginia history, see Virginius Dabney, Virginia: The New Dominion (New York: Doubleday & Co., Inc., 1971); also, Louis Rubin, Virginia: A History (New York: W.W. Norton and Company, 1977). Ronald Heinmann offers recent interpretations of Virginia history in the twentieth century in "Virginia in the Twentieth Century: Recent Interpretations," Virginia Magazine of History and Biography 94(1986), pp. 131-160.

⁴Richmond, capitol of the state and home to a concentration of wealth and power that causes it to be called the 'holy city,' is technically part of Tidewater, since the "Fall Line" of the James River is in Richmond.

is the largely rural and agricultural region west of the Blue Ridge Mountains and south of Roanoke. The siting in Blacksburg of the Virginia Agricultural and Mechanical College, the land grant school that later became Virginia Polytechnic and State University, was no accident, but a response to the agricultural needs of the Southwest. Northern Virginia includes the Virginia cities and counties located within thirty miles of the District of Columbia, an area that between the two world wars was virtually without political influence. The social attitudes, economic interests, and political positions of these areas remained relatively distinct from one another until very recent times.⁵

Government and Social Policies

It probably is fitting that within the Commonwealth that produced Washington, Jefferson, and other revered historical figures, the man who dominated the period in question was an heir to the legacy of the Colonial period. Harry Flood Byrd, descendent of the Byrds of historic Westover, was twenty-eight years old when he entered the Virginia Senate in 1916, thirty-eight when he assumed the Governorship of the Commonwealth. An engaging and outgoing person, Harry Byrd's position as unquestionable leader of Virginia's Democratic party over the next forty years was unprecedented. Indeed, so tightly did he control that organization that it soon became known as the "Byrd Machine," or just the "Machine."⁶

Byrd came into office in 1926, with a "program of progress." Under his regime, the government became far more centralized. Appropriations to "social" projects, such as

⁵Thomas H. Biggs, ed., Geographic and Cultural Names in Virginia (Charlottesville: The University of Virginia Press, 1974).

⁶Alden Hatch, The Byrds of Virginia (New York: Holt, Rinehart, and Winston, 1969).

roads, education, and mental hospitals, were the largest in the history of the Commonwealth--although such spending remained within the bounds of "Byrd-defined" fiscal prudence. Industry was encouraged to come to Virginia. Indeed, Byrd reported that in the "fiscal year 1927, Virginia made the largest industrial progress of any state in the Union" with "\$265,000,000 added to the state's industrial capital."⁷ However, this is not to say that Byrd was a pawn of "Big Business." He moved very effectively against large and powerful corporations--for example, oil and telephone companies--to keep them from a high level of success in the Commonwealth--one that might have resulted in accrual of economic power leading to political challenges.

Even in his early years, Governor Byrd's "program of progress" had distinct limits, and one of those limits would eventually lead to a political explosion within the Commonwealth. For Harry Byrd did not support integration. While he did push an exceptionally strong anti-lynching law through the General Assembly, he did very little to extend to the black community the same privileges as those enjoyed by the white. For instance, when an uproar that occurred over integrated audiences viewing performances at Hampton Institute resulted in new legislation mandating segregation in such public forums, Byrd allowed the legislation to become law. In taking no action against the segregationist legislation, Byrd followed the repressive policies of his forebears and satisfied the white, rural communities within which his power base lay.⁸

In sum, Virginians or, to be more accurate, white Virginians, viewed Byrd as a highly successful governor. The Commonwealth business community regarded his

⁷Virginus Dabney, Virginia: The New Dominion (New York: Doubleday & Co., Inc., 1971), p 483.

⁸James W. Ely, Jr., The Crisis of Conservative Virginia (Knoxville, Tennessee: 1976); Francis Wilhoit, The Politics of Massive Resistance (New York: George Braziller, 1973).

achievements as exemplary in matters of economics. His emphasis on state's rights would remain one of the main themes in Virginia for many years. Byrd's strong belief in a more vigorous and larger state economy was highly popular during the 1920s. Finally, for the first time, the governor of Virginia had taken control of the loose structure of state government. When Byrd left the state's highest office, all seemed well with the Commonwealth.

In 1930 John Garland Pollard succeeded Harry Byrd. Pollard, an even-tempered professor from William and Mary's School of Government and Leadership, was expected to follow where Byrd had led and to expand his program. It is in some ways amazing that neither he nor Byrd understood that the terrific stock market crash of 1929 would usher in the worst depression in American history. Virginia was less hard-hit than most southern states, in part because of an even balance among agriculture, manufacturing, and trade. Close on the heels of the crash and the beginning of the depression came the drought of summer of 1930. In Virginia, the rainfall was only sixty percent of normal. Crops were ruined and cattle starved. Agricultural woes were followed by industrial troubles, as attempts at unionization hit the Commonwealth. Strikes followed wage cuts that were motivated less by politics than the bald facts of economics in the depression, and violence erupted as conditions worsened.⁹

Southside with its dependence on the tobacco crop and Southwest Virginia with its mines suffered the most. In July of 1932, overall employment sank to nineteen percent.¹⁰ All over the nation, the cities were the sites of the greatest suffering, since country people

⁹Ronald Heinmann, Depression and the New Deal in Virginia: The Enduring Dominion (Charlottesville: The University of Virginia Press, 1983).

¹⁰Virginius Dabney, Virginia: The New Dominion (New York: Doubleday & Co., Inc., 1971), p. 490.

were able to maintain themselves by subsistence living off the land. But in Virginia, the two largest cities were spared the worst of the plight of the nation at large. People continued to smoke, so Richmond, with its cigarette industry, was not hit as hard as other urban sites. And Norfolk was a major home port for the Navy, which spent around twenty million a year in the city. Nevertheless, conditions were hardly propitious for record-setting of a positive sort by Governor Pollard.

Pollard appointed Harry Byrd to the United States Senate following the appointment of Virginia's Senator Claude Swanson as newly-elected Franklin D. Roosevelt's Secretary of the Navy. In 1932 Franklin D. Roosevelt had accepted the Democratic nomination for president by promising a "new deal for the American people." The somewhat hastily thrown together package of attempts to end the Depression through the New Deal actually led to major reforms in the American economy. Byrd supported the President and his reformist efforts initially, but soon voted against everything when "money out" began to exceed that of "money in." The strong disapproval of Senator Harry Byrd for many of the New Deal policies was based not only on the extravagant spending of money but also on the extension of the federal government's power--an extension he believed trampled on the rights of the states. This attitude would come to characterize Virginia politics for many years, with its inevitable impact on the funding of education--from the building of public schools to money for higher education.¹¹

In keeping with the philosophy of fiscal conservatism espoused by Byrd and his many followers, the state of Virginia refused to contribute money for direct relief under the New Deal's Federal Emergency Relief Association (FERA). Virginia officials argued that a

¹¹Edward Younger and Jane Tice Moore, eds., The Governors of Virginia, 1860-1978 (Charlottesville: The University of Virginia Press, 1982).

reduced state budget, a lighter local tax load, and money given to people to build highways was sufficient for recovery. First and foremost, officials were determined to maintain the fiscal soundness of the state government.¹² Other programs of the New Deal met with greater success in Virginia. The Works Projects Administration (WPA), for example, was responsible for building many new schools and other public structures throughout the area. New school buildings especially were needed since the Byrd Administration, despite its rhetoric, had not allocated enough money for education, and certainly there were no funds available under the Pollard regime. Yet, despite all the woes, fewer Virginians were on relief during the 1930s than were citizens of almost any other state. As an elderly Virginian once remarked, “Virginians like to believe in their self-sufficiency and their reliance on themselves and not the federal government.”¹³ Certainly this philosophy was a reflection of what Byrd and Pollard both believed.

George Peery of rural Tazwell County succeeded Governor Pollard and was followed by James Price of urban Richmond. The latter, a low-key and friendly man, was interested in humane policies more than in fiscal prudence. In addition to urging the appointment of black Virginians to draft boards throughout the cities and naming an African American to the State Defense Council, Price favored public housing, and supported federal assistance for the old, the handicapped, and the poor. Given that his interest lay in the realm of social outreach rather than economic restraint, relative prosperity throughout the Commonwealth characterized the Price years. Between 1935 and 1940, the state’s industrial output jumped forty-four percent, making it the fastest growing industrial center in the country.¹⁴

¹²Virginus Dabney, Virginia: The New Dominion (New York: Doubleday & Co., Inc., 1971), p. 494.

¹³Virginia Rice Webb to Charlotte Webb. Informal conversation. March 1, 1996. Norfolk, Virginia.

¹⁴Dabney, Virginia: The New Dominion (New York: Doubleday & Co., Inc., 1971), p. 502. See also,

Higher Education

Higher education was not an area of major interest for any of these governors, although they claimed they supported and were proud of Virginia's educational system. By the mid-1920s, the so-called flagship colleges and universities that we have today were in place and open to the white male population.¹⁵ Women could attend the state normal colleges in the first few decades of twentieth century, but the other state institutions of higher education were not open to them.¹⁶ There also existed several privately-funded colleges for women. For example, Randolph-Macon Woman's College in Lynchburg was counterpart to Randolph-Macon College at Ashland. In fact, the former was the first institution of higher education in the south to refer to itself as a "college" rather than a "female institute."¹⁷ Sweet Briar and Hollins were also highly regarded--although, like Randolph-Macon Woman's College, they were expensive. An exception to general Virginia attitudes toward educating women was the College of William and Mary, where in 1918, the General Assembly had decided to admit women on an equal basis with men. That same year, women gained admittance to the University of Virginia's graduate and professional schools. African-American males could attend Virginia State College--the Commonwealth's first state-supported college for blacks--Hampton Institute, Virginia

Andrew Buni, The Negro in Virginia Politics, 1902-1965 (Charlottesville: The University of Virginia Press, 1967).

¹⁵For example, William and Mary; University of Virginia; Hampden-Sydney College; Washington and Lee University; Virginia Military Institute, Medical College of Virginia; University of Richmond; Randolph-Macon College; Emory & Henry College; Roanoke College; and Virginia Polytechnic Institute.

¹⁶East Radford Normal School in Radford, State Teacher's College in Harrisonburg, and Farmville Normal School in Farmville were the primary teacher's schools in the Commonwealth at this time.

¹⁷Randolph-Macon Women's College enjoyed a number of other "firsts," including being the first southern women's college to be admitted to the Southern Association of Colleges and Secondary Schools and the first to gain a chapter of Phi Beta Kappa.

Union University, St. Paul's, or could attend special programs established by the Norfolk Division of the College of William and Mary, now known as Old Dominion University.¹⁸

It was not only in education for females and African Americans where Virginia exhibited very little leadership. Missing from the state during this period were the community college system and the universities for the urban centers and the middle class such as George Mason, Virginia Commonwealth, Old Dominion, James Madison, Christopher Newport, et cetera. It is ironic that in 1927 the state hosted a convention, "The Association for Higher Education in Virginia," but not until the 1960s did Virginia's appropriations to higher education equal or exceed those of the other southern states. The lack of fiscal support for colleges and universities was particularly harmful to scientists, who required lower teaching loads, expensive laboratories, and support for research in order to develop an indigenous science community of a stature that would command national respect. The various problems emanating from the political sector created an environment in which the Virginia Academy of Science was the logical body to offer an alternative way to build both a community and a network sufficiently broad to lobby the state on behalf of science in higher education.

Part II. The Association of Virginia Biologists

By the early 1920s, Virginia scientists began reacting to the lack of scientific support to universities and colleges from the state government and, to a lesser extent, Virginia industries. Attending national meetings, securing funding for research, and

¹⁸It is interesting to note that older Academy members hold to the view that race was not an issue within the VAS even though, by virtue of their position in society, blacks were not members of the organization.

locating adequate publication outlets--all necessary for a first-rate scientific career--were not easy tasks for most scientists in the south, and Virginia scientists found themselves to be no exception. Indeed, the meager collegial support offered by their own institutions did not quell the overriding sense of professional isolation these scientists felt--both among themselves and from national colleagues. Reflecting the sentiments of many in Virginia, Paul Boyd, President of the Kentucky Academy of Science, remarked in 1920:

Isolation is one of the most serious handicaps to research. The greatest need is not more national societies but a more thoroughgoing organization of state and local scientific forces. . . .the academy should be a medium through which men in various parts of the state and in various educational and industrial plants may be associated in the furtherance of needed scientific endeavor.¹⁹

Participating in the North Carolina Academy of Science (NCAS), the young biologist Ivey Lewis witnessed the first-hand benefits of a statewide, scientific organization.²⁰ Professional fellowship, encouragement of research, and commitment to civic issues such as education and environmental conservation were the stated objectives of the NCAS--goals that were, in fact, consistent with most academies of science in the United States. After taking a position at the University of Virginia, Lewis issued a call for a meeting of the biologists in Virginia. On November 24, 1920, biologists representing various institutions of higher education in the state met at the John Marshall High School in Richmond.

Although the disciplinary specialization kept the attendance to eight, both the larger universities and the smaller colleges were represented. Randolph-Macon College, the

¹⁹Paul Boyd, "The Future of the State Academy of Science," Science (11 June, 1920), pp. 575-580.

²⁰For a brief, informational piece on Ivey Foreman Lewis, see B.F.D. Runk, "Ivey Foreman Lewis," in Virginia Journal of Science 5(April, 1954), pp. 51-52.

Medical College of Virginia, and the University of Virginia each sent one person, while the University of Richmond and the College of William and Mary sent two. In addition, two biologists from Virginia Polytechnic Institute forwarded letters of interest. Given the exclusion of women from all institutions of higher education in the state save the state normal schools or private colleges and the low percentage of women in science fields, it is revealing of the tenor of the group that Flora Bryson, a biology teacher from East Radford Normal School, also was in attendance.²¹

Concerned over the lack of professional opportunities, the scientists listened to Lewis as he outlined the advantages a professional, state association might offer. Not only would a formal organization promote fellowship among biologists of the state, but it also would encourage individual research--both through establishing and maintaining collections of local flora and fauna and offering a publication outlet. Lewis pointed out that especially in Virginia where academic scientists found themselves perpetually underfunded and overworked an association would have more power in eliciting support from the universities and colleges.²² Finally, he took the unusual and prescient step of outlining the ways in which corporate action might improve the status of biology and of science in general within the Commonwealth.²³

²¹Organization and Proceedings, 1923-1924, p.3. Special Collections, Virginia Tech. Those in attendance were Flora Bryson from East Radford Normal School; W.L. Dolley from Randolph-Macon College; P.F. Fackenthal from Medical College of Virginia; H.E. Hayden, Jr.; Paul Merriman from University of Richmond; Ivey Lewis from University of Virginia; and Donald W. Davis and E.J. Grimes from William and Mary. Letters of interest came from Smythe and Fromme of Virginia Polytechnic Institute.

²²"Minutes of Preliminary Meeting, Association of Virginia Biologists," November 24, 1920. Special Collections, Virginia Tech.

²³George W. Jeffers, "A History of the Virginia Academy of Science," p. 4, unpublished manuscript, 1962. Special Collections, Virginia Tech.

Enthusiasm greeted Lewis' proposal, and the group of eight decided to call themselves the Association of Virginia Biologists (AVB). Not surprisingly, the nascent Association selected Lewis as President, who called an informal meeting to order. The first formal meeting was immediately scheduled for January 21, 1921, at the University of Virginia. Cognizant of the need for early institutional recognition, the Association's first act was to prepare a circular introducing the Association and its mission to the university and college administrators and requesting funds to facilitate attendance at the January meeting. Keenly aware of their need for a publication outlet, the biologists' second act was to decide that all scientific work--not just biological--should be included in a publication--the exact nature of which would be decided at the first meeting. Finally, the new organization considered the viability of a state academy of science in which all disciplines, not simply biology, would participate. After much debate, they agreed "to postpone any formal attempt to organize such an academy until the organization of the biologists was completed, and it was understood that this matter would be taken up at the January meeting."²⁴

Twenty people met at the University of Virginia on January 29, 1921, for the first annual meeting of the Association of Virginia Biologists. While the majority of the participants were male professors, two female high-school teachers and one male representative from the State Department of Education also attended the meeting--a telling composition for at least three reasons.²⁵ For an organization seeking to gain professional legitimation, inviting high-school science teachers--with little status and experience in the "scientific world"--to its first formal meeting demonstrates an apparent early commitment to

²⁴"Minutes of Preliminary Meeting, Association of Virginia Biologists," November 24, 1920. Special Collections, Virginia Tech.

²⁵All members of the Association of Virginia Biologists were white.

egalitarian principles. Likewise, in a state in which the nineteenth amendment was not ratified until 1952, extending membership to women illustrates that same egalitarian commitment. Finally, including a representative from the State Department of Education indicated a desire to establish a working relationship with the state.

Adopting a constitution and selecting an executive committee were the primary items on the agenda. H.E. Hayden of William and Mary was elected to replace Lewis as president. For this Virginia biologist, the chief purpose of the Association was clear: “to increase the knowledge of the plants and animals of Virginia.” Although the state “is on the border between the northern and southern biological regions,” Hayden pointed out, “very little work has been done along this line. . . .”²⁶ To facilitate this endeavor, the AVB established two informal committees--bird banding and conservation. Not only did the committees appear consistent with the mission of the AVB, but, more importantly, the AVB made it clear that the committees were to “bring their science to the layperson,” thereby laying the groundwork for a future mission of the Virginia Academy of Science: promoting science within the general public.²⁷ Finally, eleven papers were presented--five in the morning and six in the afternoon--thereby satisfying an initial goal of the Association. The first annual meeting brought together scientists from various institutions, providing fellowship and a professional forum in which to present papers, and creating committees--all in all, a highly satisfactory event.

²⁶“Minutes of Preliminary Meeting, Association of Virginia Biologists,” January 29, 1921. Special Collections, Virginia Tech.

²⁷Listed on a handwritten sheet placed within the aforementioned “Minutes,” January 29, 1921. Special Collections, Virginia Tech.

Encouraged by the success of the first formal meeting, attention turned the following spring to the possibility of expanding into a multidisciplinary Virginia Academy of Science. As Ivey Lewis explained the move: "The success of this organization [the AVB] has encouraged its Executive Committee to think that the time is ripe for the organization of a larger and more inclusive group of scientists in Virginia"28 An intense discussion ensued, primarily focusing on whether or not the biologists of the state would lose professional ground as a small section of a large academy. Evidently agreement was reached to the contrary, as the membership authorized its Executive Committee, led by newly-elected President W. D. Hoyt, to proceed with the organization of the Virginia Academy of Science.²⁹ Active members Paul Warren of William and Mary and Dean W. Rudd of the Medical College of Virginia volunteered to compile a list of prospective members. The task of writing the letter of invitation naturally fell on the shoulders of the Secretary-Treasurer, W.L. Dolley. Dolley, however, had a better idea, writing to Vice-President Donald Davis: "Don't you think that the biologists should have as their representative in this movement the most important biologist in the state? I feel that Dr. Lewis is the man to attend to this."³⁰

In his subsequent letter sent to "the Scientists of Virginia," Lewis outlined his conception of an academy of science:

The advantages of such an organization, as found by experience in other states, are threefold.

²⁸W. L. Dolley to Donald Davis, March 8, 1923. Donald W. Davis Papers, Earl Gregg Swem Library, College of William and Mary, Williamsburg, Virginia.

²⁹Organization and Proceedings, 1923-1924, p. 5. Special Collections, Virginia Tech. The new Executive Committee consisted of President W.D. Hoyt, Vice-President Donald Davis, and Secretary-Treasurer W.L. Dolley.

³⁰W.L. Dolley to Donald Davis. Donald W. Davis Papers, Earl Gregg Swem Library, William and Mary, Williamsburg, Virginia.

First, an Academy serves to arouse the interest and to stimulate the work of its members.

Second, it brings about a healthful spirit of cooperation among its members and brings together in a most helpful way the more or less isolated followers of science.

Third, it gives a voice to a scattered and unorganized group of scientists, enabling them to support effectively such scientific programs as having a bearing on the public welfare, and to set forth claims of science to public appreciation and support.

It is hoped that the responses to this invitation will show that there is, in this State, a widespread desire of scientific workers to unite in a common cause.

Anticipating questions as to a real need for a multidisciplinary academy of science, Lewis cited persuasive data:

A partial survey of the number of scientists in Virginia shows that it is rather surprisingly large. Without taking into account the various special societies in the State, such as the Chemists, the Bacteriologists, the Engineers, and others whose lists would furnish additional names, it has been found that there are about three hundred more greater than this. From a study of the membership of the American Association for the Advancement of Science, the distribution of Virginia scientists is about as follows:

Biology, Including Forestry and Agriculture	65
Chemistry	48
Geology	8
Mathematics and Physical Science	85
Medical science	15
Psychology and Sociology	50
Not limited to one field	19 ³¹

Signing the letter were not only biologists but also seven members of a variety of other scientific disciplines from a wide range of institutions.³² Hardly could these scientists have

³¹Proceedings of the Virginia Academy of Science, 1923-1924, pp. 4-5. Special Collections, Virginia Tech. This early connection with the AAAS reveals that Lewis and his supporters were aware of a complementary role for the Virginia Academy with the AAAS, rather than one in which the Virginia Academy competed with the established, national organization.

foreseen that within ten years, the Virginia Academy of Science would be the largest of the southern academies of science.

It should come as no surprise that members of the Virginia Academy credit Lewis with the founding of the Academy. Repeatedly referred to as “father of the Academy,” the story follows that as a young professor at the University of Virginia, Ivey Lewis--schooled in the tradition of the North Carolina Academy of Science--determined that Virginia scientists might receive the same benefits. And, for the most part, archival records and oral interviews lend full credence to this account. However, an interesting letter from Paul Warren to Hughlett Mason in July of 1964 offers a different perspective. As Warren remembers:

I began work in Williamsburg at the Summer School in 1922. During the spring of 1923, I found out that there was no Academy of Science in Virginia. This interested me especially because I had been working with the Michigan Academy centered in Ann Arbor. So one day I spoke with my boss, Dr. Donald Walton Davis, about it. Let's organize one! He rejected the idea at first because he had just put together the Association of Virginia Biologists and was afraid it would get lost as a section of an Academy. Then, one day, he came to my office in the old Penniman building with a new idea--Let's organize an Academy of Science. So he wrote letters inviting everyone to Williamsburg and we organized one The Academy was my idea in the first place. Davis wanted credit for it--so I kept my mouth shut until Miller asked me about it. Perhaps you have the records.³³

Davis' name appears time and again in the “Minutes” of the AVB and VAS and general correspondence with Lewis. Hence, it is safe to assume that he did play an integral

³²Those signing the letter were: Graham Edgar, Professor of Chemistry, University of Virginia; B.G. Childs, Professor of Education, Randolph Macon College; H.D. Campbell, Professor of Geology, Washington and Lee; Joseph E. Rowe, Professor of Mathematics, William & Mary; Wortley Rudd, Professor of Chemistry, Medical College of Virginia; George O. Ferguson, Professor of Psychology and Education, University of Virginia; and Frank Bane, Commissioner of Public Welfare, Commonwealth of Virginia, for Sociology.

³³Paul A. Warren to A. Hughlett Mason, July 26, 1954. Special Collections, Virginia Tech.

role in the founding of the Academy. Warren's name, however, appears only in reference to compiling the invitational list with Rudd: consequently, his position as a major actor in the founding of the Academy is not well supported by the archival evidence. Nevertheless, Warren's perspective is a reminder that no single account tells a full story. One might speculate that perhaps Warren's reminiscences in this case are indeed valid and that for any number of reasons--his midwest heritage and schooling or his new professorship, for example--he did not hold sufficient standing with his peers in the Virginia Academy for proper recognition of what might have been a seminal role. It is interesting that Warren cites E.C.L. Miller--who is actually shown by the archives to have been a central actor in the history of the Virginia Academy of Science--as the one person with whom he shared this account. For in bringing Miller into his story, Warren forces historians to take notice of their contributions and at least wonder about the legitimacy of his claim.

Part III. The Virginia Academy of Science: Structure, Scope, and Related Events 1923-1939

Charter and Constitution

On April 26, 1923, scientists and science educators met in Williamsburg at the College of William and Mary for the final meeting of the Association of Virginia Biologists and the first meeting of the Virginia Academy of Science. Representing a variety of scientific disciplines and heralding from virtually every institution of higher education in the Commonwealth, the 135 charter members eagerly supported the transition from a single discipline association to a multidisciplinary academy.³⁴ Hoping to inspire both those

³⁴The group of charter members--from University of Virginia, William and Mary, Medical College of

present and others who expressed an interest in a state academy, Lewis and Davis invited William C. Coker, professor of botany at the University of North Carolina and former president of the North Carolina Academy of Science to give the official address. Coker's lecture, "The Scope and Function of a State Academy of Science," outlined the ways in which the academy would stimulate research, foster higher standards in teaching, and encourage fellowship among scientists in all areas of the state.³⁵ Furthermore, Coker reaffirmed the sentiments of many, when he suggested that the all-inclusive nature of a multidisciplinary academy would increase the interest of the general public in science.

Following Coker's remarks, the next day the new membership assembled to map out the framework of the new Virginia Academy of Science. Given the importance of a formal constitution, it is not surprising that the group's first act was to create such a document. A constitution provides structural integrity, indicates a unity of purpose, and endows an organization with a sense of public and professional legitimation as well as pride. Following the lead of other academies of science, most notably North Carolina and Tennessee, the new Constitution outlined the mission of the VAS:

To promote the development of interest in scientific matters in the State;
to provide means for the prompt publication of papers or abstracts;

Virginia, Virginia Polytechnic Institute, Washington and Lee, Lynchburg College, Randolph Macon Women's College, University of Richmond, Farmville Normal School, Hollins, Bridgewater, East Radford, Sweet Briar, Virginia Truck Experimental Station, Blackstone College, Emory and Henry, Hampton Institute, Hampden-Sydney, Roanoke College, Virginia Agricultural Experimental Station, and Virginia Union University--came from a variety of disciplines, listed as follows: Biology 55; Chemistry 27; Medical Science 27; Physics and Mathematics 26; Psychology and Education 18; Sociology and Economics 9; and Geology 10. In comparison to other southern academies of science, this was an extremely large and diverse charter class. In her recent book *To Foster the Spirit of Professionalism* (Tuscaloosa: University of Alabama, 1991), p. 61, Nancy Smith Midgette suggests that the size was due to the great number of educational institutions in the state. In addition, scientists in Virginia were closer to the mid-Atlantic and northern cities than those in other southern states, so the likelihood that they had attended a big, national conference was greater; therefore, they easily comprehended the benefits of a regional academy of science.

³⁵Proceedings of the Virginia Academy of Science, 1923-24, pp. 4-5. Special Collections, Virginia Tech.

to provide opportunity for increased co-operation and fellowship among its members;
to co-operate with other scientific bodies having similar aims; and
to render public service in scientific matters.³⁶

In order to ensure a “successful mission,” the Constitution provided for an Executive Committee. This “group of five”--President, Secretary-Treasurer, and three elected Council members whose term would vary from three to five years--had full responsibility for directing the Academy. Lewis’ reputation as the driving force behind the Association of Virginia Biologists and his experience as a former member of the North Carolina Academy of Science made him an obvious choice for President. Indeed, as one member commented, Lewis possessed the skill of an “adept compromiser whose graciousness and gentility of manner commanded the respect of scientists and the public alike, and assured that sort of harmony without which no organization can prosper.”³⁷

E.C.L. Miller, a chemistry professor at the Medical College of Virginia was elected Secretary-Treasurer--a position he would hold until 1953. In describing this “quintessential southern gentleman,” Jeffers represented the opinion of the entire Academy, when he wrote:

A man of balanced calm and profundity, Dr. Miller became the Academy’s gyroscope as well as its pilot; he mastered every detail of its constitution and of its organization; he came to know its members and he made himself constantly available--to do the chores, to suggest, and to stimulate, and he did everything with becoming modesty, happy only in the success of the new movement. Little wonder that in time he came to be known as ‘Mr. Academy.’³⁸

³⁶Proceedings of the Virginia Academy of Science, 1923-24, pp. 4-5. Special Collections, Virginia Tech.

³⁷George Jeffers, “A History of the Virginia Academy of Science,” p. 4, unpublished manuscript, 1962. Special Collections, Virginia Tech.

³⁸It is unusual for all members of a group to individually describe a person in the same way. Yet when asked in oral interviews about Miller, every interviewee responded to the effect that Miller was a true southern gentleman. Quotation taken from George Jeffers, “A History of the Virginia Academy of Science,”

Initially, as compensation for his services, Miller received forty cents a year for each paying member in good standing. In 1929, his honorarium was changed to 150 dollars per year. George Ferguson, a psychology professor from the University of Virginia, Henry Smith, President of Washington and Lee, and Robert Young, a physics professor from William and Mary, rounded out the new Executive Committee. The composition of the Council reflects an attention to the natural and social sciences--a mixture that would remain fairly consistent in the early years of the VAS.

Under this structure, the Academy tripled in size within eight years--concrete evidence that Virginia scientists had perceived a real need for such a professionalizing force. A strength of the VAS's first few Executive Committees was their ability to recognize those actions which would serve to legitimize both the collective Academy and its individual members in the eyes of the public. By May of 1928, Miller reported that the Virginia Academy's request for state incorporation had gone smoothly, giving them greater leeway in financial matters. Another step toward maturity occurred the following year, with the acceptance of an official Academy seal.³⁹

For eight years, the Constitution remained unchanged. By 1932, however, it became clear that with an Academy membership of six hundred--and growing--the Executive Committee needed to expand. The membership opted for a seven-person

p. 5, unpublished manuscript. 1962. Special Collections, Virginia Tech.

³⁹Earl Gregg Swem was named chair of the Committee designated to create a seal. The seal consists of symbols from the history of Virginia. Three concentric circles form two rings around an open area in the center of the seal. On the outer ring is inscribed Virginia Academy of Science. Printed around the inner ring are the names of four great Virginia scientists: John Clayton, Thomas Jefferson, Matthew Fountaine Maury, and Walter Reed. The circle in the center of the seal has the state flower--a full bloom at the top and a bud at the bottom. The seal's motto is *Ignorantia supremus tyrannus*: Ignorance is the greatest tyrant.

Council, by including one-year terms for the retiring president and the president-elect. Seven years later, with membership hovering around the one thousand mark, the VAS increased the number of elected Council members from three to five. That same year, the past-president's term on Council was extended from one to three years.

Of top priority to the new membership was the annual meeting. Continuing in the tradition of the Association of Virginia Biologists and national organizations such as the AAAS, the VAS decided the annual meeting should convene at different areas around the state in the spring. Accordingly, universities and colleges with adequate facilities--usually a large gymnasium or auditorium--agreed to host the annual assembly. Depending on the region, the participants either stayed in dormitories, with colleagues, or in a local hotel. Initially, the Virginia Academy followed the meeting format of the American Association for the Advancement of Science (AAAS). That is, Council meetings were held at the beginning of the annual meeting, usually a Thursday evening, and at the close of the event, generally a Saturday afternoon. As the Academy grew in size, attendance dropped at the Thursday meeting, while the Saturday meeting to which official Council members invited committee chairs and section leaders who, in turn, invited others, often was "standing room only." During these Saturday meetings, George Jeffers jokingly noted: "Young scientists could observe more seasoned members, ones in action, and perhaps best of all, academy motions got a thorough going over. In fact, what started out as a small, discrete, select governing board of the august Virginia Academy of Science had evolved unwittingly into something more nearly approximating the New England Town meeting more than anything else in the South!"⁴⁰ By 1936, the two meetings proved unmanageable, and the

⁴⁰George Jeffers, "A History of the Virginia Academy of Science," unpublished manuscript, p. 69, 1962. Special Collections, Virginia Tech.

Academy voted to hold one, enlarged, formal Thursday meeting called the Academy Conference.

Sections

In keeping with the routine of other state academies, morning and afternoon sessions focused on the presentation of scientific papers.⁴¹ From the beginning, the Virginia Academy sessions were discipline or “section” specific.⁴² In this way, the scientists were able to present the results of their research to an audience of their peers. Camaraderie across the state, the possibility for collaborations among scientists at different institutions, and a greater awareness of developments within a field were enhanced by this format.

Looking for ways to increase the number of sections--with the hope of serving more scientists in the Commonwealth--the VAS took the position that it had much to gain by cooperating with other groups having objectives similar to its own. As early as 1923, Lewis approached the Virginia Section of the American Chemical Society (ACS) for suggestions as to how best support the growth of science in the state. Viewing the new

⁴¹It was not until the following year at the 1924 meeting held at Washington and Lee that the VAS provided for five classes of members. The first, Patrons, consisted of those who gave 1000 dollars or the equivalent in property. They paid no dues. The second, Life members, contributed 150 dollars in its entirety to the Academy. They paid no dues. The money from the Life members was earmarked for the general fund of the Academy and was treated as other dues. The third class, Business members paid annual dues of 100 dollars, immediately earmarked for the general operation of the Academy. Sustaining members, the fourth class of members, contributed between ten and ninety-nine dollars to the Academy. It was the hope that most colleges and universities would become Sustaining members. From this contribution, it was anticipated that eventually a regular publication of the Academy Proceedings might be published. Finally, the last class, the Regular members, had regular dues earmarked to support the regular operation of the Academy.

⁴²Eighteen papers were delivered at the first meeting, indicating a high level of support for this format. Nine of the presentations focused on biology. Five of the nine readers of that group were from William and Mary and four were from the University of Virginia.

Academy as a means to attract more chemists to a regional meeting, the eight-year old Section of the ACS decided to meet with the Virginia Academy of Science and function as its Chemistry Section, while still retaining ties to the national society. In addition, the chemists offered to print the program of the next Virginia Academy meeting in the spring issue of their state-wide Bulletin.

The Section of Education and Psychology also had roots in an established society. In June 1923, John McConnell, President of the East Radford State Normal School for Women, now Radford University, proposed a merger of the Virginia Society for the Study of Education with the Virginia Academy of Science. Organized during World War I and with a current membership of sixty members, the Society had an abiding interest in science education and scientific questions in general. Such interests, McConnell suggested, might contribute substantially to the stated objectives of the new Academy.

Concerned that the large membership of the Society might sway the VAS toward the study of science rather than the actual practice of science, the Executive Committee greeted McConnell's proposal with skepticism. Repeated assurances that the Society would remain a section of the Virginia Academy soothed such concerns, and the Society for the Study of Education was assimilated, becoming the Education and Psychology Section of the Virginia Academy of Science."⁴³ Initially, the groups shared similar research interests. The significance of psychological tests for education, for example, was a strong area of concern throughout the 1920s. By 1934, however, both growing numbers of participants and increasing specialization within the two disciplines warranted the separation into two distinct Sections.

⁴³George Jeffers, "A History of the Virginia Academy of Science," p. 15, unpublished manuscript, 1962. Special Collections, Virginia Tech.

The sections proliferated rapidly. In 1924, the geologists of the state gathered together for the first time at the annual meeting, held at Washington and Lee in Lexington. From its inception, the Geology Section invited graduate students to attend the annual meeting; by 1934, graduate students were permitted to deliver papers and participate in the organizational aspects of the section meeting. For this group of scientists, a heavy emphasis was placed on encouraging budding scientists in their professional careers. In this regard, the Geology Section would remain distinct from the others until after World War II.

By the 1925 meeting in Richmond five sections--Astronomy, Mathematics, and Physics; Biology; Psychology and Education; Chemistry; and Geology--held sessions. While there is no formal archival record of the "Minutes" of the first Bacteriology Section, both Jeffers and oral interviews place the meeting in 1926, when the Virginia Society for American Bacteriologists met with the VAS.⁴⁴ The Society retained close ties with the Academy until its dissolution in 1928. In 1930, a Richmond surgeon and active member of the Virginia Academy, J. Shelton Horsley, gathered together the remaining bacteriologists--professors of medicine at the University of Virginia and the Medical College of Virginia, and physicians, mostly from the Richmond area--to form the Medical Section. A "man on a mission," Horsley initially conceived of the Medical Section as a way to retain the greatest number of trained scientists--especially physicians--within the Commonwealth. Lack of interest on the part of the physicians, however, changed Horsley's conception, and by the

⁴⁴George Jeffers, "A History of the Virginia Academy of Science," p. 18, unpublished manuscript, 1962. Special Collections, Virginia Tech. Also, Vera Remsburg to Charlotte Webb. Phone interview. January 13, 1995.

end of the 1930s, the Medical Section primarily served to encourage camaraderie between the basic science departments of the two medical schools.

Shortly after the Virginia Academy's founding, engineers--primarily academicians--began to deliver papers in various sections. The numbers of participants from engineering generally ranged from five to ten. In 1938, however, twelve papers were presented by engineers in the Chemistry Section, with several more delivered in other sections. Given this level of interest, Dean Earl Norris, current president of the VAS and an engineer from Virginia Polytechnic Institute, suggested a Section of Engineers. The next year in Danville, the Engineering Section held its first annual meeting. Thirty were present to hear the fifteen presentations.

Committees

While the early leadership of the Virginia Academy of Science established sections to provide their organization with a solid, professional foundation, they viewed committees, with their interdisciplinary emphasis, as a means by which the VAS could interact with the public--with politicians, industry, various interest groups, and the citizenry at large. Nathan Reingold points out that the concept of professionalism involves outreach, and "assumes an applied component requiring a service ideal."⁴⁵ Committees, as defined by the early Virginia Academy of Science, are the mechanism by which the organization's members could provide useful services, whether educational, advisory, or advocacy in nature, to all levels of Virginia society. As the primary means through which an

⁴⁵Nathan Reingold, "Definitions and Speculations: The Professionalization of Science in America in the Nineteenth Century," in Alexandra Oleson and Sanborne Brown, eds., The Pursuit of Knowledge in the Early American Republic (Baltimore: The Johns Hopkins University Press, 1976), p. 35.

organization interacts with the “outside world,” committees introduce the citizenry to scientific issues. Within the Virginia Academy, the analysis of a given issue by a committee often serves as a point of entry into the relationship among the seemingly disparate cultures of state government, institutional bureaucracies, and science practitioners--including those within the VAS and in other organizations. Committees reflect the goals of the Academy. Because the committees act as bridges to the entire Commonwealth, in the work they are able to do and in the positions they take, they are potentially reflective of the Virginia people. The committees are, therefore, of singular importance: they are the only part of the VAS that are both reflective of and a shaping influence on Virginia society and culture. This would become particularly true in the years during the Great Depression, when for various reasons, the sections backed away from the kind of service through outreach to which Reingold alludes.

Committee on the Preservation of Natural Resources

Like other state academies of science in the United States, the Virginia Academy took an early interest in the conservation of natural resources. Conservation in the 1920s was still a relatively new phenomenon. Before the election of Theodore Roosevelt brought to the White House a progressive-minded President with a strong interest in natural resources, federal and state regulations to control the exploitation of the environment did not exist. Businesses operated without concern for destruction wrought by their practices. Clear-cutting of virgin timberlands was common, and strip-mining laid waste once-fertile lands, particularly in southwest Virginia and West Virginia. Rules restricting hunters and fishermen were not in place. Entire species were dealt a fatal blow, and ecosystems like the Chesapeake Bay were disturbed to a greater extent than anyone perceived at the time.⁴⁶

⁴⁶Jack Temple Kirby, “Virginia’s Environmental History: A Prospectus,” in Virginia Magazine of History

Theodore Roosevelt took the first steps towards controlling what many regard in hindsight as senseless plundering. By the end of his term in 1909, the Reclamation Act and the Newlands Act were in place and pointed the way toward future federal environmental regulation. In large part, the network of national forests that Americans enjoy today is the result of Roosevelt's prescient actions. However, it was not these acts--important though they may have been in the long run--but the formation of the National Conservation Commission that brought national public attention to these problems. The National Conservation Commission issued predictions that were both alarming and that attracted attention. Scientists, whose profession made them the bearers of information about natural conditions, found themselves in the unique position of environmental experts. As Thomas Haskell points out in his book The Authority of Experts, from this elevated platform, scientists used their expert knowledge in public forums, and were believed without question.⁴⁷

For scientists everywhere, national and state academies of science provided a strong and popular foundation from which environmental issues could be addressed. Many academies, in fact, had as a stated objective the conservation of natural resources. It is not surprising, then, that less than one month after the chartering of the Academy, President Lewis sent to the Executive Committee several items to consider, one of which was setting

and Biography 99(1991), pp. 449-488.

⁴⁷For a discussion of the concept of the expert, see Thomas L. Haskell, The Authority of Experts: Studies in History and Theory (Bloomington: Indiana University Press, 1984). See also, Nico Stehr, Knowledge Societies (London: Sage Publications, 1994), especially Chapter 7. For information regarding environmental history, see Daniel Worster, ed., The Ends of the Earth: Perspectives on Modern Environmental History (Cambridge: Cambridge University Press, 1986); Joseph M. Petulla, American Environmental History (San Francisco: Boyd and Fraser, 1977); Kirkpatrick Sale, The Green Revolution: The American Environmental Movement, 1962-1992 (New York: Hill and Wang, 1993).

aside an area of the Great Dismal Swamp--the irreplaceable habitat which follows the North Carolina-Virginia border--as a reservation. Stated Lewis:

The North Carolina Academy proposes to join the Virginia Academy in positioning the respective legislatures to purchase and set aside as a permanent park and wild life reservation a large and preferably designated area of the Dismal Swamp. The Association of Virginia Biologists had a committee to take care of this and I suggest that the President of the Academy be authorized to reconstitute this committee so as to have it representative of the Academy as a whole and to authorize the committee to get the matter in shape for presentation at the next meeting of the legislature. Your opinion of this is requested.⁴⁸

At the same time the VAS membership was considering the reconstitution of such a committee, Council received a letter from the Ecological Society of America asking for help in defeating a bill pending in the United States Congress that would weaken the power of the Forest Service over grazing rights on federal land. While the Academy Council did not pass a formal resolution, the group of seven did encourage individual members to lobby their congressional representatives against the bill. Impressed by the similar nature of these two events, the following year the Virginia Academy created the Committee on the Preservation of Natural Resources "to study the subject of unnecessary destruction of natural areas which are valuable to the State and to science, with the view of determining what steps can be taken."⁴⁹ Thus began a long history of concern for the degradation of irreplaceable natural resources.

Perhaps seeking to pacify those members and potential donors associated with industry, the committee changed its name the following year to the Committee on

⁴⁸Ivey Lewis to Executive Committee, 1923. Special Collections, Virginia Tech.

⁴⁹"Report of the Secretary" in the Proceedings of the Virginia Academy of Science, 1925-6, p. 4. Special Collections, Virginia Tech. "Minutes of VAS Annual Meeting," May 7-8, 1926. W.D. Hoyt of Washington and Lee was elected chair of the committee, a position he would hold for the next ten years.

Conservation of Natural Resources.⁵⁰ Yet preservation rather than conservation seemed the goal in 1927 as the committee, along with the Garden Clubs of Virginia, took a forthright stand against the building of a private dam and power plant at Goshen Pass, an unusual gorge in the Appalachian mountains. Up against the Virginia Public Service--the powerful electric and gas utility--the committee, led by Professor Hoyt of Washington and Lee, outlined an aggressive plan: first, arouse as much opposition as possible to the project throughout the state; second, lobby the State Highway Commission to deny the change of the highway running through the area, making it impossible for the Service to condemn the land since it contained a public roadway; and third, locate an individual willing to purchase the land after the committee has "made the company as uncomfortable as possible and it as difficult as possible for them to proceed. . . ."⁵¹ Today, the still-pristine state of the Pass bears witness to the success of the Virginia Academy of Science's effort.

No sooner had the Goshen Pass matter reached closure than two major projects surfaced. First, new concerns over the Great Dismal Swamp came to light: real estate developers were petitioning the General Assembly to fill in the swamp, thereby making it of some "use" to the Commonwealth. Again, the Committee on Conservation, buoyed by the support of small, local action groups, swung into action, encouraging individual members to lobby the General Assembly for the maintenance of this irreplaceable habitat. While the Virginia Academy did not pass a formal resolution stating its position, it appears from archival records that a sufficient number of its members did contact their state

⁵⁰It is important to remember that rather than being alarmed at the number of companies coming into Virginia and using her natural resources, the scientists welcomed such industry, viewing its presence as necessary for the region's continued economic development. Concern was expressed, however, when irreplaceable habitats or unnecessary utilization of the land with no thought of replacement occurred or when areas vital to scientific research were tampered with.

⁵¹"Report of Committee," April, 1927. Special Collections, Virginia Tech.

representatives to make a substantial impact.⁵² Today the Great Dismal Swamp remains in its natural state, open to visitors throughout the year.⁵³

The second project grew out of the earlier cooperation between the Garden Club of Virginia and the Conservation Committee. By 1930, the State Commission on Conservation and Development observed a need for an advisory committee to oversee Virginia's parks and forests. Prompted by the ease of their earlier interaction, VAS and Garden Club members offered their joint services to the state. These three groups, along with the Izaak Walton League, formed the first State Park and Forest Advisory Council. Among the group's more noted acts was the successful campaign directed toward Senator Harry Byrd to make the Shenandoah Park a reality.

Committee on Flora

Taking the lead from the Association of Virginia Biologists, whose members were committed to the collection of local flora and publication on related material, a Committee on Flora was proposed formally in 1926 by botanist A.B. Massey and the following year was officially recognized.⁵⁴ The most important contribution of the committee in its early days came in the form of support it gave to one of its members, Professor Paul Merriman of the University of Richmond. An avid naturalist, Merriman had amassed over the years

⁵²"Minutes of VAS Meeting," May 9-11, 1929 Special Collections, Virginia Tech; Proceedings of the Virginia Academy of Science, 1930-31, pp. 11-12. Special Collections, Virginia Tech. For a history of the Great Dismal Swamp, see Alexander Crosby Brown, Juniper Waterway: A History of the Albemarle and Chesapeake Canal (Charlottesville: University of Virginia Press, 1980).

⁵³Chapter Four will treat the later focus of the Virginia Academy of Science on the Great Dismal Swamp.

⁵⁴Composed of Lewis, Massey, Freer, Hoyt, and Warren. Hoyt left in 1932 and Robert Smart was added in 1932. When Warren left the State, his place was taken by George Mason of the Mariner's Museum in Newport News.

an enormous collection of the flora of Richmond and its surrounding areas. By 1930, Merriman was ready to publish his findings. Not able to find an adequate publication outlet, Merriman turned to the Committee on Flora for help. Intensely lobbying Governor Byrd and the Conservation and Development Commission, the Committee pushed for a modest grant of \$2000. Finally, in 1931, the State Budget Committee appropriated \$1000 to enable the Virginia Academy of Science to publish the Flora of Richmond and Vicinity. A total of 2000 copies was printed and sold for a nominal cost to tourists, members of garden clubs, and others interested in wild plants.⁵⁵ The publication came none too soon, as shortly thereafter, a fire destroyed Merriman's entire collection.

The Flora Committee's activities led to other publications as well. From its inception, the committee sent the majority of new plant specimens to the State Herbaria, located at Virginia Polytechnic Institute in Blacksburg. Naturally, the question soon arose as to how best to inform the general membership and other interested scientific academies of the ever-increasing holdings. The solution came in the form of a bimonthly mimeographed pamphlet called the Claytonia. Named after the seventeenth-century Virginia botanist John Clayton--one of the first Virginians to receive international recognition for research and publication--the Claytonia was the Virginia Academy's first attempt to publish anything other than the Proceedings. From 1934 to 1939, the Claytonia offered an up-to-date report on the state of wildflowers and other flora in Virginia. The pamphlet survived until 1939, when it merged into the Virginia Journal of Science.

⁵⁵E.C.L. Miller to Governor Pollard. August 4, 1931. Special Collections, Virginia Tech.

Committee on Publications

By the 1920s, publication had become an integral component of professionalism. American scientists young and old took great pride in having their research accepted for publication by their disciplines' national journals. For those whose articles were declined by the more prestigious journals, state academies provided a viable--though decidedly second tier--professional alternative. Although a few southern academies attempted to publish journals during the 1920s and 1930s, only North Carolina and Tennessee could be credited with success.⁵⁶ Financial hardship, inability to reach an audience outside of the general membership, and difficulty attracting research articles from first-rate scientists rendered timely and high-quality publications almost impossible. For all these reasons, state journals did not enjoy the same level of success as their national counterparts. They did, however, announce to the national scientific community that scientific activity was alive in regions otherwise viewed as nonproductive.

The Virginia Academy was not hasty in its effort to produce a journal. Beginning in 1924, the Proceedings from the annual meeting were published, and in 1927 the Secretary's Report was included as well. Other than the Claytonia, official publications did not exist. At the 1936 meeting, the first female President of the VAS, Ida Sitler, announced the formation of a Committee on Academy Publications. She surmised that the combination of several of the science publications then appearing in Virginia--the Bulletin of the Virginia Section of the American Chemical Society, Claytonia, and the VAS Proceedings--might produce a quarterly periodical. Such a publication "would afford a more obvious demonstration of the actual creative achievement of science within the state than could the scattered efforts now representing the different interests within the

⁵⁶See Nancy Smith Midgette, To Foster the Spirit of Professionalism (Tuscaloosa: University of Alabama Press, 1991).

Academy.”⁵⁷ Sitler’s suggestion did not gain full favor; however, it did pique the interest of the membership. Consequently, in 1939, the Claytonia was converted into the Virginia Journal of Science, with Ruskin S. Freer and Robert P. Carroll of Virginia Military Institute continuing as editor and business manager.

Committee on the Encouragement of Research

In 1973 long-time member Walter Flory remarked that “[I]n a sense, the research committee dates from the very founding of the Academy when the first objective of the young organization was stated as ‘The Promotion of Scientific Research in Virginia.’”⁵⁸ So seriously did the membership take this mission that included in the first printed Proceedings is a full reprint of an editorial entitled “What the Academy Can Do.”⁵⁹ In offering advice to the fledgling academy, the unidentified author writes:

Too often there is a struggle to improvise, to go ahead in spite of obstacles, and then a gradual slipping into the state of mind that is content to do the day’s work of teaching or of testing occurs. The university seldom continues to stimulate, for its attitude seems to change the moment the professors have no further daily responsibility. The scientific societies to which man belongs are so large and so dominated by the savants of established position that the young teacher receives no spur from them. The Virginia Academy may give him just what he needs of encouragement, of contact, and of outlet. It may be a national scientific association in miniature, a substitute for the atmosphere of university research.⁶⁰

⁵⁷Proceedings of the Virginia Academy of Science, p. 8. Special Collections, Virginia Tech.

⁵⁸Walter S. Flory, “Research Committee History,” p.1, unpublished manuscript, no date. Special Collections, Virginia Tech.

⁵⁹Research News Leader (1 May, 1925) in Proceedings of the Virginia Academy of Science, 1924-25. Special Collections, Virginia Tech.

⁶⁰ Proceedings of the Virginia Academy of Science, 1924-25, p. 3. Special Collections, Virginia Tech.

One early form of research assistance came from the American Association for the Advancement of Science (AAAS). In an attempt to increase membership, the AAAS offered a fifty-cents, no-strings attached payment to the state academies for each of their members who also participated in the national organization. The VAS joined the Association in 1924, and it did not take long for the contribution to become an integral part of the annual budget. Seeking to foster research, the AAAS suggested in 1934 that the annual payment be used for individual scientific grants. To facilitate movement in this direction, the Association increased the amount awarded. Rather than fifty-cents per member, the AAAS would offer a twenty-five dollar total payment.⁶¹

For most southern academies, the AAAS grants provided the sole source of research funding. Only the Virginia Academy could boast an independent research fund. Early in 1925, Academy President J. Shelton Horsley, the wealthy Richmond surgeon of national reputation mentioned earlier, appointed “a committee to concern itself with the advancement of scientific research in Virginia.” Representing the Medical College of Virginia, Randolph-Macon Women’s College, William and Mary, the University of Virginia, and the University of Richmond, the Committee on the Encouragement of Research was set up on a rotating basis, with each member serving between one and five years. The duties of the committee were simple: “to keep in touch with research done in Virginia, to encourage research, to suggest problems, to serve as a clearing house for research problems, and to act in any other ways that seem advisable to the committee.”⁶²

⁶¹Claude Baker, History of the Academy Conference, 1926-1952 (Washington, D.C.: American Association for the Advancement of Science, 1952).

⁶²E.C.L. Miller to R.F. McCracken, June 7, 1926. Special Collections, Virginia Tech.

As its first project of 1926, the Research Committee undertook an analysis of the status of research in the Commonwealth. After surveying sixty-three instructors from various universities and colleges, the committee found the results discouraging: research was underfunded; research was not encouraged at the state level; scientific equipment and laboratories were in sad shape; and instructors were teaching over fifteen clock-hours per week--leaving little, if any, time for research. In their written report to the membership, the committee cited the abysmal data before ending with the remarks of Yale scientist William MacDonald:

The Supreme test of the intellectual life of a community is the importance which it attaches to research and creative intellectual effort. Unless research in whatever field it may be carried on, is held in high esteem with adequate facilities for its maintenance and adequate rewards for men and women who devote themselves to it, the development of applied science in all its forms will eventually be checked. Sooner or later unless research continues, we shall reach the end of the things that are known and then progress will cease. What is true of research must be true of creative intellectual performance: it must be magnified or intellectual life will decline. What can be done is to avert such a calamity and to give to research and intellectual creation the place of honor which they ought to hold in our intellectual and social life.⁶³

Determined that the VAS would affect substantially the course of scientific research in the Commonwealth, the new committee took early action to support the struggling scientists. For the majority of Virginia scientists, time outside of their teaching duties--critical for conducting research--did not exist. By and large, each professor or instructor was required to teach nine to twelve credit hours per semester in addition to supervising the necessary laboratory components. Not helping the situation, the Southern Association of Colleges and Secondary Schools had promulgated a policy in which, regarding measurement of work-load, laboratory instruction was not commensurate with that in the

⁶³William MacDonald, *Science* 63(26 March 26, 1926), p. 320.

classroom. Thus, many college and university administrators viewed two or three hours of laboratory teaching as equivalent to one classroom hour. Little wonder scholarly pursuits often fell by the wayside.

William and Mary professor Donald Davis sought to change the system as early as 1925. Before Council, he suggested that the Virginia Academy pass a resolution encouraging the Southern Association to reconsider its policy, perhaps amending it, so that time spent in the laboratory would be equal to that in the classroom. Seven long years passed before the VAS acted on Davis' motion, passing a resolution and forwarding it in early 1932 to both the Southern Association and college administrators. Frustrated by the Southern Association's lack of response, several months later the Virginia Academy authorized Secretary-Treasurer Miller to attend the annual AAAS meeting and deliver its resolution and recommendations at the Academy Conference, with the hope that other state academies of science would follow suit. Entitled "The Credit Values of Laboratory Teaching," Miller's paper elicited such a positive response that it was published along with several reaction papers in the AAAS proceedings for 1932. Unfortunately, it appears that the support was short-lived: the Southern Association did not receive any other formal resolutions and recommendations and did not, in the near future, reverse its policy.⁶⁴

Davis's early efforts to change the rules governing laboratory teaching credits were compatible with President Horsley's ideas concerning the importance of research for Virginia scientists. Confident in his leadership role, Horsley took the unusual step of proposing that the Academy create an endowment fund of at least \$25,000 to be to be "at the disposal of the Committee on Research of the Virginia Academy of Science." Such an

⁶⁴"President's Report" in Proceedings of the Virginia Academy of Science, 1933-34, p. 7. Special Collections, Virginia Tech.

amount would net approximately \$1250 per annum in interest of which, according to Horsley, \$500 could be given annually for a meritorious paper, \$250 could be used to defray committee expenses, and \$500 could be divided into small research grants for those Virginia scientists “who need financial assistance in any particular line of research work.”⁶⁵ To commence the fund, Horsley donated the first \$150, earmarking it to be used over the next three years as an award for an outstanding paper delivered at the annual meeting. By March 4, 1927, Horsley reported to an incredulous membership that thus far \$8375 had been raised for the endowment fund. Contributions ranged from seven large private donations from the Richmond area and numerous smaller ones, to \$250 from the C.V. Mosby Publishing Company of St. Louis and \$200 from a medical publishing firm in Maryland which wished to remain anonymous.

Two months later in his Presidential address of that year, Horsley offered a campaign-like speech, exhorting the VAS membership to support scientific research. Exemplifying a true Enlightenment spirit, he repeatedly equated scientific progress with social progress. Referring to academy scientists as the “Fifth Estate,” Horsley built his speech around a recent editorial in the New York Times in which the author proclaimed that modern science had “recast civilization through its study and application of the fundamental facts and laws of Nature.” Hence, scientists needed to “bring home to every man the wonders, the significance, and the underlying harmony of the world in which we live to the end and that all undertakings may be better ordered, all lives enriched, all spirit fortified.” Horsley continued in the same vein, impressing upon his audience that “the value of scientific work and of research in pure science is becoming increasingly important, and no scientific association has any excuse for existence unless it be some stimulant to research.”

⁶⁵J. Shelton Horsley to William M. Brown, December 21, 1925. Special Collections, Virginia Tech.

In addition, he expressed concern over a constant problem within the scientific community: the public's willingness to support only research that seems to have immediate practical application rather than pure research. Citing the practical accomplishments of Alexander Graham Bell, Horsley pointed out that Bell's accomplishments would not have been possible without the prior, "purely scientific" research of Joseph Henry. In his conclusion, Horsley simply stated that basic research is good training for the mind and the intellect.⁶⁶

Although \$25,000 remained out of reach, in 1929 the Research Committee informed the Academy membership that it was ready to accept requests for grants. The following year, six different projects were awarded fifty dollars each.⁶⁷ Monies were also set aside for continuation of the meritorious paper contest. In 1930, thirteen papers were submitted. Such successes notwithstanding, the Research Committee constantly sought to better its operations. In a letter of November 10, 1932, Miller wrote to Horsley that for research to be successful, the person must be adequately trained in the field, have the desire to do research, have a suitable program, and have adequate time and facilities. "Unfortunately," he lamented, "the training that teachers receive frequently does not develop a strong desire to do research work and when difficulties arise the research work is more and more neglected and finally abandoned. The increase and maintenance of this desire to do research work is central in any plan to promote research work here in Virginia."⁶⁸ Given these sentiments, it is not surprising that Secretary Miller became quite agitated when, several months later, he learned that two applications had been rejected

⁶⁶J. Shelton Horsley, "The Virginia Academy of Science: Our Fifth Estate," Proceedings of the Virginia Academy of Science, 1926-27, pp. 21-28. Special Collections, Virginia Tech.

⁶⁷Proceedings of the Virginia Academy of Science, 1928-29, pp. 10-11. Special Collections, Virginia Tech.

⁶⁸E.C.L. Miller to J. Shelton Horsley, November 10, 1932. Special Collections, Virginia Tech.

because they came in several days past the due date. In an angry letter to the Research Committee, Miller asserted that if “the purpose of this committee is the encouragement of research in Virginia, then we should be very careful not to discourage it. The spirit of research is so scarce, so difficult to arouse, and so easily extinguished that we should not throw cold water on any little flame we find.”⁶⁹

In 1936, Horsley initiated another fund-raising effort to shore up the endowment fund. Seeking to enlist support for the fund from prominent Richmond figures, Horsley wrote Virginius Dabney, then editor of the Richmond Times-Dispatch, historian Douglas Southall Freeman, and Jay Johns, representative of the Virginia State Chamber of Commerce. Horsley pointed out:

The net exodus of Virginians amounts to about 500,000 . . . in fact, a large proportion of the emigrants who go from Virginia are individuals who seek better opportunities for their activities--chemists, medical men, engineers artists, journalists, and biologists frequently go elsewhere because of better opportunities . . . Research should be held in higher esteem in Virginia . . . a sympathetic attitude toward research will do much to retain men and women who have that flare.⁷⁰

Horsley also solicited funds and expressions of support from outside the state. In 1937, he wrote to numerous individuals whom he felt might make a donation to the endowment, including Mrs. Alfred du Pont, a native Virginian then living in New Jersey. In the course of outlining the ways in which the funds had been used to date, Horsley proclaimed that Virginia’s most important asset is the quality of its people. Therefore, “it is most unfortunate that a large percentage of young scientists are compelled to leave the state for better opportunities and where the prestige of scientific work is greater.”

⁶⁹E.C.L. Miller to J. Shelton Horsley, November 10, 1932. Special Collections, Virginia Tech.

⁷⁰E.C.L. Miller to Jay Johns, July 1, 1936. Special Collections, Virginia Tech.

Competition with the heavily-endowed institutions is not feasible, allowed Horsley, but encouragement and financial help is. "If we could keep only one out of four research workers we would be doing something very great for our state. This work naturally does not have the emotional appeal that crippled children, illness, or the indigent have, and so must be limited to a few persons of understandings, who give intelligently rather than emotionally, and these must be asked to give in larger amounts."⁷¹ Mrs. Alfred DuPont sent one thousand dollars, while others contributed five hundred dollars or less. By 1938, Horsley's efforts had topped the fund off at 13,000 dollars.

The following year, Frank Geldard of the University of Virginia took over as new chair of the Research Committee. As his first task, Geldard initiated an analysis of the research grants awarded over the past ten years. On the one hand, the results of the study indicated a high level of success. Over its ten-year history, the committee received 102 applications for aid--seventy-one of which received a partial or full grant, totaling \$4028. The recipients delivered forty-eight papers on their grant-supported topics and published sixty-six.⁷² On the other hand, the review revealed that perhaps a change in policy relative to making the grants might be in order. Geldard summarized the issue, stating:

I have serious doubts as to the wisdom of making very many or very large grants to people like Speidel, Yoe, etc. who have other resources to fall back on. Too, I think we should encourage the "matching" of funds by institutions, as in the cases of last year. It draws attentions to our limited resources and probably gives administrative officers a better appreciation of research difficulties in their own institutions.⁷³

⁷¹J. Shelton Horsley form letter, 1937. Special Collections, Virginia Tech.

⁷²"Virginia Academy of Science: A Review of the First Ten Years of the Research Committee, 1929-1938," 1939. Special Collections, Virginia Tech.

⁷³Frank Geldard to E.C.L. Miller, Oct. 12, 1939. Special Collections, Virginia Tech.

One other incentive to research is worth mentioning. In 1936, Phipps and Bird, Inc.--the Richmond-based manufacturer of scientific instruments managed by Lloyd C. Bird, himself an active member of the Virginia Academy--offered to award a gold medal at the annual meeting to a meritorious paper delivered before the individual academies of Georgia, North Carolina, South Carolina, and Virginia.⁷⁴ Following the annual meetings, the four recipients of the Jefferson Gold Medals, as they were called, would send their papers to be evaluated by a panel consisting of one judge from each academy. Of that group, the winning paper would receive one hundred dollars, while second and third would collect twenty-five dollars respectively. While the Virginia Academy responded enthusiastically to the Jefferson Medal contest, the other academies often did not have enough entries to compete. Not pleased with the level of participation, in 1943 Bird withdrew the company's sponsorship of the award.⁷⁵

On balance, the effort to raise research money was fairly successful. Very likely, only Horsley could have raised such an endowment. He was able to do so for several reasons. First, his profession as surgeon allowed him considerably more free time and flexibility in his use of his leisure than that enjoyed by teaching scientists. Second, because he was a surgeon and practiced in Richmond, he had both professional and social stature, which he was able to use to the advantage of the Virginia Academy. His standing with people of "high status" in the powerful Richmond community and his membership in the VAS made him an important node in the Academy network. He was, to use sociologist Bruno Latour's terminology, able to enroll people who under normal circumstances had nothing to do with an academy of science. In so doing, he expanded the network of people

⁷⁴Circular from E.C.L. Miller to the Virginia Academy of Science, July 17, 1936. Special Collections, Virginia Tech.

⁷⁵Proceedings of the Virginia Academy of Science, 1942-43. Special Collections, Virginia Tech.

to whom the Virginia Academy had access, thus making the Academy more durable. It is a truism to say that the more one can link powerful people securely into a given network, the greater the access the members of the network have to money and power. Horsley, and probably Horsley alone among the members of the Academy at that time, was able to make such connections on behalf of the VAS. It was a loss to the Virginia Academy of Science and a weakening of Horsley's efforts when Lloyd Bird pulled his support away from the collection of academies, yet there was very little Horsley could have done about it, since it was the lack of activity in other states more than anything within Virginia that negatively affected Bird's evaluation of the results of his company's effort.

Education

The Virginia Academy placed an enormous premium on protecting and improving the quality of secondary science education within the state's public school system. As early as May of 1923, George Ferguson, professor of education and psychology at the University of Virginia, expressed concern over the power and the proximity of the creationist movement. Like many Virginia scientists, Ferguson viewed the myopic conception of science reflected in creationist doctrine as antithetical to all scientific inquiry, and it was thus vital to address the problem immediately. Writing to then-president Lewis, he stated: "If Mr. Bryan comes this way, I hope we may issue a statement."⁷⁶

Before 1920, there had been little hesitation in Virginia and other southern regions about teaching students the theory of evolution. Even colleges and universities known for their religious curriculum, such as Wake Forest of North Carolina, viewed teaching the

⁷⁶George Ferguson to Ivey F. Lewis, May, 1923. Special Collections, Virginia Tech.

theory of evolution as a necessary component of scientific instruction. A mere five years later, this was not the case as a tide of anti-evolutionary sentiment swept the nation, most notably in the south. “[F]ighting for their careers and reputations,” teachers and professors were, “besieged by angry fundamentalists who increasingly identified organic evolution as the cause of the social ills plaguing modern civilization.”⁷⁷ Led by William Jennings Bryan, a member of the Presbyterian church and a Democratic candidate thrice-defeated for the presidency of the United States, the creationists sought to erase any reference to evolution from standard curriculum, replacing it with a literalist interpretation of the Book of Genesis.

So successful were Bryan and his followers that by the end of the 1920s, more than twenty states had debated anti-evolutionary laws, with intellectually troubling results. Tennessee, Arkansas, and Mississippi had banned the teaching of evolution in public schools, and in Oklahoma, all texts considering evolution were banned. In Florida, evolution was considered “improper and subversive.” Even the United States Senate debated an amendment to ban radio broadcasts advocating evolution.⁷⁸ Given the conservative tenor of Virginia, the concern voiced by Ferguson was well-founded.

⁷⁷Ronald Numbers, “The Creationists” in David Lindberg and Ronald Numbers, eds., God and Nature: Historical Essays on the Encounter between Christianity and Science (Berkeley/Los Angeles: University of California Press, 1986), p. 40. Numbers’ account considers the extent to which biological evolution had permeated institutions of higher education by this time. For example, he cites a study in 1919 in the Midwest out of Wheaton College in which out of 53 surveyed, 3/4 taught evolution. In the south, Numbers comments that even the Baptists were teaching the theory of evolution and had been for decades—even at church schools such as Wake Forest in North Carolina, which had started teaching evolution in the 1880s. For general information, see William E. Ellis, “Evolution, Fundamentalism, and the Historians: An Historiographical Review,” The Historian 44(1981), pp. 15-35; Willard B. Gatewood, Jr., ed., Controversy in the Twenties: Fundamentalism, Modernism, and Evolution (Nashville, Tennessee: Vanderbilt University Press, 1969); Judith V. Grabiner and Peter D. Miller, “Effects of the Scopes Trial,” Science 185(1974), pp. 832-837.

⁷⁸Ronald Numbers, “The Creationists” in eds., David Lindberg and Ronald Numbers, God and Nature: Historical Essays on the Encounter between Christianity and Science (Berkeley/Los Angeles: University of California Press, 1986), p. 41.

In response to Ferguson's 1923 suggestion, Lewis posted a circular in the spring of 1924 to the Executive Committee stating:

It has been suggested that the Academy may perform a useful service at this time by drawing up a statement of the status of the theory of evolution among Virginia scientists. The point is made that in the present wide interest in and general discussion of this subject there is a good deal of misapprehension, some of which may be allayed by a clear statement from the Academy. Some of the popular errors are that evolution teaches that man is descended from the monkey; that evolution is necessarily irreligious; that evolution is synonymous with Darwinism; that there is no evidence of evolution; and that there is a wide difference of opinion among scientists as to its truth. It is a nice question. May I have the benefit of your opinion as to whether it is wise for the Academy to make any pronouncement on the subject?⁷⁹

Each committee member supported issuing an official statement, though with varying levels of enthusiasm. Miller, for example, remarked that it was difficult for him to recognize the importance of issuing such a statement because for him the idea of evolution was "as commonplace and fundamental an assumption as that the sun will rise tomorrow." However, he conceded that there were "some who needed some sort of guidance in the matter," so he thought it might be worthwhile to make a statement defining the theory of evolution and showing its value as a working hypothesis.⁸⁰ Five days later, Miller was more subdued, advising against using the phrase "Doctrine of Evolution" and the word "believe" in connection with scientific theory. Such rhetoric he maintained is "too religious; we must be careful to always use language that people understand."⁸¹

⁷⁹Ivey Lewis circular letter, April 21, 1924. Special Collections, Virginia Tech.

⁸⁰E.C.L. Miller to Ivey Lewis, April 23, 1924. Special Collections, Virginia Tech.

⁸¹E.C.L. Miller to Ivey Lewis, April 28, 1924. Special Collections, Virginia Tech.

Both Henry Smith, President of Washington and Lee University, and R.C. Young of William and Mary were more cautious than Miller. Smith cautioned that

. . . in such an ultra-conservative state as Virginia, issuing a statement might excite the extreme fundamentalists, who I fear are quite numerous in the Old Dominion, to greater alarm and more violent efforts at repression than ever. . . . It might, however, be wise and timely to pass a unanimous resolution that in the opinion of the scientists of Virginia the acceptance of the doctrine of evolution as believed by scientists in the world today is not inconsistent with religious faith, hope, and practice.⁸²

Young maintained that a “valid objection to the pronouncement [that of Bryan and the creationists], provided the public thoroughly understands the spirit in which it is made” might be issued. It should be made clear that our purpose in doing this is to give information and allay misapprehension.”⁸³

Given the affirmative response of the Executive Committee, Lewis decided to speak on the relationship between the church and science in his 1924 Presidential address to the Academy membership. Based on the reaction of the membership to his speech--which would reflect as well the opinions of the Executive Committee--Lewis would decide whether or not to issue a proclamation. Lewis began with a brief description of the conflict at hand:

In the course of the history of the Christian church there have been many occasions when theological conclusions did not square with the experience of man as to material matters. The result in all cases was the same, an initial success of the church, then a period of attempted compromise, and finally an ignominious retreat by the spokesmen for the church. . . . That the movement to curb the teaching of evolution is not a trivial thing has become evident to all those who love liberty and believe in truth. Efforts have been

⁸²Henry Louis Smith to Ivey Lewis, April 23, 1924. Special Collections, Virginia Tech.

⁸³R. C. Young to Ivey Lewis, April 24, 1924. Special Collections, Virginia Tech.

made to dictate the teaching of science in Kentucky, Florida, Texas, Oklahoma, North Carolina, West Virginia, and Minnesota.⁸⁴

Furthermore, continued Lewis, the ways in which the “agents of the inquisition” are attempting to dislodge those who teach evolution from their profession is unconscionable and indicates an acute confusion over the meaning of the theory of evolution. Indeed,

[T]here seems, however, to be some confusion in the minds of ecclesiastical leaders as to which particular windmill is being tilted at. The words Darwinism and evolution are most frequently used in evident ignorance that the two are different. The fact of evolution may be regarded as proved, just as the fact of gravitation is proved. Darwin’s theory is to account for it, on the other hand, is not only proved, but is subject to revision like any other theory. . . . But the fact of evolution stands on quite other grounds.⁸⁵

Given the enthusiasm and support with which Lewis’s address was greeted, it would seem that an official statement should have followed. This was not the case, however. In fact, following Lewis’s speech, there was no immediate correspondence--formal or informal--that discussed the relationship between church and science. Two years later, one final word on the matter appears in a letter from Lewis to Francis D. Murnagan, Assistant Secretary of the AAAS, stating that “nothing further has been heard of any anti-evolution bill in Virginia.”⁸⁶ “Furthermore,” he remarks, “I do not believe that Virginia will ever vote that the earth is flat.”⁸⁷

Neither the archival record nor oral interviews reveal the reasons behind the sudden lack of interest in the evolutionism-creationism debates. At first glance, one might

⁸⁴Ivey Lewis, “Presidential Address, 1924.” Special Collections, Virginia Tech.

⁸⁵Ivey Lewis, “Presidential Address, 1924.” Special Collections, Virginia Tech.

⁸⁶Virginia is the only southern state whose General Assembly has never had to consider an anti-evolution bill or resolution.

⁸⁷Ivey Lewis to Francis D. Murnagan, February 10, 1926. Special Collections, Virginia Tech.

speculate that with the conclusion of the infamous Scopes Trial in 1925, the academics no longer felt threatened by fundamentalists seeking to ban the teaching of evolution. However, the majority of southern state governments were still in the process of debating such a ban. Furthermore, fundamentalist groups within Virginia were encouraging the General Assembly to consider an anti-evolutionary ban. Clearly, the conflict persisted well into the decade. Then why the sudden lack of interest? One may only conclude that the VAS fell into a pattern which would appear time and again in its history. That is: an initial flurry of interest in an issue which might have political repercussions and then, for no stated reason, a sudden loss of interest in the issue. Of course this pattern did not hold true in every controversial issue. However, it does occur sufficiently over time to make one wonder what kind of political statement these “nonactions” of the VAS have made.

The issues of evolution and creationism were not the only matters on the Academy’s education plate. The VAS saw itself as an inclusive organization, and acting on that philosophy, in early 1925, the Virginia Academy initiated its first big push to attract more high-school teachers into its fold. Secretary Miller attended the science section of the Virginia State Teachers Association, inviting all to join the VAS.⁸⁸ While the teachers did not flock to the Academy, they were, nevertheless, always encouraged to participate in its activities. The early interest in secondary education is not surprising: after all, the majority of the membership taught in the Commonwealth’s colleges and universities, and were only too well aware of the results of inadequate scientific preparation of college freshmen in their classrooms and laboratories. In addition, the several state teaching colleges were active in the Virginia Academy, and for them, the link between the high-school teacher and student was even stronger.

⁸⁸E.C.L. Miller to Ivey Lewis, early 1925. Special Collections, Virginia Tech.

Although the VAS did not establish a Committee on Science in the Public Schools until 1930, late in 1925, Council did consider the problems within science education and informally suggested three avenues the organization might follow in addressing the situation. First, Academy membership would be extended more forcefully to the region's high-school teachers, and they would be encouraged to form a working section. Second, the VAS would lobby to gain a seat on the State Education Commission; such a position would ensure the organization's voice in science education policy. Third, the Academy would establish a working relationship with high-school students through, for example, scientific demonstrations by visiting Academy members and an involvement with science clubs.⁸⁹

In keeping with Council's unofficial recommendations, two years later in 1927, Miller and Lewis proposed that the Virginia Academy officially recommend to Governor Byrd the appointment of Horsley as a member of the State Education Commission. In a letter to Miller, Lewis explained: "It seems that at least one man of scientific training should be on the commission and I know of no one who is so eligible on the basis of broad experience and thorough training as well as common sense and the qualities of good citizenship as Dr. Horsley."⁹⁰ Shortly thereafter, the Governor appointed Horsley to the commission. By all accounts, Horsley was an excellent surgeon, a devoted member of the VAS, and most likely a conscientious member of the commission. Yet he certainly was not an expert on science education; indeed, his lack of classroom experience leads one to question appropriateness of behind his being recommended to Governor Byrd.

⁸⁹E.C.L. Miller to Ivey Lewis, late 1925. Special Collections, Virginia Tech.

⁹⁰Ivey Lewis to E.C.L. Miller, April 14, 1927. Special Collections, Virginia Tech.

By 1930, the Academy began a concerted effort to establish direct contact with high-school students. An example of this effort is the heavily-marked “How State Academies of Science May Encourage Scientific Endeavors Among High-School Students” placed in the archival folder for that year. Written by Louis Astell, a high-school teacher from Community High-School in West Chicago, Illinois, the article outlined a four-pronged approach for promoting science among the youth:

1. Develop momentum for science clubs and activities
2. Assist the constitution for the Junior Academy
3. Offer teacher training courses
4. Construct the annual program of the state academy for the maximum benefit to the high-school delegates.⁹¹

In the margins of Astell’s article, an anonymous reader penned: “Must establish a Comm. on Junior Science.” Several days later, the Virginia Academy appointed the Committee on Science in the Public Schools “to consider the part that training in science should play in the process of education, the time and attention in school programs that its importance justifies and, from time to time, as need and opportunity appear, to exert all proper influence to improve the standing of the science in the schools of the state.”⁹²

While the committee did not institute change on a large scale, it did toy with the notion of forming a junior academy of science. This suggestion produced lengthy discussions within the Academy, although Council did not consider firm proposals for a Virginia Junior Academy of Science for several years. A few individual members of the

⁹¹Louis Astell, “How State Academies of Science May Encourage Scientific Endeavors Among High-School Teachers,” Science LXX (May, 1930).

⁹²Minutes of the Virginia Academy of Science,” May 9-10, 1930 in Proceedings of the Virginia Academy of Science, 1929-30, p.13. Special Collections, Virginia Tech.

committee did venture into the public school system and offer free demonstrations to the various science clubs and teachers. For example, in a letter prior to the 1934 annual meeting, Academy President William Kepner notes that the next meeting will be held in Winchester--“the seat of great High School activity . . . Demonstrations might be helpful to the high-school teachers and science clubs, so contact him [President Kepner] if interested.”⁹³ Unfortunately, such outreach required much time and money--neither of which was abundant in the years immediately following the Great Depression.

Such outreach did not immediately extend to the undergraduates of the region's colleges and universities. While the Geology Section opened their sessions to upper-level students, the other sections were less eager to follow. In 1931, Nan Thorton, an energetic faculty member from Randolph-Macon Women's College, proposed a junior membership program for college students. Dues would be negligible, the students would gain invaluable experience from witnessing a scientific conference in action, and the general membership would increase.⁹⁴ The program quickly caught on: in 1933, eighteen students attended the meeting. Two years later, the number doubled, before leveling-off at thirty-three. Finally, at the 1939 annual meeting in Danville, Council passed a motion relieving those students sponsored by members of any dues.

However well intentioned the efforts at outreach in the direction of high-school teachers and college students, they could hardly be defined as vigorous. One wonders whether the scientists in the universities were sufficiently over-worked and under-funded so that they simply could not expend the necessary effort to interact with the high-school

⁹³William A. Kepner to Members of the Virginia Academy of Science, March 6, 1934. Special Collections, Virginia Tech.

⁹⁴Nan Thorton to Council, April 5, 1931. Special Collections, Virginia Tech.

teachers, or whether there is a more complex issue at base. For example, there is an implicit hierarchical structure within education that, despite the egalitarian motives characterizing the founding of the VAS, may have taken over when strenuous individual effort and/or commitment of money was required. Was the initial inclusion of the high-school teachers and the later rhetoric concerning outreach simply the playing out of a kindly paternalism that was abandoned when their inclusion became difficult? If that were indeed the case, then one may raise the issue of the real nature of the network within which academic scientists worked. From this view, high-school teachers actually would have been only peripheral participants whose ability to function within the network depended entirely on the willingness of the more central members of the Virginia Academy to allow them access. The hierarchical structure also is likely to have come into play in a situation characterized by the struggle for scarce resources that marked the Great Depression. Unfortunately, there is no direct evidence for this analysis within the archival material or in the oral histories.

The Virginia Academy of Science and the American Association for the Advancement of Science

Prior to 1919, state academies of science enjoyed a loose and informal association with the AAAS. That year, the AAAS revised its Constitution, offering the academies formal affiliation and awarding them one position on the national Council. To facilitate camaraderie among the affiliated academies, in 1926 the AAAS instituted the Academy Conference. Held on one day at the annual AAAS meeting, the Academy Conference “promoted mutual cooperation of the common aims and purposes of several academies, provided appropriate means for consultation on and investigations of academy problems,

and gave others the benefit of their successes and failures.”⁹⁵ Enrollment in the Academy Conference gave each state academy the opportunity to function on the national scene.

Well aware of the importance of membership in the national organization, Secretary Miller wrote the AAAS Secretary on March 26, 1924 asking how the VAS might proceed with affiliation. One year later, he received a response that included the general rules representing such affiliation and the application--the latter requiring a mission statement and also a list of its members.⁹⁶ Miller immediately sent a letter to Lewis enclosing a copy of the letter and requested input. During the May meeting of 1925 in Richmond, the Virginia Academy voted to join the AAAS.

Once officially an affiliate, in 1927 the Virginia Academy decided to follow the lead of other affiliate academies of science and appoint a public relations representative. Sidney Negus, professor at the Medical College of Virginia, took his new job seriously, remarking to members of the VAS in 1928, “Every college in the state having representatives at the Academy should check up on its publicity. . . . Scientific work in the state needs the right kind of publicity . . .”⁹⁷ Negus possessed an uncanny ability to foresee what course the Academy needed to follow to elevate its professional standing. Under his guidance, the VAS worked hard to convince the AAAS to hold its 1932 meeting in Richmond. Although the national organization was receptive to the Academy’s overtures, economic hardship

⁹⁵C.L. Baker, A History of the Academy Conference, 1926-1952 (Washington, D.C.: American Association for the Advancement of Science, 1952).

⁹⁶Burton Livingston to E.C.L. Miller, March 21, 1925. Special Collections, Virginia Tech.

⁹⁷Sidney S. Negus to Members of the Virginia Academy of Science, March 5, 1928. Special Collections, Virginia Tech.

brought on by the Depression made it impossible for the Virginia Academy to raise the \$7000 needed to hold the event.

While negotiating with the AAAS for the meeting, Negus formed an excellent working relationship with its Council. In the spring of 1936, the AAAS named him national Director of the Press Service. In explaining his acceptance of the position to the Virginia Academy, Negus wrote:

One of the principal reasons for taking on this work for the AAAS last spring was to tie it in with accomplishments of members of the Academy. I felt that having the various channels throughout the country open to our State scientific organization might work advantageously from time to time in letting the public, which ultimately pays the bill for scientific research, learn more fully what is being done along science lines in Virginia⁹⁸

With Negus occupying an official post, the Virginia Academy felt encouraged to raise another bid to host the national meeting. Together with the Virginia Section of the American Chemical Society and the Richmond Chamber of Commerce, the VAS mounted a full-scale campaign. By late 1936, the AAAS announced that its December 28, 1938 meeting would be held in Richmond, the state capitol of Virginia. Less than a year later, Horsley received a letter from William Meachum, the assistant editor of the Richmond Times Dispatch, in which Meachum said that he had been asked by the New York Times Magazine to prepare an article on Richmond and that he realized that the scientific interests and achievements of the state would be important, “especially since the AAAS intended to hold its 1938 meeting there.”⁹⁹ For the Virginia Academy, it appeared as if science had finally come of age in its fair state.

⁹⁸Sidney Negus to Members of the Virginia Academy of Science, 1937. Special Collections, Virginia Tech.

⁹⁹William Sands Meachum to J. Shelton Horsley, June 9, 1937. Special Collections, Virginia Tech.

Government and Industry

Like other state academies of science, the Virginia organization sought to attract the attention of members of the state government who might be willing to support scientific development in any number of ways. As early as 1928, the Academy Council authorized a new Committee on Cooperation with the Government of the State to conduct a survey of the VAS special abilities and services it could render, for “such analysis might satisfy the needs of the State from the standpoint of scientific research.”¹⁰⁰ Unfortunately, scientific development was hardly a high priority during the Great Depression, and the committee--never called upon for advice--eventually disbanded. Despite this lack of interest, the Virginia Academy of Science submitted--on its own accord--an annual letter of progress. For example, in a 1931 letter Miller informed Governor Pollard that at the present time the Academy could boast nearly 600 members representing rather extensively the science teachers in colleges and those “men of science” within medicine and industries in Virginia.

Cognizant of the increasing importance of industry in the Commonwealth, early on the VAS sought to cultivate a working relationship with company scientists. For the Virginia Academy, industry support might translate into monies for publications and research funds, participation in the annual meetings--most likely in the form of exhibits--and a stronger voice in Richmond. In 1930, the Virginia Academy organized a Committee on Industrial Relations, whose purpose was to “study methods for establishing more complete understanding, better mutual relations, and greater cooperation between the Academy and the industries of the State.”¹⁰¹ As Colonel Edwin Cox of Richmond

¹⁰⁰Proceedings of the Virginia Academy of Science, 1927-28, p. 23. Special Collections, Virginia Tech.

¹⁰¹Proceedings of the Virginia Academy of Science, 1930-31, p. 11. Special Collections, Virginia Tech.

remarked in a moment of candor: "If the mutual relations between the Academy and the industries of the State were more cordial and helpful there would be no difficulty in increasing the [Virginia Academy's] income from that source."¹⁰²

After a lengthy and detailed review of the industrial field, the committee presented Council with recommendations designed to interest the company scientists in the annual meetings. According to the committee, the present level of support for the Virginia Academy, from both government and industries, was highly unsatisfactory; hence, "activities must be planned to attract their interest." Unfortunately, the committee's subsequent line of reasoning presupposed a sharp division between the academic and non-academic scientist; such assumptions led to an inaccurate conception of the industrial scientist. For example, the committee suggested that a program heavily weighted with specialized, technical papers--which often failed to reveal the overarching reason for conducting the research--was less than stimulating to the industry scientists. Furthermore, the belief held by many Academy members that industry work "is destructive of 'pure' science" was inimical to creating an inviting environment. While the committee did offer twelve recommendations--including encouraging papers emphasizing general conclusions and applications; symposia aimed at industrial interests; use of the research endowment to disseminate information concerning research results to the industry and legislature; and sponsorship of an industrial research award--the Virginia Academy did little to implement them.

¹⁰²Virginia Academy of Science Council meeting, May 8, 1932 in Proceedings of the Virginia Academy of Science, 1929-30, p. 9. Special Collections, Virginia Tech. Also in Nancy Smith Midgette, To Foster the Spirit of Professionalism (Tuscaloosa: University of Alabama Press, 1991), p. 117.

Science Museum of Virginia

In 1933, William Carson, Chair of the State Commission on Conservation and Development, contacted the Virginia Academy asking whether it might be interested in helping the commission develop a state museum of science. Carson allowed that his group “has been more or less at a standstill in our development work, with the exception of the projects that are now under way, as our appropriations have been badly cut. . . .”¹⁰³ Therefore, if the VAS were to establish a committee to “look into the matter of a museum,” it would be “quite welcome.” The primary motivation behind Carson’s interest in a state museum seems to have been the acquisition of the natural history collection of Florida businessman H.H. Bailey, who insisted upon a suitable housing arrangement before donating it. Comprised of about 5500 bird skins, 25 mounted birds, 850 mammal skins, 25,000 eggs, a shell collection, and a library of some 3000 titles, the Bailey collection would serve as an excellent foundation for a new museum.

The Virginia Academy unanimously supported the idea of a state museum of science. Member J.J. Murray summed up the general opinion of the organization in a letter to Council in which he stated: “I am very interested in the development of our state museum, especially from the standpoint of natural history. Virginia has done very little for a museum, and that is a very poor thing when compared with the museums of, for instance, North and South Carolina. . . .”¹⁰⁴ Council appointed George W. Jeffers of State Teacher’s College in Farmville, as the first chair of the Committee on a State Museum. New to the subject of museums, Jeffers wrote to the American Association of Museums asking how best to familiarize himself with such work. Next, he sent a memorandum to

¹⁰³George Jeffers to William Carson to George Jeffers, March 20, 1933. Special Collections, Virginia Tech.

¹⁰⁴J.J. Murray to Virginia Academy of Science Council, April 7, 1933. Special Collections, Virginia Tech.

his committee on April 2, 1933. "As I see it," he said, "there is very little the Committee can do at this time beyond familiarizing ourselves with museums and their development elsewhere, but I would welcome suggestions designed to prevent us and a committee from merely 'marking time.'"¹⁰⁵ Helen McCormack, a member of the committee, and an employee of the Valentine Museum in Richmond, responded three days later, stating that all of the members of the committee should at least visit the Valentine Museum.¹⁰⁶ One might assume that Jeffers' lack of creative initiatives was frustrating to Helen McCormack.

Despite initial signs to the contrary, the relationship between the commission and the committee did not remain on solid footing. Less than a year after being approached by the commission, Jeffers wrote to Council: ". . . since the commission gives us no chance to co-operate, does the Academy wish our function to be that of spreading propaganda for a state museum? If not, then what exactly are we to do?"¹⁰⁷ A possible explanation for the commission's general negativity is not revealed until much later in a letter from Jeffers to Professor J.R. Dymand of the Royal Ontario Museum in Toronto. As Jeffers explained: "The state of Virginia, mother of Presidents, etc. does not boast a museum worthy of the name. Three years ago, our State Academy of Science appointed a committee of which I am chairman to be ready to assist if ever a museum possibility appeared. There seemed not even the remotest hope, so we began quietly to start something, and right now things look brighter. We can secure a very good collection if we can get the state or someone else to guarantee proper housing, etc. But the donor [Bailey] is particularly wary of politicians of

¹⁰⁵George Jeffers to Members of the Committee on a State Museum, April 2, 1933. Special Collections, Virginia Tech.

¹⁰⁶Helen McCormack to George Jeffers, April 5, 1933. Special Collections, Virginia Tech.

¹⁰⁷George Jeffers to Virginia Academy of Science Council, April 28, 1934. Special Collections, Virginia Tech.

every sort, and he wants a guarantee also of its proper administration by scientists. . . .”¹⁰⁸ Surely the commission, comprised predominantly of politicians, did not take kindly to such a guarantee.

Council obviously encouraged the committee to continue in its efforts to secure the Bailey collection, regardless of the commission’s position. Though the archival record is sketchy, it appears that the committee sought support from the various business communities. An unsigned letter to Jeffers, for example, reports a conversation about the Bailey Collection and Museum with Morton G. Thalhimer, one “of the largest real estate men here in Richmond.” Apparently, Thalhimer expressed a genuine interest, requesting a letter setting forth the essential facts and promising to call a meeting to consider “how to best go about getting Virginia a high class natural history museum.”¹⁰⁹ Further south, Homer L. Ferguson of Newport News pledged his support to the endeavor, and promised to visit Bailey and view the collection on his next visit to Florida.

Although the Committee did not secure the Bailey collection for Virginia or establish a state museum of science, this activity is representative of the efforts of the Virginia Academy to bring science to the attention of the citizenry, and in the process, to increase public understanding of science. A puzzling question is why the Academy’s efforts failed, particularly in view of the attractiveness of the Bailey collection. A comparison of the success of the endowment raised by Horsley is instructive. Horsley was able, through use of his own money, position, and contacts but primarily by his personal determination and perseverance to bring his idea to fruition. In contrast to the VAS’s Museum Committee and its relationship with the commission, Horsley did not have any

¹⁰⁸George Jeffers to J.R. Dymand, May 8, 1935. Special Collections, Virginia Tech.

¹⁰⁹Anonymous person to George Jeffers, December 10, 1935. Special Collections, Virginia Tech.

connection with an outside body. Obviously, though, the relationship with the commission was at best a mixed blessing. Both the varied interests of the commission and Bailey's insistence that control of the museum not be vested with politicians must have worked against the creation of a state museum. Nevertheless, the museum was too good an idea for the Virginia Academy of Science as a continuing body to let die.

Part IV. Concluding Remarks

In sum, 1920-1939 marked the start and early development of the Virginia Academy of Science. Born out of a perceived need for a state-based professional society to further the cause of science within Virginia, the VAS made a good beginning during this period. It developed a sound organizational structure, the membership became stable and interested in the welfare of the Academy, and several of the enterprises proposed by members were brought to fruition. The use of the expertise of the members was demonstrated to the political sector from which money flowed. The leadership of the Academy was strong, and there was a high level of interest in bringing science to the public through a variety of means.

However, in a climate that did not offer support necessary to the scientific disciplines within higher education, the Academy was not able to garner sufficient support--within the state legislature and administrations of the region's colleges and universities--to secure the resources necessary for Virginia's scientists to practice on a level with the best of the nation. Perhaps as a consequence of this failure, the Academy proposed several ventures and started on several missions that it was not able to complete. In the latter area, there was a hint of a pattern that would reveal itself in the later years of the VAS, where the

Academy started a project, and then either dropped it or offered insufficient support to reach the declared goal. It is interesting to speculate on how much impact these early failed ventures had on the “habit of mind” or “institutional memory” developed by the members of the VAS in considering future directions. It is perhaps possible that they too easily agreed on a goal because their history had shown them that if the task proved too difficult, they could very easily back away. On balance, however, this first period was one of solid achievement.

CHAPTER TWO

Linking Allies and Resources:

Maintaining Cohesion During World War II, 1940-1952

From 1940 to 1952 the Virginia Academy of Science weathered the difficult challenge of maintaining internal cohesion and scientific integrity during a war followed by a booming post-war economy. During this period, science grew in importance, as the general public increasingly viewed the field and its practical applications as capable of providing solutions to human needs and problems. Not surprisingly, this growth in stature was accompanied by changes that took place within the formal boundaries of the VAS and outside--the latter changes clearly evident in the Academy's interactions with the larger network of scientists and business people within the Commonwealth and the nation as a whole. Faced with these changes, the Virginia Academy of Science restructured its framework by creating new, stronger allies.

Part I. Setting the Stage: Virginia, 1940-1952

By virtue of her location--with deep water ports on the water close to the Atlantic and near the nation's capitol--Virginia predictably became heavily involved in the World War II efforts. Already entering the 1940s on a decided economic upturn, the Commonwealth's war-time involvement drastically affected its economic and social conditions. In the course of several years, Virginia was transformed from a predominantly rural, slow-growth state to one with a booming economy based on manufacturing and

defense. The enormous expansion of the federal administration led to human spillover into Virginia, turning Alexandria, Fairfax County, and Arlington into bedroom communities of the District of Columbia, and this, combined with the rapid growth of Pentagon operations, effectively established Northern Virginia as an important economic and political power.¹

In Tidewater, the basis for a war-time industry was already in place, left over from World War I. The deep-water docks of Norfolk, Portsmouth, and Newport News became the primary base for antisubmarine operations. By 1945, the Newport News Shipyard had built 400 ships for the war effort. Also by 1945, nearly 1.7 million people had passed through the Hampton Roads Port of Embarkation. In Southwest Virginia, war-related industry boomed as well. For example, the munitions plant in Radford located on the New River employed as many as twenty thousand workers. Boosted by the war, the population of the state increased from 2,677,773 in 1940 to 3,318,680 in 1950.²

World War II with its clarion call for national unity in the fight against Nazism gave energy to the struggle for civil rights for African Americans. In the early 1940s, the courts ruled that local schools boards had to offer equal pay to black and white teachers. Once the war was over, returning black veterans wanted what they had come to regard as their rights, and campaigns registering black voters sprang up in several areas. Progress was slow, but certain. In 1948, a black attorney, Oliver W. Hill, won election to the Richmond City Council. And in 1952, a federal district court in the case of Davis versus the County

¹Louis Rubin, Jr., Virginia: A History (New York: W.W. Norton & Company, Inc., 1977); Jonathan Wolfe, "Virginia in World War II" (Ph.D dissertation, University of Virginia, 1971); Virginius Dabney, Virginia: The Old Dominion (New York: Doubleday & Co., Inc., 1971).

²Emily J. Salmon and Edward D.C. Cambell, Jr., The Hornbook of Virginia History (Richmond: The Library of Virginia, 1994), p. 91.

School Board of Prince Edward County ruled that a local black high-school had received unequal resources in comparison to its white counterpart. Despite this decision, the lower courts continued to uphold the policy of segregation, setting the stage for Brown versus the Board of Education two years later.³

In 1942 Byrd-candidate Colgate W. Darden, Jr. succeeded Governor James Price. A native of Southampton County and resident of Norfolk, Darden remains one of Virginia's most respected and popular governors. Shaped by World War I and the "politics of accommodation," Darden's dignified, yet energetic manner, and thoughtful perspective coupled with his talent for moving freely between liberal and conservative camps were well-suited for a leadership role in the early forties. While much of Darden's time was spent managing Virginia's heavy involvement in World War II--including a complete reorganization of Virginia's civil defense system--he also regarded domestic questions as having equal importance. Historians universally regard his two most important achievements as extensive penal reform and improvement of the state's public education system. Never known as a racist, Darden refused to enforce the Jim Crow laws. At the same time, however, he avoided the issue of racial reform. Following his term in office, Darden assumed the presidency of the University of Virginia, where for twelve years, he remained a major player in Virginia's educational life.⁴

³For a general overview of this time period, see Louis Rubin, Jr., Virginia: A History (New York: W.W. Norton & Company, Inc., 1977). See also Virginius Dabney, Virginia: The Old Dominion (New York: Doubleday & Co., Inc., 1971).

⁴See Guy Friddell, Colgate Darden: Conversation with Guy Friddell (Charlottesville: The University of Virginia Press, 1978); Louis Rubin, Jr., Virginia: A History (New York: W.W. Norton & Company, Inc., 1977), p. 173; Jonathan Wolfe, "Virginia in World War II" (PhD dissertation, University of Virginia, 1971); Edward Younger and Jane Tice Moore, eds., The Governors of Virginia, 1860-1978 (Charlottesville: The University of Virginia Press, 1982).

Governor William Tuck of Halifax County, Lieutenant Governor under Colgate Darden, took office in 1946. Boisterous, loud and outspoken, Tuck's bluster stood in sharp contrast to his fellow Democrat Governor Darden's genteel demeanor. In what historian Eric Goldman calls the "crucial decade," Tuck's term was marked by the appearance on the Virginia scene of social, economic, and political problems either postponed by or attributed to World War II.⁵ Although he was not a fan of unionized labor, Tuck did create the Public Utilities Labor Relations Act to accommodate the emerging labor-management disputes. He also established an agency to control water pollution--the first such move in a state that would become marked by its passive attitude towards sky-rocketing problems with pollution. In contrast to Darden's moderate stand, Governor Tuck was adamantly opposed to racial reform. In fact, when the Brown decision was handed down rendering unconstitutional the South's system of segregated schools, Tuck denounced the Supreme Court as "nine reprehensible individuals masquerading in judicial ermine."⁶

The obstreperous Tuck was followed into the Governor's Mansion by a dignified attorney from an old and distinguished southern family. A personal friend of Harry F. Byrd, John Battle served four terms as a state senator before being elected governor in 1950. A born compromiser, Battle clung to the fiscal conservatism of the Byrd organization. Although he did support the appropriation of large sums of money to the public school system, his actions were motivated by the conviction that in "shoring-up" the

⁵Eric Goldman, The Crucial Decade--And After: America, 1945-60 (New York, 1960).

⁶Edward Younger and Jane Tice Moore, eds., The Governors of Virginia, 1860-1978 (Charlottesville: The University of Virginia Press, 1982), p. 317; J. Harvie Wilkinson III, Harry Byrd and the Changing Face of American Politics, 1945-1966 (Charlottesville: University of Virginia Press, 1968); William Bryan Crawley, Jr., Bill Tuck: A Political Life in Harry Byrd's Virginia (Charlottesville: University of Virginia Press, 1978).

separate but equal system of public education, Virginia might be able to preserve her segregated school system.⁷ Tied to the conservatism and fundamentally racist position of the Byrd organization, neither Battle nor his predecessor Tuck was able to carry Virginia into the new era which the immense changes in the Commonwealth's economic and social structure demanded.

The new era that Battle and Tuck failed to deal with adequately was well recognized, if not always dealt with efficiently, within the Virginia Academy of Science. Nothing had indicated more clearly the importance of scientific discoveries and their translation into technology than the many developments of World War II, from radar to the atomic bomb.⁸ In the case of the latter, Virginia's scientists were no different from the rest of the scientific community in understanding its moral implications. In his retirement address, Academy President Robert Smart said in 1945 that the "war of science, is not always a success for science. It can no longer be accepted that the results of scientific investigation will lead to continuous progressive improvements in conditions of life."⁹ Men and women in the scientific community had believed that their work was either value neutral or would make a positive contribution to human life. In large part, that belief went into the ashes of Hiroshima and Nagasaki. Yet the promises of science for great change could not be denied, and the VAS saw its responsibility as well as the opportunities the

⁷Louis Rubin, Jr., Virginia: A History (New York: W.W. Norton & Company, Inc., 1977), 173; J. Harvie Wilkinson III, Harry Byrd and the Changing Face of American Politics, 1945-1966 (Charlottesville: University of Virginia Press, 1968); Edward Younger and Jane Tice Moore, eds., The Governors of Virginia, 1860-1978 (Charlottesville: The University of Virginia Press, 1982).

⁸For a good bibliography and overview on science in World War II and the aftermath as well as other topics in the history of science, see Sally Gregory Kohlstedt and Margaret W. Rossiter, eds., Historical Writing on American Science (Baltimore: The Johns Hopkins University Press, 1985).

⁹George Jeffers "A History of the Virginia Academy of Science," p. 33, unpublished manuscript. 1962. Special Collections, Virginia Tech.

new era heralded. In the opinions of many persons, Virginia clearly needed to move forward, a movement that her political leaders--bound as they were by the twin cords of racism and conservatism--could not lead.

E.C.L. Miller spoke of this challenge to move Virginia forward when he addressed the Virginia Academy of Science at its twenty-fifth annual meeting in 1947. "The world is entering a new era, an era of science," Miller proclaimed. "Most of our people in Virginia know little or nothing about it, but are still living in the age-old tradition of their fathers. Is it not peculiarly our duty as a state academy of science to assume some responsibility for the enlightenment of the people of our state?"¹⁰ Miller and his colleagues were acutely aware of the necessity to tie together, in a peace-time setting, scientific research and industrial activity and, by so doing, to keep the economic machine moving forward as well as to continue funding for scientific endeavor. They conceived of the "enlightenment of the people" as a task that they alone were able to undertake. And while altruistic intentions were certainly behind much of this paternalistic attitude, no doubt the knowledge that public legitimation might lead to increased resources for scientists also contributed to the Academy's interest in courting the people of Virginia. Indeed, what now commonly is called the public understanding of science thus became a focus for the postwar VAS as the Academy attempted to shape the perspectives of Virginians and to introduce them to the new ways of the times.

The Second World War, as we will see, left an enormous legacy in Virginia: an invigorated, well-funded and ambitious science community; a solid economic base that

¹⁰Proceedings of the Virginia Academy of Science, 1946-47. Special Collections, Virginia Tech.

remained closely tied to the defense industry; and a citizenry in which African Americans demanded equality and veterans demanded--and thanks to the G. I. bill could pay for-- higher education. A continuous influx of people not native to Virginia brought their own habits of thought, ways of living, and attitudes toward race and money with them. All of these factors were to change the face of higher education, the attitudes of the people, the very face of Virginia politics. The VAS worked hard at taking an active role as an agent of change--at educating the populace whom it served and among whom the scientists lived.

Part II. Sections, Committees and Related Events

Overview, Meetings, and Sections

On December 7, 1941--six months into George Jeffers' term as President of the Virginia Academy of Science--the Japanese bombed Pearl Harbor. One day later the United States Congress formally declared a state of war, dramatically shifting the careers of many Virginia scientists. Unlike the First World War, when scientists left their academic or (in a few cases) industrial posts to serve their country overseas, World War II was fought inside the walls of state and federal laboratories as well. Nearly every member of the Virginia Academy of Science registered in the National Roster of Science and Specialized Personnel. Academy members served in all capacities: for example, biologist E.L. "Chick" Wisman of Virginia Tech returned decorated from the Battle of the Bulge, while Foley Smith of the Virginia Alcoholic and Beverage Control Board and biologist Lynn Abbott of University of Richmond were stationed in the Pacific.¹¹ Others, such as

¹¹George Jeffers, "A History of the Virginia Academy of Science," p. 31, unpublished manuscript. 1962. Special Collections, Virginia Tech. Also Paul Siegel to Charlotte Webb. Interview. March 26, 1995. Blacksburg, Virginia.

physicists Jesse Beams and William Ham of the University of Virginia traveled to Los Alamos, the latter developing the timing device used in the trial runs of the atomic bomb.¹² Scientists remaining in Virginia continued to support the Virginia Academy of Science, with the result that while the direction in which the VAS took its mission or the length of time to complete a project might have been different in peace-time, the Virginia Academy managed to maintain a high level of productivity throughout the war.

Although the Academy had scheduled its annual meeting of 1942 for Norfolk, because of the city's mandated conscription--a policy which included the postponement of "extracurricular event"--the venue was changed in January to the Hotel Roanoke. One new Section, Bacteriology, and a new affiliation, the Blue Ridge Section of the American Chemical Society, appeared on the program. The year-old Forestry Section, comprised primarily of state and federal foresters, held its second and last Section meeting.¹³ Membership, which had reached an all-time high of 912 in 1941, began its steady war-time decline, despite the VAS's policy of keeping all enlisted members on the roll. By 1945, membership numbers had sunk to 629, and it was not until 1948 when Foley Smith, Chairman of the Membership Committee, mounted a membership drive that the numbers topped the pre-war figures.¹⁴

¹²William Ham to Charlotte Webb. Interview. March 5, 1995. Richmond, Virginia.

¹³Proceedings of the Virginia Academy of Science, 1940-41, p. 208. Special Collections, Virginia Tech.

¹⁴Proceedings of the Virginia Academy of Science, 1947-48, p. 17; In 1948 membership reached 1007. Special Collections, Virginia Tech.

There was not a complete annual meeting of the VAS in 1943. The decision to hold the 1944 meeting stemmed from two reasons: “first, to consider what we as scientists could do further toward winning the war, and second to give some consideration toward post-war planning.”¹⁵ As Leslie Sandholzer of the Public Health Department of Norfolk argued: “It is the duty of the Academy to make the community aware of its scientific needs in the war effort and to promote a program of scientific endeavor in line with this.”¹⁶ To satisfy these two goals, Council asked Marcellus Stow of Washington and Lee to lead the new Committee on War-time Activities.¹⁷ To say that the War-time Committee was not a success is an understatement. In effect, the committee sat idle, not answering Sandholzer’s call for the Virginia Academy of Science to raise the level of community awareness of the “scientific needs of the war effort.”¹⁸ War-time duty prevented the Engineering Section from holding a single session during the war, and it would be seven years before the engineers regrouped, in 1949. Professor Boyd Harshbarger of Virginia Tech proposed a new Section of Statistics, following which, Council informally invited the statisticians to the 1944 annual meeting. Two years later, the Statistics Section was an official entity of the Virginia Academy of Science.¹⁹

¹⁵George Jeffers, “A History of the Virginia Academy of Science,” p. 31, unpublished manuscript. 1962. Special Collections, Virginia Tech.

¹⁶Proceedings of the Virginia Academy of Science, 1941-42, p. 193-94. Special Collections, Virginia Tech.

¹⁷Proceedings of the Virginia Academy of Science, 1941-42, p. 198. Special Collections, Virginia Tech.

¹⁸The Long Range Planning Committee will be addressed in this chapter.

¹⁹Proceedings of the Virginia Academy of Science, 1943-44. Special Collections, Virginia Tech.

It was four years before Council again considered admitting another section, by that time in the post-war era. In 1948, Sidney Negus, President of the Virginia Academy of Science, called together ten high-school science teachers and ten Academy members to discuss organizing a Section of Science Teachers. With the establishing of the Virginia Junior Academy of Science (VJAS) in 1941, Negus felt that such a section, held during the VJAS meeting, would provide high-school teachers with the opportunity to discuss the latest in science education and pedagogy and offer a new sense of professional camaraderie.²⁰ The group unanimously voted to hold a trial session the following May, and sent out informational letters to over one thousand high-school teachers in public, private, and parochial schools. At the trial meeting, the teachers agreed upon six goals for the new Section: present current data in various fields of science; demonstrate new presentation techniques; assist with the VJAS; promote awareness of the Speakers Bureau; encourage National Science Search and Virginia Talent Search; and strengthen student appreciation for research. In 1950, the Science Teachers Section held its first official meeting.²¹

Virginia Journal of Science Committee

As with the sections, committees responded differently to the challenges of war-time impact on manpower and resources. By 1939, Professor Ruskin Freer and Colonel Robert Carroll, editor and manager of Claytonia, reported to Council that the official publication of the Flora Committee was suffering from “insufficient interest and financial

²⁰The Virginia Junior Academy of Science (VJAS) will be discussed later in the chapter.

²¹Samuella Crim, “Report on the Science Teachers Section,” 1950. Special Collections, Virginia Tech.

support.”²² In fact, financial stringencies compelled Carroll to request additional monies from the Flora Committee in order to complete the calendar year.²³ Several months later, Carroll again brought up the request before the general membership at the annual meeting in Danville. In response to Carroll, Ivey Lewis remarked that rather than merely allocating more funds to the Claytonia, perhaps it would be more prudent to consider expanding the specialized, bimonthly publication to a multidisciplinary Academy periodical. After all, stated Lewis, one of the constitutionally mandated functions of the Virginia Academy of Science is to: “to provide for prompt publication of papers or abstracts.”²⁴ Overwhelmingly, the membership agreed. Acting quickly, Council appointed a new Publication Committee “with the power to act” to draw up the necessary plans for establishing a permanent Academy journal. Chaired by Ivey Lewis, the Publication Committee consisted of twenty-five representatives of the various sections and special committees.

Over the next twelve months, the Publication Committee only met once; however, well over one hundred letters in the archives attest to the members’ enthusiasm and commitment to an Academy journal. As the first order of business, the group decided to call the periodical the Virginia Journal of Science (VJS). The committee then requested Freer and Carroll to continue as editor-in-chief and business Manager. For the upcoming year (1940-41), Lewis and the others recommended a temporary Editorial Board, comprised of Preston Edwards, Astronomy, Mathematics, and Physics Section; Paul

²²Ruskin Freer was a professor at Lynchburg College and Robert Carroll a Lieutenant Colonel at Virginia Military Institute. For a biographical piece on Carroll, see Dean Foster, “Colonel Robert Patrick Carroll: A Retrospective,” VMI Alumni Review (Spring, 1994).

²³Proceedings of the Virginia Academy of Science, 1939. Special Collections, Virginia Tech.

²⁴“Constitution of the Virginia Academy of Science.” Special Collections, Virginia Tech.

Burth, Biology Section; William Guy, Chemistry Section; John Rorer, Education Section; D.H. Pletta, Engineering Section; E.C.H. Lammers, Geology Section; and E.C.L. Miller, representing the general VAS.²⁵

While the Publication Committee was well-aware of the problems of financially overburdening Academy members, money the VAS could spare from its general fund simply would not cover the estimated costs of an annual publication; hence, the subscription price of the Journal was proposed as one dollar for Academy members and two dollars for non-members. However, two issues of the Journal, the Program of the annual meeting and the subsequent Proceedings, would be sent to non-subscribing members free of charge. Finally, the committee decided that while the new Journal would be inclusive of different sciences, to facilitate an immediate issue, the Editorial Board would use the botanical manuscripts intended for publication in Claytonia.²⁶

By January 1940, the first issue of Volume I, the Virginia Journal of Science was rolling off the press. In explaining the objectives of the new Journal to the VAS membership, E.C.L. Miller reflected the Publication Committee's sentiments, stating:

The Virginia Academy of Science has no interest other than the advancement of science in Virginia. It has long felt the need of periodical to help accomplish these ends. It is hoped that this Virginia Journal of Science may become the local organ of the various scientific groups in the State, and thus serve as an integrating influence on science in Virginia. It will also represent Virginia science wherever it goes, and if we all cooperate, it can be made a worthy representative of which we may all be proud. I bespeak your help.²⁷

²⁵Proceedings of the Virginia Academy of Science, 1940-41. Special Collections, Virginia Tech.

²⁶Proceedings of the Virginia Academy of Science, 1940-41. Special Collections, Virginia Tech.

²⁷Virginia Journal of Science I(January, 1940). Special Collections, Virginia Tech.

Clearly, a shared conception of the Journal was that it would provide yet another tie among the people in the scientific community within the Commonwealth. In that sense, the transformation of the Claytonia might be viewed as a fortuitous event.

By and large, the membership expressed pleasure with Volume I of the VJS. Editor-in-chief Ruskin Freer pointed out that the goal of inclusivity had been met as far as possible. Each paper that was sent in received equal consideration by the Editorial Board. To illustrate the wide participation, Freer developed the following table to show the number of papers submitted by each section and number of printed pages representing the sections in Volume I.

	<u>Number of Papers</u>	<u>Pages</u>
Agriculture	1	5
Astronomy	1	8.5
Botany	9	42
Chemistry	14	47
Education	2	16
Geology	4	25
Physics	1	8
Zoology	4	30 ²⁸

Given the longstanding influence of the Claytonia and the large number of chemists participating in the Virginia Academy of Science, it is not surprising that these two sections enjoyed the greatest number of published pages. Thirty-five total papers were contributed throughout the first year of the VJS--a high enough number to indicate the importance of a new publication outlet to Virginia scientists.

²⁸Ruskin S. Freer, "An Announcement," Virginia Journal of Science I(January, 1940). Special Collections, Virginia Tech.

As with any untested endeavor, though, people did raise objections, two of which Freer addressed by means of an editorial published in the Journal itself. First, Freer allowed that many members had suggested that the printed papers should have more popular appeal, pointing out that it often is characteristic of scientists that “they dearly love to write the results of their researches in highly technical form” but are not tolerant when others do the same thing. Posing the question to the readership, he asks with a hint of sarcasm:

Is the chief function of our Journal to provide an outlet for technical publications on research in Virginia? Or should a paper by a chemist be so phrased that it provides thrilling reading for a worker in the field of education . . . Should we all prepare our papers in a form which will be read and enjoyed by high-school students interested in science?²⁹

Freer’s question, no doubt, reflects a tension within the VAS that exists to this day: that is, who should be the primary audience of the Virginia Academy of Science? Furthermore, at what level should the VAS see its role in fostering first-rate scientific activity? The need to balance these concerns--professional versus popular--also indicates the tension that an observer notes between the impact of the VAS on the Virginia public, and the impact on the VAS of the citizens of the state, their concerns, and their attitudes.

A second problem for the membership centered around subscription fees. Recognizing that the Journal already was under financial duress, several scientists suggested that Academy dues be raised from two to three dollars. Under this strategy, all members would receive the VJS, regardless of subscription. With this added revenue, along with the annual five hundred dollars allotted by Council, the Journal would have a

²⁹Virginia Journal of Science I(January, 1940). Special Collections, Virginia Tech.

greater chance of reaching sound financial footing. Such proposals did little more than generate debate. While publication remained consistent throughout the following year, only 235 of 912 members subscribed to the VJS, seventy-five more than the previous year, but not nearly the eight hundred and upwards needed to create a self-supporting publication.³⁰ Adding to the Journal's financial woes, the Editorial Board also experienced difficulty selling advertisement space to businesses, educational institutions, and general patrons. By the beginning of its second year, the Journal suffered from a growing deficit. To halt the mounting insolvency, Council voted to reduce the number of issues from eight to four, two of which would remain the Academy Program and Proceedings.³¹

Characteristically, President Wortley Rudd assigned the newly-formed Long Range Planning Committee the task of analyzing the Virginia Journal of Science and perhaps developing a strategy whereby perpetual debt would not be the publication's hallmark. Wondering where the VJS stood relative to other state academy of science journals, the committee sent out a questionnaire to twenty-five academies, receiving responses from eighteen.³² Ten of the eighteen academies polled published their own journal. All journals received partial support from membership's annual dues, and almost half drew revenue from the sale of advertisement space. By and large, the VJS was not unique in its inability to turn a profit or at least avoid debt. In fact, "one secretary reported that occasionally he asked friends for one hundred dollar donations for journal purposes."³³ Following this

³⁰E.C.L. Miller to VAS membership, October 17, 1940. Special Collections, Virginia Tech.

³¹"Minutes of VAS Council," October, 1940. Special Collections, Virginia Tech.

³²Forbes E. Robertson, "Methods of Financing the Publications of State Academies of Science," 1942" Located in Council files for 1942. Special Collections, Virginia Tech.

³³"Minutes of the Long-Range Planning Committee Subcommittee on the Virginia Journal of Science to Council," 1942. Located in Council files for 1942. Special Collections, Virginia Tech.

report to Council at the annual meeting, the committee recommended that if the VJS were to continue, the VAS should at least request funds from the Commonwealth to cover part of the publication costs.³⁴

One year later, the deficit continued. With World War II in full force, raising money for a publication either by increasing membership dues or petitioning for help from the state was neither feasible nor, in the opinion of most people, ethical. Membership was on the decline as Virginia scientists devoted necessary time to the war effort, many through active duty. At the annual meeting in May 1943, Ivey Lewis proposed the following motion: “. . . that the Virginia Journal of Science be authorized to print, in addition to the Proceedings of 1942, two more numbers, one of which will be the Chemical Symposium, and that thereafter the Journal be suspended for the duration of the emergency. . . .”³⁵

In his account of the Virginia Journal of Science, Virginia Tech statistics professor Boyd Harshbarger maintained that the war only served “to give an excuse for stopping something that was not financially solvent.” According to Harshbarger, two forces were at work to warrant suspension of the publication. First, as mandated by the Academy Constitution, a publication outlet should be available to members of the VAS. Why, then, was not the Journal perceived as an “official function of the Academy?” If that had been the case, then a certain percentage of the budget--probably from membership dues--would have been allotted to the VJS from the very beginning. Such a percentage certainly would

³⁴“Minutes of the Long-Range Planning Committee Subcommittee on the Virginia Journal of Science to Council,” 1942. Special Collections, Virginia Tech.

³⁵“Minutes of the VAS Council,” May 1943. Special Collections, Virginia Tech.

have exceeded the \$500.00 annual grant. Second, Harshbarger pragmatically pointed to the financial folly of publishing eight issues the first year.³⁶

Three years later, Lewis reintroduced the subject of the Journal in a written speech delivered before Council on April 15, 1946. Encouraging its resurrection, he made a strong statement:

State Academies of Science have as a major function the fostering and development of scientific work among the citizens. Methods of attaining the desired results vary. Sometimes, a museum is maintained, or a research laboratory such as that at Reelfoot Lake [Tennessee Academy of Science-supported research venue] is supported, or a research fund is set up and allocated where needed, or more general projects of a constructive nature are furthered. These are all good objectives, but in my opinion, and I believe in the practice of most state academies, a more effective way to encourage scientific research and interest in Science is by publication of a journal.³⁷

Lewis continued by outlining the ways in which publication on all levels--local, state, and national--is of primary importance to the furtherance of research and the maintenance of high professional standards. Finally, he posed the question: "Can the Virginia Academy of Science do the best possible job of creating research interest and neglect the one thing found most effective and necessary in stimulating research?" For, he continued, an academy publication encourages research, accords recognition to deserving work, and brings to a variety of audiences the accomplishments of Virginia scientists. Following Lewis' inspirational speech, professor Garnett Ryland of the University of Richmond proposed and Harshbarger seconded a resolution stating that the "publication of the Virginia Journal of Science be resumed--that a committee of three be appointed by the

³⁶Boyd Harshbarger, "The History of the Virginia Journal of Science," p. 14, unpublished manuscript, 1960. Special Collections, Virginia Tech.

³⁷Ivey Lewis to members of the VAS, April 15, 1946. Special Collections, Virginia Tech.

incoming president to make plans for this and to report at the 1947 meeting.”

Enthusiastically, the resolution was accepted.

The following year, the Virginia Journal of Science Committee, chaired by Ladley Husted, presented only preliminary findings.³⁸ As reported by Lewis to Council, the leadership needed to meet two conditions before publication: first, adequate financial support and second, agreement as to the “nature of the material to be published.”³⁹ Two years later, in 1949, the Journal Committee offered an extensive report which covered historical and professional reasons for publishing a new series of the Journal and laid out in detail the financial needs of the publication. In addition, the committee outlined the policies of the VJS regarding types of manuscripts accepted and the organizational strategy and role of the Editorial Board.⁴⁰

Anxious to avoid mistakes of the past, the Journal Committee advised quarterly publication of the VJS, to include the Program and Proceedings as two of the issues. Those issues not devoted to regular Academy business would be divided into three sections: a feature article of multidisciplinary interest, scientific articles reporting original research results, and general news from the scientific world. A percentage of membership dues would be transferred from the general funds to the Journal coffers. Thus, each member in good standing would receive a subscription to the quarterly publication. In addition, an annual sum of at least one thousand dollars over and above funds garnered

³⁸The Virginia Journal of Science Committee was composed of Robert Brunfield, Alfred Burger, Paul Patterson, Wilber Schael, and Ladley Halsted. Special Collections, Virginia Tech.

³⁹Proceedings of the Virginia Academy of Science, 1946-47, p. 34. Special Collections, Virginia Tech.

⁴⁰Proceedings of the Virginia Academy of Science, 1946-47, p. 34. Special Collections, Virginia Tech.

from membership dues would be appropriated to the managing editor. Furthermore, the committee recommended that Council seek support for the publication from state institutions. This avenue should have held promise for the future. For example, when contacted by Ladley Husted about the VJS, Colgate Darden, Jr., by then the president of the University of Virginia, said that it is the obligation of the state institutions of higher education to encourage an academy publication in any manner necessary.⁴¹

On May 7, 1949, Ivey Lewis recommended that Council accept the report of the Virginia Journal of Science Committee. Following his suggestion, Council immediately authorized Lewis's proposal that a new series of the Journal begin by January 1, 1950. One month later, Council appointed an Editorial Board, to consist of a representative from each section of the VAS with staggered terms, so that only one new member would enter the board each year to serve for a period of five years. Responding to Boyd Harshbarger's overall enthusiasm and tenacity, Council appointed him editor-in-chief, while relative newcomer Horton Hobbes, professor of biology at the University of Virginia, was named technical editor. Harshbarger further took the prescient step of hiring an advertising manager, Clinton Baver, of Larus Brothers Advertising Company in Virginia. Under this able leadership, the first and second years of the Virginia Journal of Science were marked by success.⁴²

⁴¹Boyd Harshbarger, "The History of the Virginia Journal of Science," p. 20, unpublished manuscript, 1960. Special Collections, Virginia Tech.

⁴²The first issue of the new series was dated January 30, 1950. Edited by Boyd Harshbarger, the Graphic Arts Department of the Radford News Journal printed the edition.

The efforts of the VAS in support of an on-going scientific publication, coupled with the comments of the significant players in this matter, show clearly the awareness of Virginia scientists of the centrality of publication to the intellectual life of the scientific community. Interestingly, there is no hint at this time of any reflection of that frantic side of academic life which came to be known as the “publish or perish” rule; rather, these people were interested simply in supporting their fellows, in publicizing useful and interesting research, and in further creating a sense of scientific community inside Virginia—in other words, solidifying their professional status inside the Commonwealth. It is provoking to consider what might have happened to the Journal and to the VAS itself if, rather than these laudatory but parochial goals, the Virginia Academy had aimed for creating a publication with a level of quality that would attract national attention and bring prestige to the authors/scientists outside of the boundaries of Virginia.

Long Range Planning Committee

In 1943, George Jeffers, professor of botany at Teacher’s College in Farmville, now known as Longwood College, published an article in the national journal Scientific Monthly titled “A State Science Academy Charts Its Course.” In this article, Jeffers informed Scientific Monthly readers of the unique “socio-scientific” program designed and implemented by the Virginia Academy of Science to ensure future attainment of specific objectives. For the VAS, these goals were simple: to promote and publicize research and to place the Academy on “intimate terms with the state’s industry and commerce, especially with the greatest business within the state, namely, the state government itself.”⁴³ VAS

⁴³George Jeffers, “A State Academy Charts Its Course,” Scientific Monthly (1943), p. 5. Special Collections, Virginia Tech.

Council believed that the process by which their organization might reach such objectives was equally as important as the end result. Jeffers pointed out in the same article: "Such objectives can not [sic] hope of full attainment so long as academies work chiefly upon the basis of one-year plans."⁴⁴ And, in fact, in May of 1940, Council had authorized President-elect Wortley Rudd to appoint a committee having as its primary goal the creation of a plan which would map out future actions of the Virginia Academy of Science.

Along with Sidney Negus and E.C.L. Miller, Rudd sent out a circular letter to members of the Virginia Academy, the National Association of Science Writers, secretaries of all state academies of science, and a select group of scientists throughout the country requesting detailed responses to two questions. First, what, in the judgment of each, should be the primary goals of the Virginia Academy of Science as it entered the 1950s? And second, respondents were asked to outline as clearly as possible and in order of importance at least three contributions that the VAS might or even should make to science itself or to the Commonwealth within the next five years. For example, one such issue might be "should the Virginia Academy of Science attempt to develop a program that would have as its objective the development of a monetarily self-sustaining Commonwealth by proper use of knowledge and resources for the purpose of raising the standards of living and creating a maximum of social and economic opportunity?" Or should less grand but equally as important projects be addressed, such as the problem of conservation or the

⁴⁴George Jeffers, "A State Academy Charts Its Course," *Scientific Monthly* (1943), p. 5. Special Collections, Virginia Tech.

“problems of stream pollution?”⁴⁵ Or, as Miller succinctly put it: “What is the Academy doing to justify its continued existence?”⁴⁶

The result was encouraging: 152 responses containing 457 suggestions. Rudd, Miller, and Negus divided the responses into thirteen categories ranked according to importance. It came as little surprise that research topped the chart, with seventy-one percent citing it as lacking in support. Forty-six percent mentioned the need for greater publicity of the Academy’s work and forty-four percent considered teaching and science education to be of primary concern. In order of rank, the remaining ten topics of concern to members were: problems concerning the state; science clubs and junior academies; guidance programs; academy meetings; providing science materials to the public; water pollution; national defense; problems concerning industry; and retention of Virginia’s trained scientists. Clearly, the respondents echoed the sentiments of Council in recognizing the potential positive influence the VAS could have on a variety of scientific and social issues within the Commonwealth.

As Chair of the new Long Range Planning Committee, President Rudd convened the first meeting on October 25, 1940, in the library of the State Board of Education in Richmond.⁴⁷ In order to emphasize to the group of twenty their “elite” character, Rudd

⁴⁵Wortley F. Rudd, Sidney Negus, and E.C.L. Miller to Membership of the Virginia Academy of Science, 1940. Special Collections, Virginia Tech.

⁴⁶Long Range Committee to VAS membership, October 25, 1940. Special Collections, Virginia Tech.

⁴⁷Members of the new committee who were present at this meeting were Prof. Arthur Bevan; Lloyd Bird, Prof. Julian Buruss; Francis Chase; Justus Cline; Prof. Frank Geldard; Prof. William Hanlan; Dr. Shelton Horsley; Prof. George Jeffers; Catesby Jones; Prof. Ivey Lewis; Prof. E.C.L. Miller; Robert Nelson; Prof. Sidney Negus; Prof. Garnett Ryland; Prof. A. Updike. Members not present were Raymond Bottom; Virginius Dabney; Dr. Meta Glass; Dr. Sidney B. Hall; and R. M. Sanford. Cited in Long Range Committee to VAS membership, October 25, 1940. Special Collections, Virginia Tech.

described the process by which they were selected. First, Rudd requested about “twenty of our most experienced and devoted Academy members” to nominate five or six people--members and non-members of the VAS--who would meet the “requirements for effective work on such a group.” From this group of one hundred or so, Council offered appointments to twenty--all of whom accepted. Cognizant of the need to constantly link the Academy with the public, Rudd worked diligently to set up an informal board of consultants to the Long Range Planning Committee.⁴⁸ Ranging from several professors to a curator at the Smithsonian Institution to presidents and chairs of various banks and businesses, the diverse group of consultants--including two women--widened the scope of the Virginia Academy of Science substantially. After naming Lloyd Bird as chair and Sidney Negus as secretary, the Long Range Committee, aided by an official executive committee appointed by Bird and consisting of Rudd and Miller, considered the thirteen items of concern voiced by the poll’s respondents. Specifically, general discussion centered around one overarching question: “How could such a wide diversification of ideas [thirteen concerns] be unified into one major objective--an objective that would appeal to the entire academy membership and at the same time capture the imagination of the state?”⁴⁹

⁴⁸The names and positions of the consultants are: Van Bohson, Director of Research, the DuPont Company, Waynesboro; Austin Clark, Curator of Echinoderms, Smithsonian Institution; Colonel Edwin Cox, Manager of the Chemical Division, Virginia-Carolina Chemical Corporation; Hubert Davis, High-School Science Teacher, Williamsburg; Julius Fishburne, President, Times-World Corporation, Roanoke; Dr. Douglas Freeman, Editor, Richmond Times Leader; Colonel Julien Hill, President, State-Planters Bank and Trust Company, Richmond; Mrs. John Littlepage Ingram, Richmond; Dean H. E. Jordan, Department of Medicine, University of Virginia; Prof. Gillian Larew, Mathematics Department, Randolph-Macon Woman’s College; Prof. R.E. Loving, Physics Department, University of Richmond; Mrs. Stuart McGuire, Richmond; E.W. Magruder, Chief Chemist, F.S. Royster Guano Company, Norfolk; Elis Olsson, President Chesapeake Corporation, West Point; Dr. I.C. Riggen, State Commissioner of Health; President W.T. Sanger, Medical College of Virginia; Allen Saville, President, Allen J. Saville, Inc.; James Smith, physician, McGuire Clinic, Richmond; Aubrey Straus, retired, Richmond; L.M. Walker, Jr., State Commissioner of Agriculture; Robert West, Director, Bureau of Industrial Research, University of Virginia; and Prof. I.D. Wilson, Biology Department, Virginia Polytechnic Institute.

⁴⁹George Jeffers, “A State Academy Charts Its Course,” Scientific Monthly (1943), p. 8. Special Collections, Virginia Tech.

Of overwhelming interest to the committee was the response of Justus Cline of

Stuarts Draft:

A monograph on the James River would perhaps appeal to the imagination of Virginians as much as anything the Academy could do. The James is strictly a Virginia River--it drains important parts of all the physiographic provinces of the state. . . The majority of important cities and institutions of higher learning in Virginia are located on it and its tributaries. . . No stream in the country has more historical romance. What civilization has done to this wonderful river, which should be the pride of Virginia and the nation, would certainly be a fine thing for the Academy to find out and tell about . . .

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Because the James was the principal artery of travel for so many decades, each region of the state enjoyed a particular relationship with "Old Man River."⁵¹ The Allegheny Mountains, Shenandoah Valley, the Blue Ridge, Piedmont, and the Coastal Plains: all are linked by the James River as it journeys from the westernmost boundary of the Commonwealth to the mouth of the Chesapeake Bay. The James River serves as the primary drainage basin for forty-two of the one hundred counties in Virginia, and most of the other fifty-eight are closely connected to the forty-two.⁵²

Cline's point was clear. Not only could a project focusing on the James River engage any number of the various sections of the VAS, but, more importantly, it might

⁵⁰Justus Cline to Long Range Planning Committee, 1941. Special Collections, Virginia Tech.

⁵¹While "Old Man River" is generally used to refer to the Mississippi River, native Virginians often use it to refer to the James River.

⁵²At that time, these counties were: Highland; Bath; Allegheny; Craig; Giles; Montgomery; Roanoke; Botetourt; Rockbridge; Augusta; Bedford; Amherst; Nelson; Albemarle; Greene; Orange; Louisa; Fluvanna; Buckingham; Appomatox; Campbell; Prince Edward; Cumberland; Goochland; Powhatan; Amelia; Nottoway; Dinwiddie; Chesterfield; Henrico; Hanover; New Kent; Charles City; Prince George; Surry; James City; Warwick; Elizabeth City; Isle of Wight; Nansemond; Norfolk; Princess Anne.

provide a means by which the Academy's work could extend visibly into a wide range of public sector areas--of which state agencies, non-profit organizations, and educational institutions of all levels were just a few examples. Indeed, as one Virginia Academy member asserted: "In this great river we have our unifying idea around which can be correlated scientific, sociological, and historical research."⁵³ In addition to Cline's suggestion to focus on the James River, the Long Range Committee recommended that Council establish six new committees--Research, Junior Activities, Education and Publicity, Museum, and Finance--to work in conjunction with already established parent committees.⁵⁴

One month later, the Long Range Committee convened to discuss details of a James River Project and to map out the informal goals of such an undertaking. Leading the discussion, I.D. Wilson of Virginia Polytechnic Institute delivered a presentation in which he illustrated through Venn diagrams the ways in which public and private state agencies might cooperate with the VAS in such a project. While Wilson's graphic diagrams are not in the archival record, "Minutes" of the Committee do indicate the diagrams' enormous influence on the subsequent approval of the project.

Recognizing the numerous points of entry into such a grand topic, the group adopted a two-pronged approach. First, using techniques unique to their discipline, each section of the VAS would survey and compile data on what was known about existing conditions of the Basin. For example, information about present land use, the status of

⁵³"Report of the Special Committee on the James River Project," May 1, 1941. Special Collections, Virginia Tech.

⁵⁴"Minutes of the Research Committee," April 5, 1941. Special Collections, Virginia Tech.

mineral resources, and the status of agricultural development would be collected along with data concerning industrial usage, availability of educational resources, and public health problems. Such an analysis would take approximately two years, so that by the end of 1943, the second stage might begin. Using the data derived from step one, the Committee planned to offer specific suggestions aimed toward the “scientific improvement of existing conditions.” For example, the “Academy would not attempt to put trout in all the mountain streams of the State, but by scientific study would attempt to determine conditions under which trout would thrive in the streams. . . . It should study the James River Basin as a Human Habitat and should indicate, wherever possible, practical means for improving this Human Habitat.”⁵⁵

In the same breath, the Long Range Planning Committee asserted that “. . . the work on the James River Project [should] be kept on the highest plane of careful scientific research; it should not become involved with the vagaries of politics or in crusades against ‘vested interests.’ ”⁵⁶ Given the goals of the Academy in initiating this endeavor, such a statement is ironic. For while the intentions of the Virginia Academy of Science certainly were on the highest plane, they were also directly political in the sense that it was the Academy’s intent to show itself in the best possible light to the Commonwealth as a whole in order to influence both the management of the James River’s resources and Virginia’s support of the VAS. Of course, what they meant by not becoming involved with “politics” and “vested interests” was simply to try and maintain as high a level of objectivity in analysis and writing as possible.

⁵⁵“Report of the Special Committee on the James River Project,” May 1, 1941. Special Collections, Virginia Tech.

⁵⁶“Report of the Special Committee on the James River Project,” May 1, 1941. Special Collections, Virginia Tech.

At the 1941 annual meeting held at the Medical College of Virginia, retiring President Rudd officially appointed the Special Committee on the James River Project as a subcommittee of the Long Range Planning Committee. Chaired by Marcellus Stow of Washington and Lee, the full group included Robert Carroll, Justus Cline, Ivey Lewis, Foley Smith of Richmond, and I.D. Wilson of Virginia Polytechnic Institute. This committee, along with the additions of A.B. Massey of Virginia Polytechnic and Charles O'Neill of University of Virginia in 1947, remained together until the completion of the project in 1950. As the new chair, Stow said proudly: "Only a project of such wide range could elicit the active interest of a body such as the Virginia Academy of Science,"⁵⁷ before issuing the following, more humble statement, to the Virginia Academy:

We wish to present a brief history of the development of those sciences in Virginia, to discuss the contributions that each has made toward the improvement of the region as a Human Habitat, to present and to indicate problems that await initial study or more detailed scrutiny in order to improve the region scientifically, industrially, and sociologically. If we may borrow a phrase of the biologists, we may wish to make a study of Human-Ecology and to ascertain methods of improving it.⁵⁸

James River Project

Over the next year, the new James River Committee methodically outlined the first stage of the project, beginning with naming the future monograph The James River Basin-- Past, Present, and Future. Sidney Negus, with his talent for organizing, prepared a

⁵⁷Proceedings of the Virginia Academy of Science, 1940-1941, p. 162-163. Special Collections, Virginia Tech.

⁵⁸As quoted in George Jeffers, "A State Academy of Science Charts It's Course," Scientific Monthly (January, 1943), p. 10. Special Collections, Virginia Tech.

detailed outline of the planned study, parts of which he published in his monthly column in The Commonwealth. Guessing the length of the analysis would be at least eight hundred pages, Negus divided the text into five parts. Within each section, articles from a wide variety of experts in diverse fields would reveal the complexity of James River Basin. In partitioning the monograph, Negus was clever. Part I, "Conservation, Recreation, and Re-education" focused on issues of immediate interest to the public, while Part IV, "Industry and Transportation," treated aspects important to business. Parts II, III, and IV-- "Biological Sciences," "Earth Sciences," and "Mathematical and Applied Sciences"--were technical in nature, appealing to those with more scientific training. Furthermore, in seeking volunteers to contribute articles, Negus and the committee enrolled members of state agencies, non-profit institutions, and businessmen for Parts I and V and scientists of the VAS for Parts II, III, and IV.

Three goals would be accomplished by this approach to the James River project. First, the resulting publication would find a greater audience because it would have a more apparent popular appeal. Second, the project would attract the interest of two powerful groups within Virginia--the state agencies and businesses--not simply because they would be involved in the production aspect but also because the project's conclusions would have the potential to affect their activities. And third, the Virginia Academy of Science network would expand and strengthen, as more people would be drawn in to render services to the VAS, and they, in turn, might use the special skills and talents of members of the Virginia Academy.

Notwithstanding the excellent planning and indications of support, at the following annual meeting in Roanoke, the committee appeared in a slump, despite a five thousand

dollar appropriation from the General Assembly in February of 1942 to “provide for the publication of a volume relating to the James River area of the state.”⁵⁹ The manuscripts were slow to come in, pushing stage one of the project well-past its original 1943 deadline, but of more obvious and enormous importance, the United States had entered World War II. In January, Chairman Stow was called to Washington as Deputy Director of the Mining Division of the War Production Board, making it difficult for him to continue leading the James River project with the same vigor. In his report to the Academy membership of that year, Stow wrote: “When original plans for the monograph were laid, Pearl Harbor was a little known harbor in the Pacific Ocean. When it flared into flames, the lives of all of us were changed so I am afraid the publication of the monograph will be delayed.”⁶⁰

In February of 1944, the General Assembly of Virginia voted to continue its appropriation of five thousand dollars for the monograph publication for the next two years. Despite the continued funding, with Stow in Washington and the intellectual and emotional energies of so many of the Virginia scientists directed towards the war effort, it would be several years before additional chapters to the monograph were completed. In May of 1946, the James River Committee met to discuss the future of the project. War was over, and it was time for normal activities to resume. With ten thousand dollars in financial aid from the state, the group decided to “pick up loose ends” and go ahead with the completion of the monograph.⁶¹

⁵⁹“Senate Bill No. 200,” Monday, February 16, 1942. Special Collections, Virginia Tech.

⁶⁰Marcellus Stow to Virginia Academy of Science, April, 1942. Special Collections, Virginia Tech.

⁶¹Chronological outline of James River Project, no date. Special Collections, Virginia Tech.

Slightly less than a year later, forty leaders within the Commonwealth representing a variety of professions--from medicine, the law and social services, for example--joined the James River Committee in Richmond to develop a viable strategy for completion of the monograph. After reassessing the outline prepared by Negus six years earlier, the group decided to go ahead with the same structure, agreeing that the prose should be nontechnical but not over-popularized. Further consensus was reached over the new date of completion: May 1, 1948. At the close of the meeting, Stow inquired: "Does this group feel, from what has been discussed this afternoon that a monograph of this type can be compiled and presented in a style which will be satisfactory to scientists and at the same time instructive to laymen?"⁶² A resounding yes answered his question.

Discouragement at the lack of completed chapters by May 1, 1948 did not mar the excitement generated by the additional ten thousand dollars allotted by the General Assembly to the State Conservation Commission for publication of the monograph. Nor did it affect the spirits of Stow the following year in Richmond, when he issued the following statement on behalf of the James River Committee: "It is a pleasure to report that the monograph on the James River is approaching publication status."⁶³ Confidently, Stow promised that by the next annual meeting, he would hold a copy of the monograph before the membership.

Two days before what had become the annual progress report of the James River Committee to the Academy membership, it did not appear to the committee as if Stow

⁶²Chronological outline of James River Project, no date. Special Collections, Virginia Tech.

⁶³"Report of the James River Committee to Council," May 1949. Special Collections, Virginia Tech.

would be able to keep his promise. The last few chapters had not come in until very late, and members of the committee did not see how the publisher, Albrecht and Company of Baltimore, would be able to have the monograph printed in time for the May 12th annual meeting at Roanoke College. Unknown to the group, however, Stow had persuaded the publishers to work straight through the night, sending his student from Washington and Lee, Richard MacDonald, to drive to the bindery in Baltimore, pick up a few copies of the monograph, and rush them to Roanoke. Stow's presentation was set for ten in the evening; at quarter of ten, MacDonald came rushing in with two copies. Thus, at the close of his report, Stow was able to present Justus Cline and Wortley Rudd, the two members to whom the monograph is dedicated, with copies of the James River Basin: Past, Present, and Future.⁶⁴

In the first year, only 226 copies of the book were sold--and the six dollar price was not exorbitant for the length of book. Until 1995, boxes of the book lay stacked in an attic in a Washington and Lee academic building. Efforts to link the community of the Commonwealth with the VAS through the publication of the book were not successful. Advertising for the book was poor; perhaps the length of time it took the committee to reach publication dampened enthusiasm, or perhaps the length of the book was simply too daunting. In addition, the committee's problems in publishing were not only due to the war, but also to its difficulty in persuading those who had agreed to write pieces to actually submit them without payment of any kind and without promise of national recognition. It is interesting, however, to note that the book, with its detailed portrayal of the past state of the environment and predictions for the future, is slowly becoming of more interest to

⁶⁴Chronological outline of James River Project, no date; Also in Sidney Negus, "The James River Project," VJS (1950), pp. 194-195. Special Collections, Virginia Tech.

scientists, especially ecologists. For not only was The James River Basin correct in its predictions, but it was also accurate in describing the conditions of the landscape, with the result that scientists now have a level point of comparison. While the publication was not a failure in the sense that it did finally mobilize the talents and resources of many scientists, business people, and other professionals, it did not succeed as Jeffers had hoped when he said: "We believe such a monograph, written by authorities, will do much toward developing and improving the status of science, industry, and social conditions in the James River region and hence in Virginia."⁶⁵

Research Committee

While all members of the VAS felt the strain of World War II, only the Research Committee entertained lengthy discussions about possible effects the war might have on the role of and practice of science both within the Commonwealth and the nation as a whole. Even before the United States entered the war, Miller asked Frank Geldard, chair of the Research Committee whether or not

it struck you as remarkable that nothing was said Saturday night [Research Committee meeting held at J. Shelton Horsley's house in Richmond] about the future of science in rebuilding a better world after this slaughter stops? The spirit and methods of science should be a tremendously important factor in this work. . . . Unless the new world is based on and conditioned by science, it will be built on sand.⁶⁶

⁶⁵George Jeffers, "A State Academy of Science Charts Its Course," Scientific Monthly (January, 1943), p. 10. Special Collections, Virginia Tech.

⁶⁶E.C.L. Miller to Frank A. Geldard, April 11, 1941. Special Collections, Virginia Tech.

This attitude reflects the dominant thinking of the times: that technology and science would provide solutions to fundamental problems of human interaction. Indeed, Miller's commitment to and belief that the quality of life in Virginia would be elevated through scientific means extended not only to the Research Committee, but to the VAS as a whole. And it was this conviction that characterized the committee's actions over the following decade.

When he replaced J. Shelton Horsley in 1939 as chair of the Research Committee, Frank Geldard's first act was to initiate an analysis of the research grants over the past year. The resulting data indicated that while the endowment fund had afforded many opportunities to struggling scientists, it also had provided many scientists who had secure financial roots with funding. Not satisfied with contributing to those scientists with "other resources to fall back on," Geldard spearheaded a movement to come up with new guidelines for obtaining VAS research grants. Midway into his term as chair, Geldard received his commission in the armed forces, leaving the Virginia Academy of Science in 1942. Frank Vibrandt stepped into Geldard's chair and finished his term.⁶⁷ In early October of 1943, the Research Committee issued new guidelines by which grants would be awarded. The guidelines opened with the definition of science to which grant applicants should adhere. Written by Miller, the tightly construed conception held that "the ideal science is that in which by setting up certain conditions one asks a definite question of nature and the skill with which these questions are asked, determines the progress made in that particular science."⁶⁸ In explaining the purpose of the grants, the Research Committee stated:

⁶⁷"Virginia Academy of Science: A Review of the First Ten Years of the Research Committee, 1929-1938," 1939. Special Collections, Virginia Tech.

⁶⁸E.C.L. Miller to Richard Hoffman, November 28, 1945. Special Collections, Virginia Tech.

The object of these grants is to stimulate a more active interest in research in Virginia and to promote those objects which would otherwise not be undertaken through the existing research facilities in the state . . . the grants will be used to foster new ideas and methods of experiment, to aid young and inexperienced investigators, and to encourage teachers working under conditions of limited facilities.⁶⁹

These grants, then, were aimed at stimulating and encouraging the development of science among those to whom the “doors of research” might otherwise have been closed. To avoid awarding the grants to scientists of the same educational or institutional background, the committee separated applications into four inclusive groups: the University Group, comprised of those institutions offering graduate studies;⁷⁰ the College Group, consisting of the four-year college programs;⁷¹ the Junior College Group, made up of two-year college programs;⁷² and the Miscellaneous Group, composed of high-schools, preparatory schools, industrial organizations, and private individuals. Not willing to eliminate anyone from participating, the Research Committee made it clear it would consider proposals from fields other than those listed as sections in the VAS, so long as the work under consideration was scientific in nature.

⁶⁹“Suggestions for the Awarding of Research Grants by the Virginia Academy of Science,” 1942. Special Collections, Virginia Tech.

⁷⁰At the time, this group consisted of the Medical College of Virginia, University of Virginia, University of Richmond, Washington and Lee, and Virginia Polytechnic Institute.

⁷¹At the time, this group consisted of Bridgewater; Emory and Henry; Hampden-Sydney; Hollins; Lynchburg; Mary Baldwin; Randolph-Macon; Randolph-Macon Woman’s College; Roanoke College; Sweetbriar; Virginia Military Institute; William and Mary; Farmville State Teacher’s College; Madison State Teacher’s College; Radford State Teacher’s College; Hampton Institute; Virginia State Teachers College; Virginia Union University; and Martha Washington.

⁷²This group consisted of Averett; Blackstone; Bluefield; Eastern Mennonite; Fairfax Hall; Marion; Shenandoah; Southern Seminary and Junior College; Stratford; Sullin; and Virginia Interment.

The intent of the committee was that the Virginia Academy of Science would offer four types of grants. The first type, General Research Grants--of value not exceeding one hundred and fifty dollars--would go toward "keeping alive an interest in research in colleges and junior colleges" where research programs and facilities generally were restricted due to financial stringencies. These grants also would fund "unusual and advanced investigations" in the University Group where research laboratories were provided. In justifying the latter policy, the Research Committee argued:

It has been said in favor of judging requests for aid on the basis of their scientific merit alone, regardless of the institution from which they are made, that "You must take a research man where you find him." The significance of this statement is appreciated, but the Committee also believes that "You can make a research man" by the proper encouragement and guidance of a young man of intelligence and character. It is believed that this is especially true in the South where tolerable research facilities have generally been lacking in the past. The Virginia Academy of Science hopes to offer this encouragement and guidance.⁷³

On the basis of this statement, one can argue that while the National Academy of Science and other national scientific organizations epitomized what historian Daniel Kevles calls "best-science elitism" and "political elitism"--in other words, support of the best--during war-time, the Virginia Academy of Science was calling for democratization.⁷⁴

Second, two grants of one hundred and fifty dollars were allotted for student research assistants to aid in projects under the guidance of a faculty member belonging to the College Group. Established with a recognition of the heavy teaching schedules of faculty at these Virginia colleges, the grants would enable professors to carry on "small but

⁷³"Suggestions for the Awarding of Research Grants by the Virginia Academy of Science," 1942. Special Collections, Virginia Tech.

⁷⁴See Daniel Kevles, The Physicists: The History of a Scientific Community in Modern America (New York: Knopf, 1978).

helpful piece[s] of investigation.”⁷⁵ For consideration for this kind of grant, the committee required that applications be submitted jointly by the faculty member and student. Third, two Educational Grants of fifty dollars, one to a professor and the other to an undergraduate or graduate student, were established to help defray either the expense of attending a scientific meeting or the cost of a research trip. Members of the College and Junior College Groups were encouraged to apply for these grants, while members of the University Group, with their state-supported research programs and concentrations of well-known scientists, were not eligible. Finally, the committee designated a Special Research Fellowship of five hundred to one thousand dollars for the “purpose of either creating some new field or establishing in Virginia some important line already developed elsewhere but hitherto unsupported in the state.” With few exceptions, the applicant was required to hold either a doctorate or a medical degree. In addition, the recipient of the Fellowship needed to have received a degree from a Virginia institution or to have resided in the state for at least fifteen years. In explaining the Special Research Fellowship, the Research Committee especially invited scientists working in the fields of biophysics and biochemistry, theoretical physics, geophysics, and the “utilization of solar radiation for power purposes” to apply, for such fields involved the “cross-fertilization of knowledge” and offered “special opportunities.”⁷⁶

Despite the new accessibility of the awards for all tiers of Virginia scientists, the Research Committee reported at the annual meeting in 1943 that for two years in succession, it had not disbursed all of the funds available for lack of applications for aid.

⁷⁵“Suggestions for the Awarding of Research Grants by the Virginia Academy of Science,” 1942. Special Collections, Virginia Tech.

⁷⁶“Suggestions for the Awarding of Research Grants by the Virginia Academy of Science,” October 9, 1942. Special Collections, Virginia Tech.

While the Research Committee “chalked” this underuse up to the limited size of the grants, a more likely explanation might be the increasing toll of the war effort on scientists in combination with the continued emphasis on teaching rather than research by administrators within Virginia’s universities and colleges. Secretary-Treasurer Miller expressed considerable concern over the growing available income of the endowment fund, remarking: “[O]ur Research Committee, good as it is, has seemed to be like a beggar sitting beside the road and accepting items dropped in a cup.”⁷⁷ In considering solutions to this problem, Miller contacted the Long Range Committee on behalf of the Research Committee, inviting them “to make a study of the research needs and research facilities in Virginia.”⁷⁸

During that same meeting, in his inaugural speech President Catesby Jones outlined his major objectives for the following year, including the aforementioned request by the Research Committee. He had been impressed, he said, by the latest report of the Alabama Research Institute, whose purpose it was to “promote scientific investigations for the development of the mineral, forest, and crop resources of Alabama and the South” as well as to “make a survey of the research work being done in the State.”⁷⁹ President Jones concluded by suggesting that perhaps the Virginia Academy of Science should consider forming a similar institute.

⁷⁷E.C.L. Miller to Otis Caldwell, June 24, 1943. Special Collections, Virginia Tech.

⁷⁸E.C.L. Miller to Long Range Committee, June 24, 1943. Special Collections, Virginia Tech.

⁷⁹Proceedings of the Virginia Academy of Science, 1943-44. Special Collections, Virginia Tech.

On October 9, 1943, Miller sent members of the Research Committee a list of applications for aid to be considered in preparation for the upcoming meeting on October 16 and the new proposed guidelines for research grants. Attached to these items was a letter in which he asked the group to consider two issues. First, what should be done with the available funds. Should the money be used to fund one large project or, perhaps, a full-time research fellowship? For, as Miller wrote, "it is becoming more and more obvious that new ideas will be necessary--we have some \$1870.00 available for distribution and four applications for grants that total \$426.00."⁸⁰ Second, Miller wondered, what was the general reaction to President Jones' mention of an institute?

At the meeting on October 16, the group approved the new guidelines without hesitation before turning to Miller's concern over available funds. After intense discussion, Council reached consensus, agreeing to hold the extra funds for use after the war when additional monies could benefit those returning from the armed forces.⁸¹ However, it was when Allan T. Gwathmey, professor of chemistry at the University of Virginia, spoke on the establishment of a Virginia Scientific Institute that the scientists grew enthusiastic.

Stated Gwathmey:

[D]uring the past few years, Virginia has been making all too few contributions to the intellectual and social development of the world. We need a Research Institute in Virginia which would have two divisions: basic science and applied science; and once viable would become independent of the Academy. At the present time, regardless of the immediate difficulties we may be having as a result of the war, the world is passing from an age of scarcity to one of relative abundance. The significant factor which is making this change possible is the application of scientific knowledge to our system of production. Only when Virginia is making significant

⁸⁰E.C.L. Miller to Members of the Research Committee, October 9, 1943. Special Collections, Virginia Tech.

⁸¹R.J. Main to E.C.L. Miller, November 19, 1943. Special Collections, Virginia Tech.

contributions to the world of science can she play her proper role in promoting the political and social changes which are now taking place.⁸²

Gwathmey continued in the same vein, declaring that Senator Lloyd Bird of Chesterfield, a loyal member of the Virginia Academy of Science, already had pledged his support to the idea and challenging the Research Committee to consider the proposal. Finally, Gwathmey hoped, the Academy would not only initially sponsor the institute, but also would spearhead the capital campaign to raise two million dollars.⁸³

Not surprisingly, Gwathmey's proposal received mixed reviews, with members rather evenly divided into two camps. For example, on the one hand, scientists such as Marcellus Stow and E.C.L. Miller did not see the pressing need for such an institute, given the existing efforts of the VAS and Southern Association for Science and Industry⁸⁴ to promote scientific endeavors in the academic and industrial realms.⁸⁵ On the other hand, Virginia Academy members W. Catesby Jones and Foley Smith were persuaded of the need for a Virginia research center, independent of educational institutions, in which scientists could work without the distractions of teaching or other duties. By 1945, Gwathmey won over most of the membership when he delivered a "Brief Resume of Proposals for Establishment of a Virginia Research Institute." Reiterating the separation of the proposed institute into a Division of Basic Science and a Division of Applied Science,

⁸²Proceedings of the Virginia Academy of Science, 1945-46, pp. 42-43; Proceedings of the Virginia Academy of Science, 46-47, pp. 42-43. Special Collections, Virginia Tech.

⁸³Proceedings of the Virginia Academy of Science, 1944-45, p. 18; Proceedings of the Virginia Academy of Science, 1945-46, pp. 41-43. Special Collections, Virginia Tech.

⁸⁴The Southern Association for Science and Industry (SASI) will be explained in detail shortly.

⁸⁵Marcellus Stow to E.C.L. Miller, November 24, 1943. Special Collections, Virginia Tech.

Gwathmey likened the first, with its “emphasis on fundamentals” to the Royal Institution, while the second he likened to the Mellon Institute, with its focus on solving practical industrial problems.⁸⁶

While the Virginia Academy did not lead the official capital campaign for the Institute, the Academy’s Research Committee did donate a portion of the available endowment funds for the Institute to use in hiring its first scientist. Even though the state had not formally incorporated the Institute, by late 1946, the VAS and other supporters acted as if it had. For example, on July 1, 1947, John Strickland, professor in the biology department of the University of Richmond, was named the Virginia Institute of Scientific Research’s (VISR) first full-time employee. In addition, the Virginia Academy secured temporary housing for the new VISR on the campus of University of Richmond. Six months later, Gwathmey proudly announced to the VAS that “the Virginia Institute for Scientific Research was incorporated as an independent non-profit organization, operating under its own board of trustees, for the purpose of conducting and promoting research in the natural sciences.”⁸⁷ Within two days, Senator Bird with the support of Senator Battle of Charlottesville introduced a bill to the General Assembly asking for a \$40,000 appropriation to cover the VISR’s operational costs through 1950. In response, the Legislature allotted \$20,000 to the Institute for the two year period.⁸⁸ Never one to fight the future, Miller praised Gwathmey’s accomplishments, writing in the 1948 Proceedings

⁸⁶Allan T. Gwathmey to Members of the Virginia Academy of Science, “Brief Resume of Proposals for Establishment of a Virginia Research Institute,” 1945. Special Collections, Virginia Tech.

⁸⁷Proceedings of the Virginia Academy of Science, 1947-48, p. 23. Special Collections, Virginia Tech.

⁸⁸Proceedings of the Virginia Academy of Science, 1947-48; Sidney Negus, “Statement Concerning the Virginia Institute for Scientific Research before the General Laws Committee,” January 30, 1958. Special Collections, Virginia Tech.

that “Perhaps the most important accomplishment this year is the launching of the Virginia Institute for Scientific Research. It is now incorporated, independent, and functioning . . .

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After lobbying the Legislature, in 1949, advocates for the new Institute secured the vacant Museum Building, also known as the Confederate Old Soldier’s Home, located in the Robert E. Lee Camp Memorial Park as housing for part of its laboratory and administrative facilities. Unfortunately, Mrs. Daisy Avery, Chair of the Museum Operation Committee of the Daughters of the Confederacy (DOC), angrily proclaimed that she would ask for an injunction to halt the Institute’s use of the building. Apparently, Old Sorrel, Stonewall Jackson’s perfectly preserved horse, would have to be removed in order for the VISR to move into the building. After a lengthy controversy between the State of Virginia and Mrs. Avery’s branch of the Daughters of the Confederacy, the battle over the horse concluded. Old Sorrel was evidently moved,⁹⁰ and the VISR opened its headquarters in the Museum and offered the VAS a third floor room for use as an office or repository.⁹¹

Four years later, sixteen full-time scientists working with a budget of ninety thousand dollars staffed the Institute. In 1950, the Board of Trustees of the Virginia

⁸⁹Proceedings of the Virginia Academy of Science, 1947-48, p. 15. Special Collections, Virginia Tech.

⁹⁰Attempts to track the whereabouts of the horse led to the discovery that he languished in isolation at VMI, somewhat to the surprise of the staff members there. It may be assumed that VMI’s sense of history rose to the occasion, since on July 21, 1997, the Hampton Roads Daily Press headlined “Jackson Horse Buried at VMI A Century After Death.” The remains were interred with “full honors.”

⁹¹Virginia Journal of Science, New Series, I(1950), p. 298. Special Collections, Virginia Tech. For information on the history of Old Sorrel around that time, see “Fate of ‘Old Sorrel’ May Stir Battle in Confederate Circles,” Richmond Times-Dispatch, December 30, 1948. See also “Little Sorrell,” Bristol Herald-Courier, April 10, 1949.

Institute for Scientific Research turned over management to the University of Richmond. By 1958, Sidney Negus boasted to Council that the budget had swelled to nearly one quarter of a million dollars with twenty-six full-time scientists on board.⁹² For the next twenty years, the VISR functioned out of the University of Richmond, providing the Commonwealth, United States Government, and private industry with research data primarily in the field of marine ecology. This success was not to be lasting, however. Funding dropped as the Virginia Institute for Marine Science in Gloucester became more and more active, becoming an independent agency in 1962. The University of Richmond also began to expand and to need the space. In 1978, the Institute ceased to operate as a research facility, and in 1994, the University of Richmond decided to fully close the Institute's doors.⁹³

Lending financial support to the Virginia Institute of Scientific Research and offering small grants to Virginia scientists was possible because of the continued efforts on the part of the Research Committee to increase the \$12,000 endowment fund. During the 1940s, contributions to the fund continued to trickle in from the usual sources--for example Virginia businesses, civic leaders, and older members of the VAS--who were appealed to directly by the committee. In 1943, however, a new source of funding, generated by an unexpected source, appeared from outside the Commonwealth. In 1942, Gillie A. Larew of the faculty of Randolph-Macon Women's College submitted a brief article to the college's alumnae magazine about the Virginia Academy. In glancing through his wife's copy of the magazine, the article caught the eye of banker C.M. Goethe of Sacramento, California. By the end of the year, Goethe pledged two hundred dollars annually to the

⁹²Sidney Negus to Council, January 30, 1958. Special Collections, Virginia Tech.

⁹³Data from Cheryl Lewis and Herb Peterson, August 26, 1996. Business Office, University of Richmond.

endowment fund, provided the Academy could match his donation with an even four hundred dollars.⁹⁴

Initially, it appeared as if the motivation behind Goethe's pledge lay strictly in his inability to construct two parks in the Sacramento region due to intense opposition from "men absorbed in profit-making." And as he maintained: "It is for this reason that I feel the extreme need of doing everything possible any individual can towards conservation of pure research."⁹⁵ Further investigation, however, reveals a very different, and somewhat disturbing, motivation:

Of late years, we have been particularly interested in human genetics and eugenics. We prefer our own contribution go toward human genetics, or eugenics, if possible. . . Mrs. Goethe descends from Virginia forbears [sic]. I cannot forget the impact that the book "Wins" (White-Indian-Negro) had on eugenic thought. Again, probably no commonwealth in American can do more to approach the sane solution of our Negro problem. We naturally sympathize with the Southern viewpoint in this matter.⁹⁶

Only vague references to Goethe's interest in eugenics appear in VAS correspondence or "Minutes." Yet since the letter from which remarks quoted above are taken is located in the Virginia Academy Archives, it is likely that Council and the Research Committee, at least, were well-aware of the Goethes' racist views. One could argue, then, that in accepting the donation from the California banker and his wife, the Virginia Academy of Science at the very least did not stand in opposition to the Goethes' advocacy of eugenics. Given the

⁹⁴C.M. Goethe to President Theodore H. Jack, December 3, 1942. Special Collections, Virginia Tech.

⁹⁵C.M. Goethe to President Theodore H. Jack, December 3, 1942. Special Collections, Virginia Tech.

⁹⁶C.M. Goethe to President Theodore H. Jack, December 3, 1942. Special Collections, Virginia Tech.

racial tension of the times, however, the Virginia Academy's position is not surprising.⁹⁷ While the Goethes' donations arrived throughout the 1940s, they arrived sporadically, making it difficult to pinpoint the exact amount the family actually contributed.

Along with maintaining the fiscal stability of the endowment fund, the Research Committee continued to offer special awards to deserving Virginia scientists. Beginning in 1940, an Academy Research Prize in recognition of an outstanding paper of original research was given along with the Jefferson Gold Medals already sponsored by the Richmond scientific instrument company Phipps and Bird, Inc.⁹⁸ In 1944, the name of the Academy Research Prize was changed to the J. Shelton Horsley Award, a fitting memorial to the man who devoted almost eighteen years to creating and stabilizing the endowment fund. In support of the new Virginia Junior Academy of Science, which the VAS officially chartered in 1941, the Research Committee established a prize of fifty dollars--later named the E.C.L. Miller award--to recognize "outstanding work by any science club within the state."⁹⁹ It was first presented to a small, local organization of young scientists, the Warren County Society of Scientists, Front Royal, in 1943.

In sum, the efforts of the Virginia Academy of Science to draw a wider group of academic scientists into active research, while well-intentioned in every way, were not particularly successful. In some sense, the times as well as the administrative practices of

⁹⁷ For an overview of the influence of eugenics, especially in the twentieth century, see Diane Paul's Controlling Human Heredity, 1865 to the Present (Massachusetts: Humanities Press, 1995).

⁹⁸ Walter Flory, "History of the Research Committee," no date. Special Collections, Virginia Tech. As recounted in Chapter One, Phipps and Bird withdrew the Jefferson Gold Medal awards due to insufficient support.

⁹⁹ Thelma Heatwole, "History of the Virginia Junior Academy of Science," p. 15, unpublished manuscript, no date. Special Collections, Virginia Tech.

Virginia's institutions of higher education were obstacles that the Academy could not have mustered the power to overcome; yet in another sense, that very lack of influence vitiated the initiatives it did undertake. The James River Basin project, which was very well conceived in every way, lacked the impact it should have had because of the continual foot-dragging of the participants. The research grants were probably of insufficient dollar value to have attracted the scientists who most needed them--younger people from the second tier schools. In its attempt to include everybody, it is likely that the VAS reduced the size of the grants until they attracted very few. At the same time, however, all of these efforts coupled with the success of the Virginia Institute for Scientific Research did indicate the Academy's keen awareness of the real need within the Commonwealth for support for research throughout the academic institutions.

Relations with Industry: Southern Association Science and Industry

On March 20, 1940, George D. Palmer, a chemistry professor at the University of Alabama and a native southerner, spoke before the general membership on "Scientific Research, the Hope of the South." Responding to President Franklin D. Roosevelt's public speech targeting the south as an industrial and economic wasteland and the Southern Governor's Convention of several months earlier which called for economic development, Palmer appealed for the establishment of a southern scientific research organization to investigate southern resources.¹⁰⁰ According to Palmer, the marriage of business and scientific research, supported by vast natural resources, had enabled the United States to attain its present economic power. Businessmen and academics needed to join forces to tap

¹⁰⁰George D. Palmer, "Scientific Research, the Hope of the South," March 20, 1940. Special Collections, Virginia Tech.

into the unexplored--and unexploited--resources of their region. But how to foster such cooperation? How to persuade the businessmen to invest in academic research programs? Palmer's answer was simple: first, academies of science, with their committees, sections, and journals, would actively promote the southern scientists and their research/earnings potential. Second, a new federation of southern scientists, representing the entire region, would have as its goal enlisting the interest and financial support of business.¹⁰¹

Not only did Palmer's plan draw notice in several prominent state journalists, garnering him much-needed statewide support, but equally as important, his address attracted the attention of the AAAS, which published it in the July 5, 1940, edition of Science. Always on the watch for ways to increase scientific activity within Virginia, Secretary-Treasurer of the Virginia Academy of Science, E.C.L. Miller, immediately requested five hundred reprints of the article to distribute to the general membership. The reprints generated considerable interest within the Virginia Academy Council, compelling President Rudd to write Palmer in early July, pledging the VAS's support to the endeavor and requesting more information as to the exact nature of the proposed organization.

Replied Palmer:

The question of research in the south is one which concerns all southern states. . . I sincerely believe that the state academies of science are doing much for the southern states, and that a Southeastern Scientific Society would greatly help us to know each other and our problems.¹⁰²

¹⁰¹George D. Palmer, "Scientific Research, the Hope of the South," March 20, 1940. Special Collections, Virginia Tech.

¹⁰²George Palmer to Wortley Rudd, July 10, 1940. Special Collections, Virginia Tech.

Over the next year, Palmer lobbied for the new organization, time and again pointing out that the disparity between economic growth in the north and that in the south had much to do with the trend in the former to combine business and scientific research. By spring of 1941, Palmer had persuaded both the southern state academies of science and many of the state's leading business interests to at least attend the inauguration of the Southern Association for the Advancement of Science at the Alabama Academy of Science's 1941 meeting. According to the Journal of the Alabama Academy of Science, "delegates from practically all the scientific organizations of the south and representatives in scientific and industrial fields of eleven southern states"--a grand total of about 150--arrived in Mobile, Alabama on March 20th for the two-day event.¹⁰³

The Virginia Academy of Science played an integral role in this first meeting and in the life of the Association. During the first day, Wortley Rudd presided over the first symposium titled "Scientific Work in the South," while Arthur Bevan, state geologist of Virginia and a member of the faculty of the University of Virginia, spoke on the possibilities of geological research in the South. At the first organizational meeting of the Southern Association for the Advancement of Science (SAAS), Rudd was elected president.¹⁰⁴ The SAAS set as their goal to address the question of why the south, with "vast supplies of human and material raw products, could not use these resources to become as prosperous as other sections of the Nation."¹⁰⁵ Furthermore, the group agreed

¹⁰³Journal of the Alabama Academy of Science 13(July 1941), p. 18. The printed program is in the Special Collections, Virginia Tech.

¹⁰⁴George Boyd of the Georgia Academy of Science was elected President-elect, Milton H. Fies of DeBardelaben Coal Corporation was chosen as Vice-President, and George Palmer selected Secretary-Treasurer.

¹⁰⁵Journal of the Alabama Academy of Science 13(July, 1941). The printed program in the Special Collections, Virginia Tech.

to foster cooperation--conceived of as supporting economic development--between the various industries and institutions of higher education to help slow the outflux not only of the raw materials that the south exported but also of the young college graduates, who left to go to other regions of the United States where professional opportunity was greater.

Over the next year, Rudd, Palmer, and other members of the Executive Committee corresponded frequently, as they defined the formal goals of the organization and the strategy by which they might be achieved. Of particular influence on Rudd was a letter he received from professor of emeritus of chemistry at Johns Hopkins University, Emmett Reid. A childhood friend of Rudd's, Reid offered sage advice for the future development of the south. "To get industrial research to come down South, university research must be built up . . . Ph.D. work must be enlarged and encouraged so that Virginia offers more than six doctoral programs."¹⁰⁶ Indeed, with the exception of doctoral programs at the University of Virginia and Virginia Polytechnic Institute, Virginians were forced to look outside of their state for the Ph.D.

In his opening address of the second SAAS, which was sponsored by the Georgia Academy of Science in April, 1942, Rudd set forth the agenda. "One of our primary objectives," he announced, "is to improve the educational facilities of the south so that our boys and girls may be able to get adequate training in research and the sciences in southern institutions. This will require the expenditure of many millions in the construction of laboratories and the establishment of research libraries and other research facilities." Furthermore, in order for southerners to fully appreciate the resources available and possible opportunities for their region, it is "proposed that the south study itself, through

¹⁰⁶Emmet Reid to Wortley Rudd, January 14, 1942. Special Collections, Virginia Tech.

the schools.” To achieve such ends, the SAAS is developing a curricula which it hopes to have “universally adopted in southern curricula.” Second, Rudd explained, without adequate facilities, scientists cannot be expected to discover new and exciting ways to utilize the region’s raw materials in the manufacture of finished goods. “Technological research creates new finished-goods industries. SAAS would encourage the south to provide facilities for a constant and intensive study of its resources so that finished goods, and not the furnishing of raw materials, may be its source of wealth.” Third, reported Rudd, the SAAS will undertake: “an inventory of southern resources” in which “agricultural and climatic resources, education, finance, fisheries, forest, labor, manufacturer, markets, minerals, power, research, transportation, water, and specialized human resources, such as managerial, scientific, and economic.” Finally, promised Rudd, the SAAS would fight to quell the post-war conversion of defense plants that would facilitate economic prosperity of one region of the nation and not others.¹⁰⁷

Following Rudd’s address, Eugene Talmedge and Frank Dixon, governors of Georgia and Alabama, pledged their support for the Association.¹⁰⁸ Although the SAAS was organized primarily by southern scientists, the symposiums, such as “Conservation of One of the South’s Major Crops--Its Forests;” “The Teaching of Science in the Secondary Schools of the South;” “As Others See Us;” and “Role of Scientific Research in Development of Natural Resources of the South,” reflected the interests of both academics and business. This was not to be the case for long, however. Businessmen, including Lloyd Bird, a member of the VAS and chair of the scientific instrument firm Phipps and Bird of Richmond, Virginia, dominated the meeting. Judging by the Executive

¹⁰⁷Wortley Rudd to SAAS, April, 1942. Special Collections, Virginia Tech.

¹⁰⁸Wortley Rudd to SAAS, April, 1942. Special Collections, Virginia Tech.

Committee's decision at the 1942 to change the name of the SAAS to the Southern Association for Science and Industry, business interests wanted center stage.¹⁰⁹

It did not take long for SASI publicity to sound "like a Chamber of Commerce for the entire South." In his speech as President-elect, Bird proclaimed that "God grant that science and industry, linked together in a common cause will, with the cooperation of other forces, make Jefferson's assertion that 'the mass of mankind was not born with saddles on their backs' a living truth. . . ."¹¹⁰ Responding to this and other proclamations of unity, Miller sent a letter of concern to Stow, chair of the Committee on Resources of Virginia for the VAS, skeptically and, arguably critically, remarking that the SASI was "obviously 'big business' . . . There is not one line or one thought as to who is to profit by the businesses involved in the SASI or as to how profits are to be distributed. Apparently, it is just assumed that they will go to 'the right persons' just as they went in the gay 1920s until one third of our people are again without adequate food, clothing, or shelter or are on relief; then again a collapse and widespread misery followed by a third war." To what extent, he queried, should the VAS affiliate with such a policy?¹¹¹

Others echoed the skepticism of Miller, especially in 1944 when the Association retained a public relations expert and moved its headquarters from Alabama to Richmond, Virginia, the home city of Lloyd Bird. For while the Association issued statements of

¹⁰⁹Wortley Rudd to SAAS, April, 1942. Special Collections, Virginia Tech.

¹¹⁰"The Way to Greater Prosperity for the South," Pamphlet published by the Southern Association of Science and Industry, 1943. Special Collections, Virginia Tech.

¹¹¹E.C.L. Miller to Marcellus Stow, October 21, 1943. Special Collections, Virginia Tech.

concern for southern education¹¹² and pledged financial support to university and college research programs, its real commitment lay in attracting the experts and research laboratories of businesses to the region.¹¹³ Despite the active participation of the VAS's own Bird, the Virginia Academy slowly lost interest in the organization, as it increasingly served the needs and interests of those scientists and industrialists outside of the academic world.

Virginia Junior Academy of Science

Efforts towards improving science education continued to be a major impetus for action within the Virginia Academy of Science. Not only was the Committee on Science in the Public Schools constantly seeking to improve the level of science education for teachers and students, but also committees such as Research and Long Range Planning considered ways in which they might elevate and improve the status of science education. However, the new decade was to be characterized by an effort of a different sort: the evolution of a junior academy of science. While the official authorization statement of the Junior Academy of Science by the Virginia Academy of Science carries the date June 30, 1940, its true roots extend to the 1938 meeting of the American Association for the Advancement of Science held in Richmond, Virginia.¹¹⁴ In discussing how to promote science at the

¹¹²The SASI established the Southern Regional Educational Board in 1949. While the VAS participated on the Board, the real value of the Board to the Academy was that the ideas and strategies it developed for the region were useful to the VAS as it tried to improve science education in Virginia. Special Collections, Virginia Tech.

¹¹³In To Foster the Spirit of Professionalism (Tuscaloosa: University of Alabama Press, 1991), pp. 143-154, Nancy Smith Midgett offers a full account of the rise and fall of the SASI.

¹¹⁴Proceedings of the Virginia Academy of Science, May 2-4, 1940; Virginia Journal of Science I(November 1940), p.187.

annual Academy Conference, members of the Committee on Science in the Public Schools of the VAS learned of the recent rise in other states of high-school science clubs, several of which were organized into Junior Academies of Science by the respective state academies of science.¹¹⁵ While the majority of new Junior Academies of Science were sponsored by academies in the midwest, in the east the VAS found especially interesting the Science Club sponsored by the American Institute of Science and Engineering of New York City (AISE). Managed by trustee H.H. Sheldon, this multidisciplinary Institute had as a primary goal the encouragement of new science clubs throughout the nation, and accordingly pledged their services to the Virginia Academy of Science should it consider establishing a science club.¹¹⁶

Over the Christmas holiday, President-elect Ruskin Freer appointed a committee, chaired by Lloyd Bird, to “study the place of science in the high-schools” and present recommendations to Council on the advisability of a Virginia Academy-supported science club or junior academy.¹¹⁷ The committee adopted a two-pronged strategy. First, Bird and his group decided to establish the number of existing science clubs in the Commonwealth and determine the degree to which high-school teachers were interested in the science club movement. With the help of the Virginia Department of Education and the Virginia Education Association, the committee sent a letter--signed by Fred Alexander, State Department of Education, Francis Chase, Executive Secretary of the Virginia Education

¹¹⁵“Minutes of the VAS meeting,” May 5-7, 1940. Special Collections, Virginia Tech.

¹¹⁶Thelma Heatwole, “Report of the Virginia Junior Academy of Science to Virginia Academy of Science History Committee,” Fall 1965. Special Collections, Virginia Tech.

¹¹⁷Minutes of the VAS Meeting,” May 5-7, 1940. Special Collections, Virginia Tech. Other members of the Committee were J.T. Christopher of George Washington High School, Danville; Hubert Davis, Portsmouth; George Jeffers, Longwood College, Farmville; Sidney Negus; P.M. Patterson; J.A. Reese; J.A. Rorer; W.E. Trout; and I.A. Updike.

Association, and Lloyd Bird--and questionnaire to seven-hundred high-school principals in the state. The response was positive: fifty science clubs already were in operation and about fifty high-school principals and teachers indicated strong support for more. Tangentially, the committee, supported by President Freer, issued a statement to all members of the VAS in which the establishment of science clubs was listed as a new objective of the Virginia Academy of Science.¹¹⁸

As the second stage of the strategy, the committee sought to bring the issues of science clubs to not only educators, but also to the public at large. To this end, E.C.L. Miller arranged to be keynote speaker for the October meeting of the Virginia Education Association, addressing the audience on "Why A Science Club." Following Miller's positive reception, the Virginia Academy of Science sponsored H.H. Sheldon of the American Institute of Science and Engineering to deliver a speech on the many benefits of science clubs before the Thanksgiving meeting of the Virginia Education Association. After his talk, Sheldon joined President-elect George Jeffers and Sidney Negus to discuss the science club movement live over a Richmond-based radio station (WRVA).¹¹⁹ That same month, an article by Jeffers titled "Science Clubs in the Schools" appeared in the Virginia Journal of Education.¹²⁰

Given the enthusiasm generated thus far, the committee felt encouraged in January of 1940 to ask the State Department of Education to issue a second letter to the high-

¹¹⁸Minutes of the VAS Meeting," May 5-7, 1940. Special Collections, Virginia Tech.

¹¹⁹Over Christmas, 1939, Jeffers would give one more solo radio address on the subject of science clubs.

¹²⁰George Jeffers, "Science Clubs in the Schools," Virginia Journal of Education (November, 1939).

schools extolling the value of science clubs as an important supplement to science education.¹²¹ Shortly thereafter, committee member Hubert Davis contacted the science club sponsors, inquiring whether or not they would be interested in a Virginia Academy sponsored Junior Academy.¹²² Their overwhelmingly positive response led the Virginia Academy to invite the sponsors to the annual meeting at Virginia Military Institute.

Anticipating detailed questions concerning the exact nature of a junior academy from the sponsors and the Academy members, the VAS invited Otis W. Caldwell, Director of the Junior Academy Program in the United States for the AAAS, to address their concerns. Caldwell's affirmation of junior academies coupled with the recommendations of Bird's committee encouraged Council to accept the motion made by George Jeffers and seconded by Rodney Berry to authorize the formation of a Junior Academy, "leaving the details to the incoming president of the Academy and to the Council."¹²³ The new President, Wortley F. Rudd set the first organizational meeting for June 5, 1940.

To provide guidance for the new Junior Academy, President Rudd and those present at the June meeting--Miller, Bird, Jeffers, Davis, and Negus--instituted a Junior Academy Committee divided into two groups: an organization committee, composed of science club sponsors and a sponsoring committee, comprised of members of the Virginia Academy of Science.¹²⁴ During the next eleven months, the Junior Academy Committee

¹²¹Lloyd Bird to State Department of Education, January 11, 1940. Special Collections, Virginia Tech.

¹²²Hubert Davis to Science Club Sponsors, January 19, 1940. Special Collections, Virginia Tech.

¹²³Proceedings of the Virginia Academy of Science, 1939-40. Special Collections, Virginia Tech.

¹²⁴Members of the former Committee were: Chairman Hubert Davis, Matthew Whaley High-School, Williamsburg; Vice-Chairman W.W. Hofsinger Jefferson High-School, Roanoke; Secretary, Francis Allen, Pulaski High-School, Pulaski; J.T. Christopher, George Washington High-School, Danville; Elizabeth

outlined a working constitution, established membership guidelines for science clubs, printed the charter of the junior academy, and developed a working relationship with the Long Range Planning Committee.¹²⁵ Finally, the Junior Academy Committee spelled out the three chief objectives of the new organization:

1. To discover and develop scientific ability through science clubs in secondary schools
2. To foster fellowship among its members and the members of the Virginia Academy of Science
3. To develop a background among its members which will eventually result in leadership in the Virginia Academy of Science.¹²⁶

On May 3, 1941, Chairman Hubert Davis convened the first annual meeting of the Virginia Junior Academy of Science at the George Wythe Junior High School Building in Richmond. Called together in conjunction with the meeting of the Virginia Academy of Science, seventeen affiliated clubs were present--their membership totaling over two hundred high-school students. The impressive turnout--coupled with events such as the address of keynote speaker Austin Clark (Curator of Echinoderms at the United States National Museum), the Science Quiz Program in which students from various high-schools answered questions over the radio, and the morning and afternoon sessions of the Junior

Gillespie, Maury High-School, Norfolk; C.G. Gibbs, Floyd High-School, Floyd; William Kell, Clarksville High-School, Clarksville; H.S. Holmes, Petersburg High-School, Petersburg; Martha Lipscomb, Thomas Jefferson High-School, Richmond; and W.I. Nickels, Lane High-School, Charlottesville. Members of the latter Committee were: Chairman John Alex Rorer, University of Virginia; Vice-Chairman George Jeffers, Farmville Teacher's College; L.F. Addington, Wise High-School, Wise; Executive Secretary Francis Chase, Virginia Education Association, Richmond; and Dr. I.A. Updike, Randolph-Macon College.

¹²⁵Proceedings of the Virginia Academy of Science, 1941-42. Special Collections, Virginia Tech; Thelma Heatwole, "Report of the Virginia Junior Academy of Science to Virginia Academy of Science History Committee," Fall 1965. Special Collections, Virginia Tech.

¹²⁶Thelma Heatwole, "Report of the Virginia Junior Academy of Science to Virginia Academy of Science History Committee," Fall 1965. Special Collections, Virginia Tech.

Academy--ensured a successful first meeting. Seeking to expand the potential of the Virginia Junior Academy of Science (VJAS), at the annual business meeting, Council agreed to affiliate the VJAS and its member clubs with the American Institute for Science and Engineering. Within the affiliation, the American Institute pledged to "conduct all business with Virginia clubs through the Junior Academy organization, to help finance the organization, and to cooperate in any way possible in promoting science club activities."¹²⁷

A mere six months later, the Virginia Junior Academy of Science received disheartening news: the American Institute withdrew all support for science clubs outside the City of New York in order to support the burgeoning national organization, Science Clubs of America.¹²⁸ At its Council meeting in January of 1942, the VAS decided for the time being to forego affiliation with Science Service--a national organization devoted to offering administrative assistance to local and regional junior science clubs--opting instead to provide "in-house" financial and administrative support for the twenty-one science clubs--approximately five hundred members--affiliated with the Junior Academy of Science. This policy lasted one year. By the end of January, 1943, Sidney Negus had negotiated an acceptable agreement between Science Clubs of America and the Virginia Junior Academy of Science. The new policy provided any science club in Virginia with joint membership in the two organizations upon affiliating with either one. Thus, the young members could receive both the attendant benefits of an esteemed national club as well as state-wide support.¹²⁹

¹²⁷Thelma Heatwole, "Report of the Virginia Junior Academy of Science to Virginia Academy of Science History Committee," Fall 1965. Special Collections, Virginia Tech.

¹²⁸This organization was also referred to as Science Service.

¹²⁹Sidney Negus to Members of Council, January 27, 1943. Special Collections, Virginia Tech.

While wartime restrictions prohibited annual meetings in 1943, 1944, and 1945, the Virginia Junior Academy of Science Committee continued to explore the nature of its mission. Instrumental in his efforts to keep the VJAS and science education in Virginia moving forward, chair Hubert Davis worked tirelessly throughout these three years. Not only did Davis continue to impress upon the high-school students throughout the state the necessity of entering such contests as the National Talent Search, but he continued to recommend to Council ways to improve science education and the Junior Academy. Encouraged by the Research Committee's annual prize (beginning in 1943) of fifty dollars to an outstanding science club, Davis asked Council to consider establishing new awards, including "a scholarship to be awarded to a science club sponsor for the most outstanding work with a science club during each year. That this scholarship be large enough to enable the sponsor¹³⁰ to attend some outstanding institution and do graduate work for a full summer in the field of science."¹³¹ Several years later in 1946, Davis' suggestion to award the sponsors began to bear fruit: science supporter A. R. Nance partially funded a seventy-five dollar scholarship; the University of Virginia donated sixty dollars to the Mountain Lake Service Fellowship; and William and Mary fully funded the one hundred dollar Donald D. Davis scholarship.

At the same time Davis championed another goal: the organization of a Virginia Science Talent Search. Only one year later, Council gave authorization, stating:

¹³⁰Vera Remsburg points out that among the more involved sponsors were: Vada Miller, Susie Floyd, Lena Artz, J. Francis Allen, W.I. Nickels, J.L. Jarman, Martha Lipscomb Walsh, Morris Tischler, J.E. Reitz, Frank Kizer, and Mae Jennings in Vera Remsburg, "VJAS-Its Beginning and Development from 1941-1973," May 2, 1973. Special Collections, Virginia Tech.

¹³¹Hubert Davis, notes of "Report to VAS Council" 1944. Special Collections, Virginia Tech. Also, the Research Committee prize of fifty dollars was later renamed the E.C.L. Miller award.

in the event national legislation is enacted to aid in education of young scientists, the Virginia Science Talent Search experiment, if it has accomplished nothing else, will have demonstrated the progressive attitude of the State Department of Education, the Virginia Education Association, the City of Richmond proper, and the Virginia Academy of Science toward science education at the high-school levels.¹³²

Interested high-school students were interviewed at the newly established Regional Science Open Houses, held at various universities and colleges throughout the state to promote “science in action” through lectures, laboratory visits, and exhibits. The early success of this program can be measured by the fact that by its second year, in 1948, each of the fifteen top candidates received assistance in obtaining scholarships at various colleges.¹³³

When Davis resigned as chair of the VJAS Committee in 1947, twenty-four schools were members, represented by eighteen science clubs and sixteen sponsors. All total, over five hundred student members participated in the VJAS. In order to reach these students within their individual high-schools, the VJAS Committee, chaired by F.G. Lankford in 1948 and Boyd Harshbarger in 1949, instituted the Speaker’s Bureau to compile lists of available speakers from the academic and industrial fields to address interested high-schools throughout the state. While the idea was sound, implementation was difficult. Often, such speakers were objected to by high-school principals claiming that the speakers tried to “sell the idea of science to high-school students” as opposed to having the students “naturally” come across scientific ideas in textbooks and through classroom lectures. By 1951, chair of the Bureau, S.S. Obenshain of Virginia Polytechnic and State Institute

¹³²Sidney Negus, Proceedings of the Virginia Academy of Science, 1945-46. Special Collections, Virginia Tech.

¹³³Proceedings of the Virginia Academy of Science, 1947-48. Special Collections, Virginia Tech.

reported to the VAS that “quite often the opportunity to make use of a competent speaker was simply ignored.” Despite such a cool reception, the VJAS Committee decided to continue the Speaker’s Bureau well into the new decade.¹³⁴

In its efforts to create and then to sustain the Junior Academy of Science, the VAS revealed what was best about itself. It is obvious from this case that a genuine interest in and commitment to science education characterized the Virginia Academy. The effort to develop the Junior Academy required two key pieces to be in place: a leader of considerable vigor within the Senior Academy, which was certainly true of Hubert Davis’s role in this matter, and a receptive and cooperative group outside the VAS with which to work, which the teachers readily supplied.

Science Museum of Virginia

If the VAS’s interest in science education was deep and abiding, so too was its commitment to a museum of science that would be one of the arms of a state-wide effort to help with the public understanding of science. Beginning in 1933, the Virginia Academy of Science began what would turn out to be its long campaign to establish just such a museum. As first Chair of the Museum Committee, George Jeffers set a precedent during

¹³⁴Virginia Journal of Science, New Series, II(1952): 249. Special Collections, Virginia Tech. Before closing out the Education Section, it is important to note that efforts continued outside of working with the high-school students to promote science clubs and chapters. In 1950, the Academy found itself with two “Official Collegiate Chapters” when the petitions for affiliation from groups at Virginia Military Institute and Virginia Polytechnic were approved. See Virginia Journal of Science, New Series I(1950), p. 300. However, college participation was not to become a major focus for the VAS. The following year the collegiate members, though not a particularly strong group, decided to continue their activities for another year. It was agreed that a definite effort would be made to attract new members, and that a separate section meeting with papers would be held at the 1952 meeting. See Virginia Journal of Science, New Series II(1951), pp. 281-282.

the 1930s, with his tireless efforts to persuade the General Assembly of the benefits of a state museum of science. Jeffer's lobbying had no effect, however, which is not surprising, given the essentially rural character of the Commonwealth and its adherence to the tenets of the "Byrd Machine." It was not until the early 1940s, when the beginnings of the war effort made apparent the power of science and technology that such efforts had much of a chance to bear fruit.

In early 1941, the Museum Committee led by President Rudd, President-elect George Jeffers, and W.T. Sanger, President of the Medical College of Virginia, mounted another campaign, contacting individual political leaders throughout the Commonwealth. Jeffers took the lead, writing to then-Congressman Colgate Darden of Norfolk, an announced candidate for the governorship. "Mr. Darden," began his letter of February 3, "In thinking about your plans for the future progress of Virginia, I hope you will be able to consider the advisability of a State Museum of Science." Jeffers continued, pledging the Virginia Academy's support to the proposed endeavor and ending by stating "I am not writing any other candidate."¹³⁵ Darden immediately responded, thanking Jeffers for his letter and expressing his high regard for the ideas of the Virginia Academy of Science.¹³⁶ President Sanger followed suit in a letter dated February 12, outlining for Governor James Price the importance of establishing a "great museum for Virginia."¹³⁷

¹³⁵George Jeffers to Colgate Darden, February 3, 1941. Special Collections, Virginia Tech.

¹³⁶Colgate Darden to George Jeffers, February 6, 1941. Special Collections, Virginia Tech.

¹³⁷William T. Sanger to James Price, February 12, 1941. Special Collections, Virginia Tech.

Yet it was not until George Jeffers successfully enrolled Senator Robert K. Brock of Farmville that members of the legislature seriously considered the idea of a science museum. A self-proclaimed “patron of science,” by February 16, 1942, Senator Brock had corralled enough votes to pass Senate Joint Resolution #19, authorizing the creation of a “State Commission on the Advisability of Establishing a State Museum of Science. . . to consist of one member of the Senate to be appointed by the President of the Senate, one member of the House of Delegates to be appointed by the Speaker of the House of Delegates, the President of the Virginia Academy of Science, and two persons appointed by the Governor.”¹³⁸ Senator Brock and Delegate Henry Johnson of Hylas represented the legislature, while newly-elected Governor Darden appointed George Jeffers and William Sanger. Acting President of the Virginia Academy of Science Marcellus Stow also served. The new commission chose Jeffers as chair and Sanger as secretary.

One year later, the commission presented the fruits of their labor to the governor and the General Assembly.¹³⁹ Based on data culled from all major science centers or ‘museums’¹⁴⁰ in the South, numerous correspondence with Vail Coleman, an expert in Museum Studies at the Smithsonian Institution, and a public hearing held in the State Capitol on July 22, the commission recommended that “the State of Virginia establish an independent institution, with its own board of trustees, to be known as the Virginia Museum of Science. . . .” Further, the commission concluded that the new science

¹³⁸Acts of Assembly, p. 989, 1942. In Special Collections, Virginia Tech.

¹³⁹To review the complete report see Senate Document No. 3, “Museum of Science Advisory Commission: Report of the Commission to the Governor and General Assembly of Virginia,” December 1, 1943. Special Collections, Virginia Tech.

¹⁴⁰Science museums, *per se*, did not exist in the south. Wings of museums, however, were devoted to science, and centers in which students could explore scientific ideas were available.

museum should be located in Richmond, “preferably in the area of the Capitol Square” and that “a board of nine trustees be provided for the new museum.” Lastly, the commission requested the state appropriate \$125,000 for construction of the building and equipment, \$25,000 annually for operation and maintenance, and \$50,000 for the new building site.¹⁴¹

In describing their conception of the proposed science museum, the commissioners stressed function, projecting that the “older, curio-type of museum where exhibits are ‘stored’ is outmoded.” A modern museum of science needed to be a science center, “a veritable beehive of activity” for all ages. Young students needed to be fully cognizant of the natural resources of Virginia, and educational exhibits and programs held at the museum could accomplish such ends. In addition, considerable outreach to citizens of the state could be effected through travel exhibits, publications, group trips to the museum, and other related activities. Finally, the commissioners pointed out that “many science and education departments of the Virginia government, university and college professors in general, and businesses whose livelihood were tied to the successful promotion of science and technology could be counted upon to cooperate with ideas, exhibits, [and] patronage.”¹⁴²

Given the high praise the commission’s report received, one might expect the legislators to take immediate action. Yet three years passed before the unanimous recommendations of the commission were even accepted by the General Assembly and nearly twenty more before overtures were made in that direction. There is in the archives

¹⁴¹Senate Document No. 3, “Museum of Science Advisory Commission: Report of the Commission to the Governor and General Assembly of Virginia,” p. 8, December 1, 1943. Special Collections, Virginia Tech.

¹⁴²Senate Document No. 3, “Museum of Science Advisory Commission: Report of the Commission to the Governor and General Assembly of Virginia,” p. 7, December 1, 1943. Special Collections, Virginia Tech.

and the oral history no hint as to why this apparently successful effort simply stopped. One very likely reason is the deflection of so many people's energies because of the effort called forth by World War II. The war itself changed the face of Virginia more than anyone might have imagined in 1943; the returning veterans, who poured into the universities in great numbers, changed the nature of higher education. Mature, earnest, determined in their pursuit of the education they had earned by virtue of their service to their country, they were a kind of student new to Virginia professors, who found their energies absorbed by the educational demands. The younger, newer members of the professoriate, some of whom had the advantage of working for or studying with the European scientists who had fled Nazism, had very high expectations of themselves and their universities in terms of research. Another very likely reason is a tight state budget, placing funding for a museum on the back burner. It is probable, then, that these factors combined to push the project of the science museum very far into the background. It was not, however, entirely forgotten, and the museum's time finally would come as the decade changed.

VAS and Race

By the 1940s, racial inequities had become an issue within the southern culture, especially within the realm of education. As a mirror of the larger Virginia society, the Virginia Academy of Science reflected a membership which although it sounded receptive to black participation--indeed, it sounded encouraging of the potential membership of African-American scientists--did not support such claims with concrete actions. Responding to Alabama Academy of Science's President Ernest V. Jones' query whether or not blacks were prohibited from membership, 1944, Miller replied that there never had been a "policy as such." From time to time, papers had been read by "colored persons,"

yet there did not exist a way to determine how many blacks were members of the Academy. Miller continued by indicating that some social functions that mixed blacks and whites had created slight problems, but assured Jones that “in recent years we have been getting away from such occasions.”¹⁴³

Obviously, Miller gave Jones’ inquiry serious consideration: however, for only one week later he wrote again, relaying a recent conversation with Garnett Ryland, faculty member of the University of Richmond and a leader in the Interracial Commission of Virginia. According to Ryland, the best policy would be to “go along and treat colored people just as you would treat anyone else and not do much talking.” Although committed to reform, Ryland further advised: “[W]hatever you do or do not do, it will be a long and slow process . . . I know of no White person here in Richmond who is disturbed the slightest because the railroads charge colored people first-class fares and give them second-class service.”¹⁴⁴ Finally, Ryland criticized the attitude of the majority of southern people, commenting that “it will be humiliating when the Supreme Court comes along and tells the South how to behave. . . . Everyone goes blythly [sic] along and completely ignores it [inherent southern racism]. Against such a smug moral vacuum, I fear yours [the Virginia Academy of Science and the Alabama Academy of Science] would be a voice crying in the wilderness.”¹⁴⁵ Miller seemed to approve of Ryland’s suggestion to quietly treat “colored” folk with the same decency as “anyone else.”

¹⁴³E.C.L. Miller to Ernest V. Jones, January 13, 1944. Special Collections, Virginia Tech.

¹⁴⁴E.C.L. Miller to Ernest V. Jones, January 13, 1944. Special Collections, Virginia Tech.

¹⁴⁵E.C.L. Miller to Ernest V. Jones, January 26, 1944. Special Collections, Virginia Tech.

Miller shared his correspondence with Sidney Negus, revealing his surprise that Alabama still did not accept “Negro members.”¹⁴⁶ Science, he challenged, should take the lead in helping with the racial problem. Clearly, Miller and others in the Academy felt that their organization should be inclusive, easing the tensions of the “racial problem,” rather than exacerbating them. However, in advocating a “don’t ask, don’t tell policy,” the VAS exemplified the attitude of the norm rather than that of an association willing to charge forward in the face of injustice. Miller’s inability to account for the number of African Americans in the organization belies an ignorance that was certainly by choice. With only several black institutions of higher education in Virginia, the race of membership drawn from their faculty would have been apparent. Furthermore, racial tensions were so great in Virginia in the 1940s, that any black participation would have been noted. For example, a letter from Lubow Margolena Hanson to Foley Smith written in 1949, several years after Miller’s correspondence with Jones, asked: “Will you please let me know whether an attempt has been made to arrange the Yearly Meetings of the Academy at a place where all members could meet and visit without embarrassment?” A handwritten note attached to the letter indicated that she was a “Negro member.”¹⁴⁷ Hanson’s letter also underscored the perennial difficulty in finding lodging and dining facilities for African Americans in a legally segregated state. A real commitment on the part of the Virginia Academy of Science to including black members would be reflected by a paper trail in support of locating suitable accommodations. Such evidence is not available.

This is not to argue that the VAS did not make gestures towards inclusion. Indeed, in 1949, Morgan E. Norris, a black professor of medicine at Virginia Union University

¹⁴⁶E.C.L. Miller to Sidney Negus, 1944. Special Collections, Virginia Tech.

¹⁴⁷Lubow Margolena Hanson to Foley Smith, November 19, 1949. Special Collections, Virginia Tech.

(VU) wrote to state chemist J.C. Jones asking for a statement attesting to the fact that the VU science department was in need of new equipment. As state chemist, Jones felt it would be unethical for him to write the requested statement, so he forwarded the letter to Harshbarger. One week later, Harshbarger contacted Norris, writing:

I was interested to learn of your activities in furthering science among the Negro race. The success which the Negro has made in science in Virginia has been phenomenal . . . We in the Virginia Academy of Science have never distinguished according to race. . . In visiting Virginia Union, I was impressed with the vigor and quality of work of this group . . . a strong science department at Virginia Union might be the stimulus needed to produce another Carver and to give the race the recognition due them.¹⁴⁸

Viewed in context, Harshbarger's words of praise were an honorable and well-meaning attempt at racial equality. Indeed, affirming comments emphasizing the accomplishments of African Americans are so rare from this period of Virginia's history that Harshbarger's intent--though patronizing to late twentieth-century ears--must have been of the highest order.

Part III. Concluding Remarks

As this period drew to a close, the VAS was heading into an era of civic and racial strife within the Commonwealth. Certainly there were gains to be capitalized upon: the James River Basin project was no small achievement, the VJAS was an exciting and a very successful venture, and the Academy itself had survived this turbulent period as well. The failure to boot home the science museum did not seem to be of major concern, but, given

¹⁴⁸Boyd Harshbarger to Morgan E. Norris, June 16, 1949. Special Collections, Virginia Tech.

the early evidence of political support, the museum still had the potential for coming into being. But the small cloud of which the correspondence among Miller, Ryland, and Jones gave evidence was, in fact, the herald of a coming storm.

CHAPTER THREE

Constructing a Balance:

Envisioning Virginia Science in the Era of Massive Resistance, 1953-1963

From 1953 to 1963 the Virginia Academy of Science grappled with the social, economic, and political change that marked one of the South's most tumultuous eras. Within the Commonwealth, race relations and the gradual move away from agrarianism toward progressivism combined to create an environment in which scientists and science educators sometimes found their professional aspirations at odds with their personal beliefs. Many, for example, found themselves in the difficult position of ignoring racism to further their personal agendas or, at the very least, maintain the status quo. While maintaining a delicate balance between the professional and the personal, the Academy often presented itself to the public as steadfast in purpose, reliable, and in complete agreement, while simultaneously experiencing uncertainty, controversy, and debate within the confines of its organizational walls.

Part I. Setting the Stage: Virginia, 1953-1963

Shortly after the thirty-second meeting of the Virginia Academy of Science adjourned, the United States Supreme Court, on May 17, 1954, handed down a 9-0 decision that struck at the heart of the social, economic, and political foundation of southern society. Writing for the Court in the case of Brown versus the Board of Education of

Topeka, Chief Justice Earl Warren stated: “We conclude that in the field of public education the doctrine of ‘separate but equal’ has no place. Separate educational facilities are inherently unequal.”¹ While in hindsight this decision might have been expected, for southerners it came as a bolt out of the blue. Its full impact would take years to unfold, and the changes in education were to affect all educational institutions, although, of course, the first effects were felt by the public school systems.

For white Virginians--who by and large asserted and genuinely believed that race relations in the Old Dominion were good (and in comparison to other southern states, such a view held considerable truth)--the Supreme Court’s decision was unconscionable: an outright threat to not only white supremacy, but also to the entire caste system and culture upon which the Old Dominion rested.² As was the case throughout the south, Virginians were class-conscious, but unlike some parts of the deep south, Virginians tended to be aware of the moral tension implied by the existence of the segregated society.³ The Commonwealth’s revered founding father himself, Thomas Jefferson, wrestled with the parent of this issue over the span of his long life, only to come to the not-so-admirable position that the economic system required the continuance of a system obviously morally repellent. Jefferson’s divided mind in this matter was to repeat itself over the generations, and was, in fact, present in the person of Thomas B. Stanley, who occupied the

¹For an overview of the Brown decision in Virginia, see Raymond Wolters, The Burden of Brown: Thirty Years of Desegregation (Charlottesville: University of Virginia Press, 1984).

²In citing the reasons for decent race relations in Virginia, politicians often pointed to both the strong anti-lynching law and the guarantee of the right to vote provided payment of poll taxes was up-to-date. For brief historical overviews of the time period, see Louis Rubin, Jr., Virginia: A History (New York: W.W. Norton & Company, Inc., 1977) and Virginius Dabney, Virginia: The Old Dominion (New York: Doubleday & Company, Inc., 1971).

³See Virginius Dabney, Virginia: The Old Dominion (New York: Doubleday & Company, Inc., 1971) for a discussion of evidence of this “special consciousness” of Virginians.

Governor's Mansion in Richmond at the time of the Brown versus Board of Education decision.

Only a few months into his term as Governor of Virginia, Thomas B. Stanley's initial response to the decision was non-committal, as he remarked that he would "calmly and dispassionately" study the situation before recommending any action on behalf of the state. Despite these words, it seems likely that inwardly, this easy going son of a Confederate veteran must have been reeling--not only because of the moral conflict he felt as a partial result of the Brown versus the Board of Education decision, but also from the realization that his four years in office were not likely to be smooth. And smooth his term would not be. The statesmanlike position implied by Stanley's first words was greeted with instant disapproval by the Byrd group, whose strong feelings made themselves felt immediately, within both the Commonwealth as well as the governor's office. Byrd's overall movement to the right had been mirrored by his followers, who were in no mood to view this latest decision by the Supreme Court as anything other than an attack on states' rights.⁴

Urged on by the Byrd organization, by late June 1954, Governor Stanley had moved away from a "calm and dispassionate approach," announcing that he would use all means at his disposal to continue segregated education in Virginia. Within a month, he had appointed a thirty-two person Commission on Public Education to design Virginia's answer to the recent Court Decision. Led by Garland Gray, the "Gray" Commission--all white, all male, and without any trained educators--recommended that Virginia give school

⁴For a detailed analysis of Byrd's movement during this period, see J. Harvie Wilkinson III, Harry Byrd and the Changing Face of Virginia Politics, 1945-1966 (Charlottesville: The University of Virginia Press, 1968). Also, see James Ely, The Crisis of Conservative Virginia: The Byrd Organization and the Politics of Massive Resistance (Knoxville: University of Tennessee Press, 1976).

boards complete discretionary power to assign students to schools for reasons other than race, such as gender or intelligence tests. Furthermore, in the event of school closings or federally-mandated integration, the commission introduced the idea of tuition grants that would enable the students to attend private schools. African Americans and civil rights advocates, not surprisingly, saw the recommendations as thinly-veiled attempts to protect the status quo, while moderates argued that such actions would irrevocably harm public education in the Commonwealth.⁵

In response to increasing pressure of the federal government, on July 2, 1956, Governor Stanley, Senator Byrd, and their cronies met in secret to formulate Virginia's "last-ditch" response. Three weeks later, on August 27, the governor called for a session of the General Assembly in which he proclaimed that in response to the "overwhelming sentiment of the people of Virginia" and to events "threatening to destroy our constitutional system" he was urging a "total resistance line."⁶ Under the new "Stanley plan," four steps were put in place to defeat integration. First, an appointed pupil placement board would assign children to specific schools, based on considerations other than race. Second, any school which sought to integrate, whether under a court order or not, would be closed. Third, tuition grants were funded for students to move into the private school system. And finally, the state would completely shut off its funds to any locality that integrated its schools. The movement that came quickly to be known as "Massive Resistance" had come of age in Virginia.

⁵For information on Almond's politics during this period see Benjamin Muse, Virginia's Massive Resistance (Bloomington, Indiana: University of Indiana Press, 1961). See Robbin L. Gates, The Making of Massive Resistance: Virginia's Politics of Public Desegregation, 1954-1956 (Chapel Hill: University of North Carolina Press, 1964). See also Ben Beagle and Ozzie Osborne, J. Lindsay Almond: Virginia's Reluctant Rebel (Roanoke, 1984).

⁶Edward Younger and Jane Tice Moore, eds., The Governors of Virginia, 1860-1978 (Charlottesville: University of Virginia Press, 1982), p. 344.

In 1958, J. Lindsay Almond, jr., with the strong support of the Byrd machine, took over the Gubernatorial office from a beleaguered Governor Stanley. Many saw Almond, “one of segregationist’s ablest legal advocates” and a former Congressman and State Attorney General, as the perfect choice to uphold Virginia’s Massive Resistance.⁷ Such hopes were misplaced, however, for while the public schools did complete the 1957-1958 year without forced integration, by summer it appeared as if Norfolk, Arlington, and Charlottesville would be the first cities to face desegregation in September. Thus, it came as a surprise to Almond and his advisors when in September the first Massive Resistance “showdown” came from the Shenandoah Valley’s Warren County at a small school with a tiny black population. Four days after the Supreme Court ordered the school to integrate, Governor Almond closed its doors. And, shortly thereafter, similar incidents induced him to seize and close several schools in Charlottesville and Norfolk. By the end of the forced closings, approximately thirteen thousand students were without classrooms.⁸

On January 19, 1959, both the Virginia Supreme Court and a three-judge federal district court struck down the legality of Massive Resistance. Upon hearing the news of their decision, Governor Almond initially stood firm on his segregationist philosophy. He promised to the citizenry that he would “not yield to that which I know to be wrong and will destroy every rational semblance of education for thousands of the children in Virginia.”⁹ These were smug words, the kind of sentiments one might have expected from

⁷Edward Younger and Jane Tice Moore, eds., The Governors of Virginia, 1860-1978 (Charlottesville: University of Virginia Press, 1982), p. 351; For a biography of Governor Almond, see Ben Beagle and Ozzie Osborne, J. Lindsay Almond: Virginia’s Reluctant Rebel (Roanoke, 1984).

⁸See Benjamin Muse, Virginia’s Massive Resistance (Bloomington, Indiana: University of Indiana Press, 1961).

⁹Edward Younger and Jane Tice Moore, eds., The Governors of Virginia, 1860-1978 (Charlottesville: University of Virginia Press, 1982).

Almond, given his record. Yet slightly over a week later and without warning his inner circle, the Governor convened a meeting of the General Assembly in which he laid down his arms before the forces of integration, explaining to the stunned legislators that the state was legally powerless to enforce strict segregation in public schools. Almond turned away from the conservatives whose support had carried him into office, declaring that most of the state's segregationist efforts had been invalidated by courts at both the state and the federal level, and that "the police power cannot be asserted to thwart or override the decree of a court of competent jurisdiction, state or federal."¹⁰ Throughout the rest of his term, Governor Almond made half-hearted attempts to adhere to the Brown decision, including the appointment in February of 1959 of the Perrow Commission--ironically, devoid of African Americans--to develop a school integration strategy. Such efforts notwithstanding, when Almond left the governorship in January of 1962, less than one percent of black students attended school with their fellow whites.¹¹

For some time, the situation remained the same. Massive Resistance, unfortunately, became the "watchword" of the 1950s, controlling the political, economic, and social life of Virginia and diverting attention from more pressing needs. The uproar caused by integration, both within the body politic and in the social order, caused the Commonwealth's leadership to ignore the fact that Virginia was in the midst of an economic and social metamorphosis as the region became more and more industrial and less rural. At the same time, and of increasing concern to people in education, Virginia was ranked near the bottom of the forty-eight states in education, mental health, and welfare expenditures because of the legislature's appropriation strategies. For the legislature

¹⁰Francis M. Wilhoit, The Politics of Massive Resistance (New York: George Braziller, 1973), p. 148.

¹¹Edward Younger and Jane Tice Moore, eds., The Governors of Virginia, 1860-1978 (Charlottesville: University of Virginia Press, 1982), p. 357.

remained true to the ideas of fiscal prudence that were such a central part of the Byrd philosophy, and the strong basis of Byrd support in the rural areas of the state did nothing to change the attitude of the state toward fiscal matters.

While there certainly was national interest in the dispute over integration in the south, as a whole the country was in good spirits, buoyed by a confidence proceeding from the successful conclusion of the Second World War and the revitalization of the country by the vigor of the veterans who had emerged from higher education to enter the work force. That there was something wrong with this self-complacent picture was brought home to the stunned country--indeed, to the world as a whole--when the Soviet Union put a small satellite, Sputnik I, into orbit. Americans everywhere felt both challenged and worried about its implications for the future well-being of this country. The confidence many people appeared to have held in the United States' ability to remain ahead of or on a scientific and technological par with the Soviets was, in actuality, shaken. This fact is revealed clearly in an oft-repeated incident of the time. As the story goes, a reporter contacted the United States Space Agency and inquired as to the status of the American Space Program. Replied the 'girl on the other end of the line,' "Sir, are you calling for information or with information."¹²

As later historical studies demonstrate, much of the public fear was unfounded.¹³ In the later 1950s, however, it seemed clear that the Soviets had "presented" the United States with a formidable challenge, to be met in the area of the sciences. As such, it was

¹²Eric Goldman, The Crucial Decade and After (New York: 1960), p. 264.

¹³See Daniel J. Kevles, The Physicists: The History of A Scientific Community in Modern America (New York: Knopf, 1978), pp. 435-464. Sally Gregory Kohlstedt and Margaret W. Rossiter, (eds.), Historical Writing on American Science: Perspectives and Prospects (Baltimore: The Johns Hopkins University Press, 1985).

apparent to the members of the VAS that increased support for higher education in the sciences was at hand.¹⁴ For spurred on by a fear of the scientific potential of the East, the federal and state governments, including Virginia, seemed ready to pour intellectual and financial support into strengthening America's scientific and technological infrastructure.¹⁵ Alerting his membership to the scientific promise of the times, Virginia Academy of Science President William Guy wrote to the Council in early 1958: "This year of the Sputniks will be a particularly significant one for the future of science in our state, as on all sides, we see a quickened interest in the development of our scientific potential."¹⁶

Thus from the supposed cloud posed by the successful venture of the Soviets came a silver lining for the Virginia Academy of Science, and for the scientific community in general. The atmosphere of excitement, the ready availability of funding, the creation of science-based institutions that would change the nature of the communities in which they were placed, and the suddenly-ample sources of research dollars for academic scientists initiated a period in which the members of the VAS expected to play an increasingly important role in the Commonwealth. The policies of the Byrd machine were to change and give way before the new day. It was on this shining future for science that the VAS would focus over the coming decade.

¹⁵It is important to note that Sputnik *per se* did not galvanize the leaders in Virginia. Rather, Virginia was already increasing its expenditures in science and technology, and Sputnik merely reinforced their actions and perhaps increased the rate and level at which the expenditures took place.

¹⁶Virginia Journal of Science 9(1958), pp. 1-2.

Part II. Sections, Committees and Related Events

Overview

With the ever increasing interest in science and technology within the Old Dominion, the Virginia Academy of Science entered its fourth decade committed to increasing the fruit of science. In a message to the members in 1953, President Allan Gwathmey expressed such sentiments to the Virginia Academy of Science when he offered the following charge:

The time is now propitious for scientists in Virginia to make significant contributions to knowledge. Because of our agricultural background and because of a half-century of impoverishment after the Civil War, it was extremely difficult for Virginia in the past to develop great centers of scientific scholarship. . . . The background work has been done, however, and the stage is now set for Virginia to win a position of real scientific leadership in the nation. There is only one way by which a region can accomplish this and that is the hard way of making distinguished contributions to scientific knowledge. The discovery of new scientific knowledge must be the spearhead of our scientific activity. The potentialities of the future lie largely in the undiscovered laws of nature all around us.¹⁷

Membership numbers remained strong throughout the fourth decade of the Virginia Academy of Science--from 973 in 1953, to 1022 in 1959, before finally settling at 1114 in 1963--and sections continued to thrive. Twelve sections participated in the annual meetings. The original Sections of Biology, Chemistry, and the trio of Astronomy, Mathematics, and Physics remained strong and unchanging in objectives. Attendance consistently reached high numbers, as scientists from all professional levels--graduate students, instructors, and professors--delivered and listened to scholarly papers.

¹⁷"A Message to the Members From the President," May, 1953. Special Collections, Virginia Tech.

Not all sections, however, retained their original objectives. The Psychology Section, for instance, underwent several transitions. In 1948 this section had voted to affiliate with the American Psychological Association as a state psychological association. Over the next eight years, however, it increasingly became evident that “the objectives and functions” of a state academy of science were at cross purposes with a state psychological association. Accordingly, at the annual VAS meeting in 1956, Council approved the following motion: “That the Psychology Section of the Virginia Academy of Science approve and sponsor a Virginia Psychological Association and that meeting be held after adjournment to organize such an association.”¹⁸ As the result of this formal maneuver, members of the Psychology Section were able to enjoy the benefits of both a general state-wide association and the more scholarly interests of the VAS annual meeting.

The Virginia Academy of Science as a whole continued to award outstanding members as well. The Meritorious Service Award was first presented at the 1956 annual meeting in a regionally televised ceremony to Ivey F. Lewis and William Sanger. Approached by President Flory to present the first two VAS members with the high honor, Boyd Harshbarger asked long-time fellow member George Jeffers to confer on Ivey Lewis the first award. In describing Lewis as an “[a]ble investigator; master teacher, who with gentleness of manner, with kindness and understanding, has labored for the advancement of science and the welfare of mankind,” Jeffers conveyed the unanimous sentiments of the past and present membership of the Virginia Academy of Science.¹⁹ Harshbarger himself presented the second Meritorious Service Award to William Sanger, characterizing the twelfth President of the VAS as the “builder of the Medical College of Virginia.”²⁰ In

¹⁸“VAS, the Section of Psychology and Education,” Special Collections, Virginia Tech.

¹⁹Virginia Journal of Science 7(1956), p. 223.

²⁰Virginia Journal of Science 7(1956), p. 223.

1958 the award went to the American Tobacco Company Research Laboratory for its dedicated financial sponsorship of the Academy, and the following year to Senator Lloyd Bird for his faithful lobbying of the General Assembly on behalf of VAS initiatives. Awards were not given in 1957, 1960, or 1962. In 1963, Jesse Beams of the University of Virginia, Allan Gwathmey of the University of Virginia and Virginia Institute for Scientific Research, and Sidney Negus of the Medical College of Virginia shared the Virginia Academy's highest form of recognition for service.²¹ An award was not bestowed in 1964, and in 1965 Hiram Hammer received the last Meritorious Service Award before the VAS changed the name to the Ivey F. Lewis Distinguished Service Award.

In 1954, two early and dedicated leaders, E.C.L. Miller and Justus Cline, of the Virginia Academy of Science died. Both men had distinguished themselves by their long, faithful, and energetic service. Miller was the Academy's first Secretary-Treasurer, and his letters and memos, preserved in the archives, reflect both his on-going service and his creative energy. At the time of his death, Miller had served the VAS for twenty-six years. And, it was Justus Cline who gave inspiration to the James River project, which remains an important achievement of the scientific community for the Commonwealth. In July of that year, the VAS officially mourned the passing of these two major figures from the Virginia scene.²²

²¹Rodney Berry to Isabel Boggs, November 15, 1963. Special Collections, Virginia Tech.

²²Virginia Journal of Science (1954).

The Long Range Planning Committee

The Great Dismal Swamp Project

Shortly after the completion of the James River project, I. D. Wilson, with the support of chair Marcellus Stow, asked the Long Range Planning Committee to consider a new environmental project--one that would continue to introduce Virginians to the natural wonders of their state. In Wilson's view, a book on the Great Dismal Swamp and the Great Dismal Canal would hold great popular appeal. After all, everyone in the Commonwealth at least had heard tales of the legendary swamp. On another level, attempts by developers to persuade legislators to change the protected status of the swampland continued with increasing force, making it all the more critical that the citizenry understand the vital importance of the swamp to the region's ecosystem. A well-written book that combined the social history of the swamp with its natural history and an appeal to conservation should attract a good deal of interest from the general reader while simultaneously educate the public in proper resource use. Detailed discussion over the next year followed, and on February 10, 1952, Council authorized the Dismal Swamp Committee, chaired by J.T. Baldwin of the Department of Biology at William and Mary, to investigate the viability of such a project.²³ Baldwin accepted the chairmanship with the proviso that "a complete study in all phases be made which could be developed into a scientific treatise."²⁴

Baldwin enthusiastically engaged the project, immediately looking for financial backers. A short eighteen days later, he wrote Council that he had initiated contact with the

²³Virginia Journal of Science 3(1952), p. 246.

²⁴"1952 Minute Book," p. 22. Special Collections, Virginia Tech.

working with the Virginia Academy of Science on the Dismal Swamp project. In fact, the Center pledged \$25,000 for a five-year study of the swamp if the State Education Board matched that amount. Accordingly, the Richmond Area University Center included an item for the Dismal Swamp project as part of the general program in a funding application to the General Education Board. Although the board temporarily turned down the item, Baldwin remained hopeful, asserting that in the next round, the item would be submitted as a separate unit and not as a part of the general program of the University Center.²⁵

Unfortunately, Baldwin's assertion did not translate into action, and an immediate financial alliance with the University Center and the General Education Board did not take place.

However, Baldwin reported to Council that the Dismal Swamp Committee felt confident in its ability to produce a popular book on the swamp.

By May 2, 1952, Baldwin had located eleven collaborators--many of whom had done field work throughout the swamp and its canal. The manuscript would be divided into six sections, each representing an important facet of the swamp. Alexander Crosby Brown, a maritime historian and journalist living in Newport News, agreed to write the history section while Marcellus Stow of Washington and Lee signed on for the geology section.²⁶ S. S. Obenshain, professor of agronomy at Virginia Tech, offered to complete the section on soils and agriculture, and George Dean, a state forester from Charlottesville, volunteered for the section on forests and forestry. Baldwin himself would write the section on plants. The animal section was separated into four parts: insects, with particular

²⁵J.T. Baldwin to VAS Council, February 28, 1952. Special Collections, Virginia Tech.

²⁶Alexander Crosby Brown's involvement with this project led to his book Juniper Waterway: A History of the Albemarle and Chesapeake Canal (Charlottesville: University of Virginia Press, 1980), which was the last major work of his long career.

Richmond Area University Center, and that its cooperating institutions were interested in working with the Virginia Academy of Science on the Dismal Swamp project. In fact, the Center pledged \$25,000 for a five-year study of the swamp if the State Education Board matched that amount. Accordingly, the Richmond Area University Center included an item for the Dismal Swamp project as part of the general program in a funding application to the General Education Board. Although the board temporarily turned down the item, Baldwin remained hopeful, asserting that in the next round, the item would be submitted as a separate unit and not as a part of the general program of the University Center.²⁵

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²⁶Alexander Crosby Brown's involvement with this project led to his book Juniper Waterway: A History of the Albemarle and Chesapeake Canal (Charlottesville: University of Virginia Press, 1980), which was the last major work of his long career.

reference to butterflies, would be covered by Austin Clark; amphibia and reptiles, would be discussed by John Wood, a medical student at the University of Virginia; the subject of ornithology would be addressed by Joseph J. Murray, a Minister and ornithologist from Lexington, Virginia; and mammals were to be treated by Charles Hundley, Jr., mammalogist from the Smithsonian Institution.²⁷ The Dismal Swamp Committee decided that the book should consist of about 268 pages, with each section allotted a specific number of pages. The group felt that the manuscript should take no more than two years to complete. Furthermore, while Baldwin was voted to have the authority to rewrite, the group concurred that approval of the author should be sought prior to any editorial changes.²⁸

In October, 1952, Stow raised an important point at the Council meeting when he remarked that the combination of the swamp's decreasing water table and the program of reforestation by the Camp Manufacturing Company--a regional timber company--would gradually move the swamp away from its present natural configuration; thus, the VAS's project was nothing if not timely, and forward progress was essential. The following year, Walter Flory, chair of the Dismal Swamp Committee, reported that approximately one thousand dollars would be needed for continuation of the project. While this expenditure worried some, especially since the project should have been completed by this juncture, the funds were appropriated. To assuage such concerns, Baldwin said that two of the eleven collaborators had already submitted their manuscripts, and he personally knew that the others actively were working on their sections.²⁹ Stow commented that all signs pointed to

²⁷J.T. Baldwin to Collaborators on popular book on the Dismal Swamp, May 2, 1952. Special Collections, Virginia Tech.

²⁸J.T. Baldwin to Collaborators on popular book on the Dismal Swamp, May 2, 1952. Special Collections, Virginia Tech.

²⁹Virginia Journal of Science 4(1953), p. 182. Special Collections, Virginia Tech.

the book's publication by the end of the following year and that consequently there would be no need for any further grants-in-aid.³⁰

In reviewing the archival evidence, it appears that Stow's remarks were an accurate reflection of what he believed, based on the information he had been given. The same cannot be said of Baldwin, however, who clearly knew that the project was so far behind schedule as to have been in danger of complete failure. For the next fourteen years, Baldwin tap-danced around Council--alternating among promising completion of the manuscript, pleading an incredible workload, and complaining that the contributors' articles lacked high scholarship. While the record reveals Council's extreme concern with the state of the project, the unwritten code of gentlemanly conduct operating among VAS members most likely limited these people to taking no action other than to keep in place constant pressure on Baldwin to deliver on his promises. It would not be until 1967, a period to be covered in the next chapter of this work, that attempts began to relieve Baldwin of his duties as chair of the project.

All of the delays meant, unfortunately, that the project would not generate the same public or professional interest that was "contemplated" when Council first authorized the Dismal Swamp Committee.³¹ Despite Stow's concern over the changes in the ecological state of the swamp as time passed, Council did not alter the course or the objectives of the project. One wonders why Stow did not advocate the cessation of the project in light of the natural changes and the failure of the project to mature in a timely manner--after all, a primary objective had been to spur on wider conservation efforts among the public.

³⁰"Minute Book of VAS Council," November 8, 1953, p. 46. Special Collections, Virginia Tech.

³¹"Council Minute Book," October 12, 1952., p. 31. Special Collections, Virginia Tech.

Perhaps he felt that in this case, a completed study, however flawed, would be better than no study at all. And what other group existed that could better put together a team to analyze the flora, fauna, and ecological conditions of the swamp?

Seashore State Park

Ever cognizant of its original objectives, the Long Range Planning Committee steadily looked for ways to promote and publicize research within the borders of the Commonwealth. Under the guidance of Lynn Abbott, Jr. of the University of Richmond, at the annual meeting in 1956, the Committee introduced Council to a possible project: the “feasibility and desirability of acquiring Seashore State Park by the Virginia Academy of Science as a wilderness preserve for scientific study and/or where the Academy might provide a place for scientific instructional programs for science teachers and others.” Intrigued by the idea of sponsoring a new research facility, Council asked the Long Range Committee to set up a Seashore State Park Committee to examine the proposal in depth.³²

After analyzing various aspects of the proposal, the new Seashore State Park Committee recommended that--given the enormous financial commitment the acquisition would entail--the Virginia Academy not act alone in this endeavor. Instead, it suggested that a letter outlining the project and listing the committee’s final recommendations be forwarded to the governor, the director of Conservation and Development, and the Board of Commissioners of Conservation and Development. The recommendations included the following details:

³²“Minutes of Council,” May 12, 1956. Special Collections, Virginia Tech.

1. That the Seashore State Park be permanently maintained as a wilderness area and that it be used as a center for training science teachers and as a location for appropriate advanced study in the sciences.
2. It is suggested that the recreational area, including all buildings, be transferred on short-term, renewable lease to a state-supported college or university, or group of state-supported colleges or universities, to become the Seashore Science Training Center.
3. That the program for the Center be highly flexible but designed especially to train present and prospective teachers of science in the secondary schools.³³

After the Seashore State Park Committee looked at its own recommendations in a realistic framework, the members thought that perhaps the more powerful state agencies might consider joining forces with the Virginia Academy of Science. Council approved the Seashore State Park Committee's suggestions but agreed that a new committee be appointed to consult with the appropriate agencies before forwarding the proposal. The new committee was chaired by Henry Leidheiser, Jr., with Sidney Negus, William Guy, Ladley Husted, Marcellus Stow, Bruce Reynolds, and J.T. Baldwin, Jr. comprising the rest of its membership.³⁴ By the following month, Leidheiser's committee felt confident of the positive reception the Seashore State Park proposal would receive, and on November 2, 1956, the President and Council of the VAS forwarded the proposal to the governmental groups.³⁵

Response from the governmental agencies was encouraging. Over the next year, the Seashore State Park Committee tackled the next item on the agenda: to garner sufficient interest from the primary research universities and colleges in the state to warrant the establishment of a State Science Center. By mid-October, 1957, committee members had

³³"Minutes of Council," October 7, 1956. Special Collections. Virginia Tech.

³⁴"Minutes of Council," October 7, 1956. Special Collections. Virginia Tech.

³⁵"Minutes of Council," November 2, 1956. Special Collections, Virginia Tech.

visited the University of Virginia, Virginia Polytechnic and State University, and the College of William and Mary. Disappointingly, but in retrospect not surprising in view of the commitments of the institution, the response from the University of Virginia was far from enthusiastic. Commitments to the Mountain Lake Biological Station and Blandy Experimental Farm--major existing research centers sponsored by the University--claimed most of UVA's time and energy, and the university was not willing to extend any further by developing a State Science Center in Seashore Park.³⁶ William and Mary and Virginia Polytechnic Institute, on the other hand, were enthusiastic--so much so that the former institution's President, Alvin Duke Chandler, promised to take up the matter with the State Council of Higher Education.³⁷ Whether Chandler kept his word is not known, for further discussions or references to Chandler's mission are not to be found in the archival record or in oral interviews.

In March of 1958, a little over one year later, the Seashore State Park Committee reported to Council in Richmond that they had not taken further action on the proposal, although the Committee offered no reasons for their inaction that are of record.³⁸ At this juncture, the paper trail stops until June 13, 1960, when in a letter to Walter Flory, George Jeffers stated: "the Seashore State Park job has been shelved--probably permanently--and you need not concern yourself with it."³⁹ A recent interview with Walter Flory led to no further information.⁴⁰ It seems likely that the committee and the Council both recognized

³⁶Also in J.L. Vaughan, Provost of the University of Virginia, to Raymond Long, Commissioner, January 18, 1957. Special Collections, Virginia Tech.

³⁷"Minutes of Council," October 20, 1957. Special Collections, Virginia Tech.

³⁸"Minutes of Council," March 8, 1958. Special Collections, Virginia Tech.

³⁹George Jeffers to Walter Flory, June 13, 1960. Special Collections, Virginia Tech.

⁴⁰Walter Flory to Charlotte Webb. Interview. April 7, 1995. Winston-Salem, North Carolina.

that, realistically speaking, both the scope and the on-going management and funding of the Seashore State Park project was beyond the reach of the VAS. It was a creative and interesting idea and would certainly have offered an unparalleled opportunity for a research preserve. At the same time, the project was highly ambitious and, even if it had been undertaken, would eventually have run into irresistible pressure from politicians to make public use of an attractive park within striking distance of such large centers of the population.

Other Conservation Efforts

Not all the Virginia Academy of Science's efforts at conservation were directed towards educating the general public, such as the James River project and the Great Dismal Swamp project, or promoting and publicizing research activity, as in the failed Seashore State Park proposal.

Rather, the Academy's interest in preserving the quality of the environment extended in many directions. For example, in November, 1960, Horton Hobbs of the Biology Department of the University of Virginia successfully lobbied the VAS Council to support his endeavor to persuade the General Assembly to set aside Mount Rogers on the Grayson-Smyth County line as a natural preserve.⁴¹

Along with preservation efforts, environmental health Council considered issues relative to environmental health, as the Long Range Planning Committee's Walter Flory presented a case for the appointment of a "well-balanced, permanent Committee concerned with the natural resources of Virginia viewed broadly: scenic beauty, water and air

⁴¹"Minutes of Council," November 6, 1960. Special Collections, Virginia Tech. Hobbs was successful in convincing the state legislators to designate the area as a natural preserve.

pollution, wildlife, mineral and other natural wealth.”⁴² Such a committee, pointed out Flory, would have as its primary objective “[T]he encouragement of an advantageous industrial development of Virginia, along with a planned, advisable management of our [Virginia’s] resources.”⁴³ When Council members objected that the proposed committee might resemble the already established Resource-Use Committee, Flory remembers that he “maintained that the established committee was reactive in character rather than proactive and that the old committee could be subsumed into the new group.”⁴⁴ Flory was persuasive on behalf of his group’s recommendation. One year later, Council approved the Natural Resource Committee to be started the following year.⁴⁵ Thus the Virginia Academy of Science continued in its efforts to support conservationist work in the Commonwealth.

State Science Museum

While the history of the VAS reveals that several important projects were allowed to fall by the wayside, it is also clear that the memory of the Virginia Academy was a long one; an effort, once begun, might go underground for a long time, only to emerge with new vigor at a later date. This was the case with the idea of a museum of science. In May of 1963, nearly twenty years after the state-appointed commission led by George Jeffers to investigate the “Advisability of Establishing a State Museum of Science” had presented its recommendations to the governor and the General Assembly, the Virginia Academy of Science resurrected the proposal. Representing the sentiments of the Long Range Planning

⁴²“Minutes of Council,” November 6, 1960. Special Collections, Virginia Tech.

⁴³“Report of the new Natural Resource Committee,” November 19, 1961. Special Collections, Virginia Tech.

⁴⁴Walter Flory to Charlotte Webb, Interview, April 7, 1995. Winston-Salem, North Carolina.

⁴⁵Minutes of Council,” November 19, 1961. Special Collections, Virginia Tech.

Committee, Henry Leidheiser urged that “[I]nterest has been expressed for many years by the VAS in a museum of science and the time now appears right to do something.”⁴⁶

Apparently, Leidheiser felt that the “disgraceful state” of the present state museum had become an embarrassment to the distinguished Commonwealth of Virginia. Council could not agree more vehemently, and unanimously approved the following resolution to be sent to the Governor of Virginia:

Whereas the need for an inspiring science museum in the Commonwealth of Virginia has been apparent for many years; Whereas the present Museum of Minerals, Timber, and History in the basement of the Finance building is uninspiring and in need of major modification; Be it hereby resolved that the Virginia Academy of Science recommends to the Honorable Albert S. Harrison, Governor of Virginia, that he appoint a committee of dedicated Virginians to study the present Museum of Minerals, Timber, and History, to consider means for short -range and long-range improvement of the Museum, and to make recommendations concerning the scope and objectives of the Museum.⁴⁷

No doubt, the resolution contributed to Governor Harrison’s decision to bring the matter before the General Assembly. The following year the legislators directed the Department of Conservation and Economic Development “to make a study and to offer a plan for the encouragement or establishment of a properly located, designed, and operated museum of science, archaeology, and natural science. . . .”⁴⁸ Less than one decade later and almost four decades after the Virginia Academy of Science first brought forth the idea of a science museum, the General Assembly chartered the Science Museum of Virginia. Certainly the seventies were a time when the general community was aware of the major contributions that science and technology had made to the world at large, but perhaps more

⁴⁶“Minutes of Council,” May 10, 1963. Special Collections, Virginia Tech.

⁴⁷“Minutes of Council,” May 10, 1963. Special Collections, Virginia Tech.

⁴⁸“Report of the Virginia Museum of Science Study Commission 1969,” p. 6. Special Collections, Virginia Tech.

importantly, as we shall see, this period was characterized by a stability in the funding mechanisms for science and an optimism about the scientific future. There was also a significant group of new players in the Virginia Academy of Science, some people of considerable energy and talent who were fully dedicated to the creation of a science museum, and their efforts were perhaps the final element in the recipe that allowed the museum to move from the status of a shelved, good idea into reality.

Public Information Committee

By the 1960s, the Virginia Academy of Science had made its mark on the Old Dominion. Scientists and educators alike looked forward to the professional aspects and camaraderie of the annual meeting each spring. The efforts of the VAS in matters environmental had secured the organization a modest recognition in the eyes of the educated public. The rapid growth and enthusiastic participation of Virginia students in the Virginia Junior Academy of Science as well as the involvement of the Virginia Academy in improving all aspects of science education within the state indicated the firm commitment of the VAS to elevating the status of science in the region. Nevertheless, when the Long Range Committee met in October, 1962, Chairman Leidheiser presided over an intense discussion concerning the public image of the organization, following which, the Long Range Committee forwarded a position statement to Council for its consideration at the November meeting. "It is recommended," wrote the committee, "that Council implement a means for achieving publicity on Academy matters during the entire year and not only at a time of the annual Academy Conference. Such publicity should be directed at getting the Academy better known within the State and in developing the impression that the Academy is representative of a cross section of scientific disciplines."⁴⁹ Council voted to establish

⁴⁹"A Report on the Long Range Planning Committee Meeting of the VAS Held in Blacksburg," Saturday, October 27, 1962." Special Collections, Virginia Tech.

the Public Information Committee, and at the next annual meeting held in Old Point Comfort, President William Guy appointed Sidney Negus--a natural choice--as the new chair.

It is particularly interesting that the Virginia Academy was anxious to be viewed by the public as representative of the scientific community in general. One wonders whether some of the members may not have thought that the biological sciences had been claiming the lion's share of public attention over the many years since biologists had been the founders of the VAS. It is perhaps also possible that the Council may have been wondering about the attention paid by the public to the VJAS, which certainly, as the active arm of the Senior Academy in the realm of public education, attracted the attention of everyone from teachers to parents and other family members. Could, perhaps, a perception of the Virginia Academy of Science as a less-than-scholarly association be out there among the citizenry? In any event, in a decade when public relations was far less an area of concern than it would be in the 1990s, the Academy was taking steps to see that the public understood that scientists of every persuasion, from the physicist to the engineer, from the teaching scientist to the pure researcher, found a home under its hospitable roof.

Research Committee

While the Virginia Academy as a whole increasingly focused on grand schemes--such as the acquisition of Seashore State Park--to promote and publicize research within the Commonwealth, Council, largely through the efforts of the Research Committee, continued to stress and support research activity within the high-schools and institutions of higher education. As President Allan Gwathmey proclaimed to the Academy Conference in 1953:

More people in Virginia must participate in scientific research. Original scientific investigations must be carried out in our high-schools and in our small colleges, at least by the members of the faculty. . . . Not only should there be a great increase in the number of people who are conducting original investigations in science but the quality of research in our institutions of higher learning and in our industrial laboratories should be greatly improved If this leadership in science can be won, it might help generate a general rejuvenation in the intellectual and cultural leadership in Virginia.⁵⁰

Gwathmey's statement reflects the Enlightenment belief--originating in the mid-to-late eighteenth century--that science should be viewed as a vehicle for the discovery of truth and the creation of a better world.

By and large, during the 1950s and early 1960s, the Research Committee continued on its established course. Research grants continued to be awarded based on the criteria established in 1942. This is not to say, however, that no adjustments were made keeping with the tenor of the times. In 1957, for example, chairman Forbes noticed that many professors and instructors, particularly in Virginia's smaller colleges, pursued research projects during the summer. In all likelihood, he remarked, their efforts might be intensified if financial assistance in the amount of one to two hundred dollars were available. Accordingly, Forbes proposed that the Research Fund for grants-in-aid be increased by an additional five hundred dollars per year, making such assistance available to a few applicants each year. With the committee's recognition that "support for research in the State is one of the prime functions of the Academy," Council moved and passed a motion that the sum of five hundred dollars be included in the annual budget of the VAS, beginning with the current calendar year.⁵¹ With a record number of grant applicants in 1957, clearly Virginia scientists wanted such funding.⁵²

⁵⁰"A Message to the Members From the President," May, 1953. Special Collections, Virginia Tech.

⁵¹"Minutes of Council," February 23, 1957. Special Collections, Virginia Tech.

Virginia Journal of Science

In 1955, at the thirty-third annual meeting, Boyd Harshbarger, having served five years, resigned as editor-in-chief of the Virginia Journal of Science. In announcing Harshbarger's retirement to the general membership of the Virginia Academy of Science, President I.G. Foster had printed in the Journal "An Appreciation" for the dedicated service of the Virginia Polytechnic professor.⁵³ At the close of Harshbarger's tenure, the VJS was in excellent financial condition, having assets of approximately five thousand dollars.⁵⁴ Horton H. Hobbs, Jr., of the Department of Biology, University of Virginia and the former technical editor of the Journal unanimously was elected Harshbarger's successor, while B.F.D. Runk, also of the University of Virginia, was appointed managing editor. As had been the case with Harshbarger, the terms were set at five years.⁵⁵ Only one year later, however, Hobbs and Runk submitted their resignations in tandem, citing increasing professorial duties. They agreed to remain in office until January 1, 1957 or whenever a successor was named, whichever came first.⁵⁶ Before stepping down, Hobbs and Runk published the first issue of the 1957 Virginia Journal of Science. Commemorating the 350th anniversary of the Jamestown charter, Number 1 of Volume 8 often is referred to as the Jamestown Celebration issue.⁵⁷

⁵²"Minutes of Council," May 9, 1957. Special Collections, Virginia Tech.

⁵³Virginia Journal of Science 6(1955), p. 133.

⁵⁴"Minutes of Council," March 13, 1955. Special Collections, Virginia Tech.

⁵⁵"Minutes of Council," March 14, 1955. Special Collections, Virginia Tech.

⁵⁶"Minutes of Council," May 10, 1956. Special Collections, Virginia Tech.

⁵⁷Virginia Journal of Science 8(1957), pp. 1-102. In celebration of the commemoration, Marcellus Stow wrote the volume's introduction, while Bruce D. Reynolds contributed "Indians of Virginia 350 Years Ago;" Arthur Bevan wrote "Geological Ancestry of the York-James Peninsula;" Ivey Lewis sent in "Seventeenth Century Science in Old Virginia;" J.L. McHugh and Robert S. Bailey jointly offered "History of Virginia's Commerical Fisheries;" and Sidney Negus authored "Physicians at Early Jamestown."

Following the Celebration issue, R.T. Brumfield of Longwood College assumed the position of editor, and his colleague Charles F. Lane, the slot of managing editor. Accordingly, the two men relocated the Virginia Journal of Science offices from the University of Virginia's Biology Department to Stevens Hall at Longwood College. As one of his first acts, Lane secured a new--and necessary--publishing contract which, as he reported to Council in May, 1957, required double the previous production costs. The increase, Lane informed a disgruntled Council, occurred despite acceptance of the lowest bid.⁵⁸ Slightly less than a year later, Lane announced to Council that the rising costs of publication, without a parallel increase in revenue, rapidly was depleting the reserve funds--so carefully accrued by Harshbarger--of the Journal. To solve the financial problems, Lane and Brumfield recommended three steps:

1. Discontinue publishing the General Program of the annual meeting in the Proceedings, since this also is published in the annual April issue
2. Reduce the "News and Notes" section of the VJS
3. Increase the advertising revenue.

Council greeted the suggestions negatively, opting instead to review the VAS's projected income for that year in the hope that extra funds either might be located for that financial year or allocated in the budget for the following term. Unfortunately, additional monies were not available, and the estimated income of the Virginia Academy of Science for the next year would not allow increased appropriations to the Virginia Journal of Science.⁵⁹ It was by then clear that some steps must be taken.

At the Council meeting in early May, 1959, editor-in-chief Lane and managing editor Brumfield submitted letters of resignation to Academy President Forbes. Rightfully

⁵⁸Virginia Journal of Science 8(1957), pp. 234-5, 256.

⁵⁹"Minutes of Council," March 8, 1958. Special Collections, Virginia Tech.

concerned with the Journal's constant insolvency, Boyd Harshbarger suggested a special committee be formed to examine the failing financial structure of the VJS. Chaired by Wilson Bell of Virginia Polytechnic Institute, the Journal Committee immediately began analyzing the publication's financial statements. Several days later, Horton Hobbs nominated Virginia Polytechnic's Robert Ross as editor-in-chief and his university colleague Robert Kral as business manager-managing editor. At the October, 1959, Council meeting, the two men formally assumed their new posts.

Editor Ross immediately faced difficulties in publishing the Journal on time and in working with the publisher; both problems were financial in origin. In a letter written in March, 1960, Ross reminded Council that "[i]t has been common knowledge for some time that the Virginia Journal of Science is operating in the red." Reiterating the complaints of his predecessor Lane, Ross pointed out to Council that "one of the difficulties of the Journal is that since 1950 it has served two functions: that of a journal wherein scientific articles are presented, and that of a proceedings in which an account of the activities of the members of the Academy are given."⁶⁰ In response to Ross, the Journal Committee advocated the increase in advertising space from six pages to twelve and an increase in subscription rates. In addition, Chairman Bell suggested the Virginia Academy consider hiring an advertising agency and manager until the VJS attained solvency. Finally, the committee recommended a slight increase in funding from VAS monies, which Council accepted, voting the Journal an extra \$400 per annum.⁶¹

⁶⁰Robert Ross to Council, March 22, 1960. Special Collections, Virginia Tech.

⁶¹Virginia Journal of Science 11(1960), pp. 151-154.

During the next year, Ross's wife, Mary, took over the duties of managing editor from Robert Kral.⁶² The ever-present financial difficulties of the Journal became even more pressing, leading to Academy President Wilson Bell's appointment of a new Journal Committee to investigate the problem. In May, 1961, this group of three--Boyd Harshbarger, Walter Flory, and George Jeffers--issued a report to President Bell in which they outlined a new procedure of operation for the Journal. Furthermore, they advised that if Ross could not follow the new mode of business, then he should tender his resignation. For, as the committee maintained, "[i]f the Journal is allowed to die this time it will be the second and probably the last time. . . ." Therefore, "[t]he committee feels it most essential that the Journal be brought up to date in publication and held up to date. After this has been accomplished, every effort must be made to improve the quality of the Journal. This is necessary for keeping up the morale of the Academy at a high level."⁶³ Unable to adhere to the committee's charge, the Rosses submitted their resignations, and at the November 19, 1961 meeting, Council accepted them. For the third time in little over six years, Council found itself in the distressing position of seeking a new editor-in-chief and managing editor. Never one to waste time, Harshbarger promptly nominated Paul Siegel and Carl Allen--both of Virginia Polytechnic Institute--as the new editorial team.⁶⁴

It seems likely that the VJS stumbled so many times for two reasons: first, it had two very different functions, which, while they were not in opposition, were certainly not complementary. Different sets of editorial skills are required for a journal offering scientific articles and for one carrying the records of activities of the members. The latter case is similar to the alumni publications of academic institutions of relatively high status;

⁶²Virginia Journal of Science 12(1961), p. 139.

⁶³"A Report to Dr. Bell, President, VAS," May 12, 1961. Special Collections, Virginia Tech.

⁶⁴"Minutes of Council," November 19, 1961. Special Collections, Virginia Tech.

the former resembles the research publications that are specific to a discipline, such as the American Journal of Physics. The second reason is even more daunting than the two differing editorial stances, and that is the fiscal management of an enterprise that is, in essence, a small business. Very few academics are capable of such multi-leveled performance or desire to engage in such an endeavor, and those individuals who show the skills of a fiscal manager are usually propelled into administrative positions within their institutions and do not remain accessible to a professional society such as the Virginia Academy of Science. The success of Harshbarger, while it may have lulled Council into expecting more of the same, was in fact an anomaly in that he could combine two different editorial perspectives with a uniquely solid practice of fiscal management.

Even with its financial problems, however, the VJS remained an important organ of the VAS. It brought to the attention of the general membership important contributions of their colleagues among the scientific community as well as the results of academy-organized symposia, and in this way the Journal both gave the VAS status within its membership and provided an appropriate goal for younger professors. It introduced new ideas to the members and gave the organization a degree of public visibility. Finally, the VJS had the function of focusing the membership on one of its central missions: supporting scientific research in the Commonwealth.

Science Education

In March, 1955, Edward Harlow, Chairman of the Long Range Planning Committee, submitted a report to Council on the woeful state of secondary science education in the Commonwealth. Citing falling enrollment in science courses, a lack of well-qualified science teachers, and administrative indifference, Harlow moved that the Virginia Academy contact the State Board of Education and offer its services to address this

obvious problem. While immediate action was not taken on Harlow's suggestion, Council did seriously consider the matter. As James W. Cole of the University of Virginia pointed out, the special and wide-ranging skills of the VAS membership might well substantially influence the course of science education. Indeed:

The Virginia Academy of Science occupies a highly important position in the Commonwealth of Virginia, and its influence extends throughout the nation. This Association has never been in a position where the need is so great for widely circulated statements of its policy on scientific conditions. . . . In an attempt at summary, a statement might be: the Virginia Academy of Science expects to undertake new activities in Virginia to appraise the condition of science education, to encourage science education of high quality, and to ensure an adequate supply of competent Science Teachers. . . .⁶⁵

Council named a new committee to gather information on science education, define apparent problems and suggest solutions, and finally, to outline the Academy's area of responsibility. This committee, called the Advisory Panel on Science Education, also had as its objective to determine actions of other concerned groups in the state and to cooperate with such groups where appropriate.⁶⁶ One of the first actions of the special Panel was to propose that science education be upgraded, reorganized, and coordinated.⁶⁷

To better understand the nature of Virginia's science education and to find out how other Virginia educators felt about the subject, in 1955 Edward Harlow represented the Virginia Academy of Science at the state-sponsored Virginia Conference on Education held in Richmond during the first week of September. A major outcome of the conference was the unanimous decision to emphasize mathematics and science.⁶⁸ The following month,

⁶⁵Virginia Journal of Science 6(1955), p. 188.

⁶⁶Virginia Journal of Science 6(1955), p. 188. The Advisory Panel, of course, had precursors: for example, the Committee on Public School Education.

⁶⁷Virginia Journal of Science 9(1955), pp. 218-222.

⁶⁸"Committee Report of the Virginia Conference on Education," August 31, September 1-2, 1955. Special Collections, Virginia Tech.

chairman Cole sent out a letter to the members of the Advisory Panel on Science Education outlining the conference's results and announcing that Harlow had been selected as one of the twenty-nine delegates representing Virginia at the forthcoming White House Conference on Education in the nation's capitol.⁶⁹ At the conclusion of the letter, Cole informed the panel that additional educational sub-committees had been established by Academy President Walter Flory to work under the Advisory Panel. These Committees were: the Permanent Working Committee on Education in the Sciences, chaired by James Cole, University of Virginia; the Coordinating Committee on Organizational Activities, chaired by Thelma Heatwole, Woodrow Wilson High-School, Staunton; and the Subject-Methods Committee, chaired by William E. Trout of University of Richmond.⁷⁰

Despite the exemplary intentions of the VAS to raise the standards of science education, the State Board of Education was not completely receptive to the Academy's participation. That the two organizations were at cross purposes clearly shows in George Jeffers's December, 1955, letter to James Cole. Dismayed, Jeffers wrote that he and a few other members of the Virginia Academy vitally concerned with the quality of science teaching in the state were not invited to attend a State Board of Education Meeting where several out-of-state experts had been called in to discuss science education in Virginia. Not willing to permit problems with the Board to interfere with the VAS's objectives, however, Jeffers concluded the letter by offering two suggestions to encourage improvement in

⁶⁹The purpose of the White House Conference was to bring about a more widespread knowledge and appreciation of and interest in education. The six major topics were: what should the schools accomplish; what kind of facilities would be needed; how to attract and retain good teachers; how to organize schools economically; how to pay for the schools; how to garner more public support for education. It is interesting to note that the only problem specifically excluded from the agenda is that of segregation of the races within the public schools. Taken from "State and White House Conference," July 22, 1955. Special Collections, Virginia Tech.

⁷⁰James Cole to members of the Advisory Panel on Science Education, Virginia Academy of Science, October 30, 1955. Special Collections, Virginia Tech.

science teaching: first, to design a program to which supervisors, counselors, principals, and superintendents would come and listen to science speakers and second, organize a Virginia Academy of Science symposium on Education in the Sciences for the following annual spring meeting.⁷¹ Both of Jeffer's suggestions would come to fruition.

To prevent further difficulties such as that reported by Jeffers to Cole, on Saturday morning, May 12, the Advisory Panel on Science Education recommended that Council take formal action regarding its feelings about science education, particularly in the secondary schools. In complete agreement, Council adopted the following resolution:

Being deeply concerned with the shortage of scientists and engineers and aware of its responsibility, the Virginia Academy of Science desires to cooperate fully with the State Department of Education. Therefore, be it resolved that a Committee be appointed to represent the Virginia Academy of Science to work with the State Department of Education if and when requested, in strengthening the qualifications of high-schools science teachers, and in other ways to improve science and mathematics instruction in the public schools of Virginia.⁷²

Council also signed another resolution, pledging support for the establishment of local action committees to develop programs that would help in meeting the educational needs of various areas of the state.⁷³ In addition to these resolutions, two separate developments over the next year served to further the relationship between the VAS and the Board of Education and to strengthen its ties to other state agencies. The first of these was the appointment of Virginia Academy of Science member and Science Club sponsor Frank Kizer in October of 1956 to the position of Assistant State Supervisor of Secondary Education. Not only did Kizer's active involvement with the Virginia Academy bode well

⁷¹"Minutes of Council," October 30, 1955. Special Collections, Virginia Tech.

⁷²"Minutes of Council," May 12, 1956. Special Collections, Virginia Tech.

⁷³"Report of the Advisory Panel on Education in the Science, Virginia Academy of Science," May 2, 1956. Special Collections, Virginia Tech.

for the future, but also, with Kizer's background in science, his new appointment was "tantamount to the state having a science supervisor."⁷⁴ Second, President Guy reported that at a 1957 Council meeting conversation with Dr. Davis Y. Paschall, State Superintendent of Education (and later President of the College of William and Mary), he had learned that it is "the thinking in the State Department of Education that the requirements for teacher certification in science will be raised and that an advisory committee on education in scientific fields will soon be set up." The distinct impression was that the VAS would be asked to serve.⁷⁵ Despite the attention, however, as always change was not to come rapidly in science education.

By 1960, Walter Flory expressed concern that more could be done to improve both the actual techniques of science teaching and the work-day experience of the professors and teachers at all levels of education. Acting on Flory's opinion, Council passed a motion that a new committee be set up to study science teaching in both the schools and the colleges.⁷⁶

Led by John Barker of Radford College, the committee had four primary objectives:

1. To create an awareness of science education resources in the state;
2. To create closer rapport between public school teachers of science, college professors, and professional scientists;
3. To create communication between the Virginia Academy of Science and other professional organizations for the purpose of advancing science education in Virginia;
4. To make efforts to raise the status of science teaching in Virginia.⁷⁷

The Virginia Academy also was well-aware of the usefulness of other sources of help, specifically of fiscal support outside of the state. Indeed, in this drive to better

⁷⁴"Minutes of Council," October 7, 1956. Special Collections, Virginia Tech.

⁷⁵"Minutes of Council," October 20, 1957. Special Collections, Virginia Tech.

⁷⁶"Minutes of Council," November 6, 1960. Special Collections, Virginia Tech.

⁷⁷John Barker to Committee on Science Education in Virginia," November 14, 1961. Special Collections, Virginia Tech.

science teaching and, in general, to boost science education, the VAS sought aid from outside the state. As early as September, 1956, Council submitted a grant application to the National Science Foundation (NSF). The NSF's rejection of the application--a request for funds to survey the outcome of the Science Talent Search--did not deter the VAS.⁷⁸ Two years later, in conjunction with the University Center in Virginia, the Virginia Academy sent to NSF a detailed proposal asking for \$40,000 to implement improvements in science teaching in Virginia colleges. "It is the belief of these two organizations," began the proposal, "that the most effective way of improving science teaching in Virginia is to establish a program of research grants which will permit a significant number of college science teachers to carry on active research work on their own campuses during the summer vacation period." In all likelihood, stated the grant proposal, the research project will continue into the school year. The NSF obviously did not agree.⁷⁹

The third attempt to get a share of these federal funds was successful. John Forbes, President of the Virginia Academy of Science, visited the University Center in Virginia to suggest joining forces once again with the Academy and submit a proposal to the National Science Foundation. This time, the objective would be to increase student interest in science careers through a Visiting Scientists Program. The University Center welcomed the opportunity to collaborate with the VAS. In mid-February, 1959, President Forbes and Colonel Herbert W.K. Fitzroy, Administrator of the University Center, took the application for a Visiting Scientists Program up to the NSF headquarters. Several months later, Harry C. Kelly of the national agency wrote to John Forbes that the

⁷⁸"Report of the Virginia Science Talent Search NSF Proposal," September 19, 1956. Special Collections, Virginia Tech.

⁷⁹"Virginia Academy of Science and University Center Grant Proposal," 1958. Special Collections, Virginia Tech.

application for \$6460 to conduct a Visiting Scientists Program had been granted. The objectives of the program as outlined in a letter and in a press release were:

1. to provide for a distinguished scientist to spend a day at each of Virginia's four year colleges;
2. to allow for a maximum of informal discussion in addition to formal lecture;
3. to enable students to become acquainted with his work and stimulate their interest;
4. to give faculty members time to discuss scientific and academic problems.⁸⁰

Council appointed a Visiting Scientists Program Committee, informed the universities and colleges of the grant, and drew up a list of potential "visitors."⁸¹

On October 24, 1959, Forbes reported that the Visiting Scientists Program was well under way. Of those scientists invited to participate, fourteen had agreed to visit the twenty-six participating colleges and two institutions. Given the educators' warm reception of the program, Forbes reminded the committee that applications to the National Science Foundation would have to be made at an early date, if the VAS wished to try the program a second year. After some discussion, Council moved to submit again.⁸²

The following November, Colonel Fitzroy reported that nearly all Virginia colleges were participating in the Virginia Visiting Scientists Program. Unfortunately, a federal

⁸⁰"Press Release," May 8, 1959. Special Collections, Virginia Tech.

⁸¹"A Visiting Scientists Program for the Four-Year Colleges of Virginia," Edmund Berkeley, Press Release, May 8, 1959. Special Collections, Virginia Tech. Administering the grant was a full-time job. All applications had to be filled out in quintuplicate. Quarterly statements of expenses were required, as well as monthly applications for cash. Typical problems in dealing with the federal government were as follows: On June 17, 1965, Foley F. Smith wrote to William E. Fee, Jr., of the Grants Office of the NSF concerning a misunderstanding that had arisen. "At the beginning, we were unaware of the exact procedure for accounting for the grant, other than the Fiscal Officer was to open a proper checking account, and draw checks to payees designated by vouchers authorized and signed by the Administrative Officer. . . ." There follows a three paragraph explanation of problems with closing the account, a revised report, and a request "that the discrepancy of \$0.05 be reconciled. . . ."

⁸²"Minutes of Council," October 24, 1959. Special Collections, Virginia Tech.

regulation regarding the amount of per diem stipends offered through grants to groups such as the VAS and limiting the allowable stipend to “an unrealistically small figure,” had forced the NSF’s withdrawal of its support for the program through state academies. To lessen the blow, however, the NSF decided to increase its underwriting of Visiting Scientist Programs by grants to fourteen major national professional societies, since by law, such groups could give realistic per diem fees. Concerned over the change in funding, which effectively eliminated VAS participation, Council passed a motion by Horton Hobbs that Colonel Fitzroy continue his investigation of alternate methods to continue the program of Visiting Scientists that the VAS had created. Additionally, Council briefly addressed the feasibility of initiating a Visiting Scientists Program for high schools: a detailed discussion of the possibility was saved for another meeting.⁸³

It is revealing to review this material in which the VAS focuses so strongly on improving science education during a period when a major social issue lay in the center of everyone’s concerns in Virginia--Massive Resistance and its ultimate collapse--and to discover that there is not one mention of this critical issue. Surely the racial problems abounding all over the Commonwealth did nothing to either encourage teachers from outside Virginia to move to the state or to motivate young science majors to consider careers as science teachers. It is simply impossible that the members of the Academy were not aware of the turmoil. In fact, as the next section will reveal, the very success of the Virginia Junior Academy of Science brought the difficulties attendant on integration into the sphere of the Virginia Academy itself.

⁸³“Minutes of Council,” November 6, 1960. Special Collections, Virginia Tech.

Virginia Junior Academy of Science

The enthusiasm which characterized the first decade of the Virginia Junior Academy of Science carried over into the second ten years; indeed, it appeared as if the annual Science Days had become a major component of the Virginia high-school science experience. While the rapid growth pleased the VAS, it also gave them pause, as the question of financially supporting the junior endeavor became a constant refrain during meetings of Council. In November of 1953, Guy W. Horsley of the Finance Committee offered a solution: that a new class of membership in the Virginia Academy be created, to be known as the "Business Membership," with dues of one hundred dollars per year. Revenue from these memberships would be used for the annual operation of the Junior Academy and the Science Talent Search. Even though a new membership class would necessitate a constitutional change, Council viewed Horsley's idea as an ideal solution.⁸⁴ Soon thereafter, Council mailed an invitational letter inviting certain businesses and industrial firms to join the Academy on this basis. By 1954 at the annual meeting, Secretary-Treasurer Foley Smith reported seven business memberships: Virginia Electric and Power Company; E. I. du Pont de Nemours and Company; Allied Chemical and Dye Corporation, Nitrogen Division; A. H. Robbins Company; Monsanto Chemical Company; Phipps and Bird Incorporated; and Newport News Shipbuilding and Drydock Corporation.⁸⁵ Tapping into the resources of the region's industrialists was a clever move that was long overdue--tying together as it did technology and its income with the scientists who, in many ways, represented the source of the developments upon which a number of these businesses were established. The lag time between the development of a strong

⁸⁴ See "Minutes of Council," November 8, 1953; Article III of the Constitution: "Members" was amended to include the following: Section 6, "Business or industrial organizations which pay dues of \$100.00 annually, shall be Business Members of the Academy."

⁸⁵Virginia Journal of Science 6(1954), p. 79.

industrial and manufacturing component of the Virginia business scene and the VAS's move to take advantage of this fact is probably due to the vestiges of the Byrd mentality within the VAS itself.

Towards the end of 1952, Grover Everett resigned as chair of the Virginia Junior Academy of Science Committee, having led the organization for one year. The appointment of Everett's successor proved a fortuitous choice, as over the next six years, Thelma Heatwole, a science teacher from Staunton, Virginia, dedicated herself to establishing the VJAS as the premier educational organization within the Old Dominion and among other state academies of science throughout the nation. No stranger to the current state of science education in the nation, Heatwole spent the school year of 1953-1954 visiting various high-schools throughout the country and observing their secondary science teaching programs, using funds awarded from a Ford Scholarship to support her travels.⁸⁶ Heatwole's influence permeated all operations of the VJAS. However, her commitment to developing the Science Open House, also called Junior Science Day, to the point where schools in every region of the state competed for the privilege of exhibiting at the Virginia Academy of Science's annual meeting, was the chief reason behind the steady increase in membership. Consider the data from just one year. In 1953, charters and membership cards were issued to sixty-five clubs with an individual membership of approximately 1200. By 1954, seventy-two clubs were affiliated and the membership had reached 2,563. In fact, at the 1954 VAS annual meeting, forty-nine individual and four club exhibits which had qualified at the Junior Science Days were displayed.⁸⁷ Six years later, eighty-five clubs were affiliated and the total membership was close to 10,000 students.

⁸⁶"Minutes of Council," April 18, 1953. Special Collections, Virginia Tech.

⁸⁷Thelma Heatwole, "History of the Junior Academy of Science," Fall 1965. Special Collections, Virginia Tech.

Approximately 4,000 students and sponsors attended the 1960 Academy meeting.⁸⁸ The increase in membership also translated into a larger and more popular Science Talent Search. Finally, to encourage the possibility of a career in science, Heatwole and the VJAS Committee invited scientists of international repute--such as Carroll M. Williams, Professor of Zoology at Harvard University and Willard Libby, Vice-Chairman of the Atomic Energy Commission--to speak before the juniors.

It is not difficult to understand how, for many high-school students, the VJAS provided an important extra-curricular activity. In order to strengthen this growing network, students at Newport News High-School took the initiative in 1953 and began publishing a "Junior Science Bulletin." Under the direction of their science club leader, Susie V. Floyd, for eight years the group issued the "Bulletin," aimed at keeping the Junior Academy membership abreast of all junior science activities. For example, in 1956 the announcement by the Philip Morris Company of the new Philip Morris Achievement Awards was carried to all VJAS members' homes via the publication. One can imagine the pleasure of the science clubs when first reading about the new awards--made possible by a seven hundred and fifty dollar grant to the VJAS--for "outstanding projects in Chemistry, Physics, Biology, and "other sciences."⁸⁹ While the Virginia Academy of Science wholeheartedly supported this endeavor, help came also from other sources. In 1958, when publication costs appeared as if they might close the Bulletin, the American Tobacco Company Research Laboratory donated three hundred dollars to ensure its continued

⁸⁸Thelma Heatwole, "History of the Junior Academy of Science," Fall 1965. Special Collections, Virginia Tech.

⁸⁹Virginia Journal of Science 7(1956), pp. 235-39.

publication.⁹⁰ The efforts of Floyd and her ever-changing cadre of students were fully validated by this gift.

Thelma Heatwole resigned as chair of the Junior Academy in 1960, but not before moving that the chair of the VJAS be made a member of the Academy Council.⁹¹ Shortly thereafter, the VJAS chair became an ex officio member of the Council. By the time Heatwole left office, the size of the Junior Science Day program had reached the stage where consideration was given to a new type of program.⁹² At the Virginia Academy of Science's annual meeting in 1960, several students read their winning exhibit papers with much success, prompting the VJAS Committee at the following fall meeting to contemplate instituting a format in which students would compete by submitting their papers to the chair and director of the VJAS Committee. Submissions, then, would be judged by a panel and those selected read by the students at the annual meeting. The committee decided further discussion was needed before a final decision could be reached.

Not long before the prior meeting, William W. Scott had assumed the chairmanship of the VJAS. The Chair of the Biology Department of Virginia Polytechnic Institute, Scott's four-year tenure as leader of the Junior Academy saw the VAS come face-to-face with the barely-submerged racial tensions that had characterized Virginia's secondary public school system since the Brown decision in 1954. Indeed, it was during his first year in office, that Scott became involved in the confluence of events that provided the VAS-VJAS with the final impetus needed to markedly change the format of the latter's program.

⁹⁰Virginia Journal of Science 9(1958), p. 357.

⁹¹Virginia Journal of Science 11(1960), pp. 151-52.

⁹²In recognition of her outstanding service to the VAS and the VJAS, Thelma Heatwole was awarded the Distinguished Service Award on May 12, 1961. See, Virginia Journal of Science 12(1962), pp. 140-41.

In March of 1961, Scott delivered the VJAS Committee's report to Council, informing them, among other things, of the Junior Academy's plans to hold a ball at the thirty-ninth meeting of the VAS to celebrate their twentieth anniversary. Two months later at the Virginia Academy's annual meeting, held in Lexington, Scott reported to Council that the selection of junior exhibitors to attend the VAS meeting in 1961 would be held in all the regions throughout the state, save for the black schools. In their case, all of exhibits were to be judged solely at Virginia State College in Petersburg, a black institution. The black students, Scott said, objected to the special venue for their presentations. They wanted, instead of being shuttled to Petersburg, to exhibit with the other science clubs--the white clubs--in the regions where their schools were located. After much discussion, Walter Flory proposed that President Wilson Bell appoint a committee to examine the consequences of the request. Accordingly, President Bell named Jackson Taylor, Walter Flory, and William Scott to a Special Committee to investigate the problem and report back in two days to Council.⁹³ Before the meeting adjourned, however, Scott informed the group that the VJAS Committee had canceled the twentieth-anniversary ball planned for the Junior Academy because the "colored students" objected to the segregated arrangements for the ball itself. In its place, the committee had substituted a scientific lecture.⁹⁴ In remembering the situation, Scott remarked: "At the time of the Lexington meeting school segregation had become a major issue throughout the state. It was not unexpected, therefore, to have the question of segregated Science Days and separate social events brought before the VJAS Committee."⁹⁵

⁹³"Minutes of Council," May 11, 1961. Special Collections, Virginia Tech.

⁹⁴"Minutes of Council," March 12, 1961; and "Minutes of Council," May 11, 1961. Special Collections, Virginia Tech.

⁹⁵Dean W.W. Scott to Harry J. Staggers, Harrisonburg, Virginia, December 5, 1967 in Harry Staggers, "A History of the Virginia Academy of Science," unpublished manuscript, p. 47. Special Collections, Virginia Tech.

On May 13, 1961, Jackson Taylor as chair of the Special Committee delivered the recommendations of the group of three:

1. That the VJAS Exhibits be continued.
2. That the plans submitted by the VJAS Committee for dividing the state into seven or more geographical areas for the purpose of conducting preliminary judging of contestants be approved.
3. That for each of these geographical areas, the VJAS Committee seek a host for such preliminary judging programs, and if unable to find a willing host, that the VJAS Committee be authorized to set up the program for that area under the auspices of the Virginia Academy of Science, with the needed funds.
4. That the VJAS chairman be authorized when requested, to make such re-assignments from one geographical area to another as he deems wise.⁹⁶

It is difficult not to conclude from recommendation “4” that the VAS remained willing to remove black VJAS student exhibitors from their geographic region if difficulties arose that made such a reassignment appear to contribute to the internal harmony of the Junior Academy. At the same time, the inherent injustice in this position must have been clear. Obviously, a just solution that would treat black and white students evenhandedly, yet not provoke passions that were running strong within the state, would require a change in the way the VJAS conducted its business. Such a change was shortly to occur.

On November 19, 1961, long-time student advocate Susie Floyd of Newport News stood in for Scott during the Council meeting held at the University of Virginia. Based on the four recommendations of the Special Committee, Floyd announced that the VJAS Committee felt that the “old procedure of having Juniors compete through exhibits [be] scrapped in favor of selecting finalists by having entrants submit papers to a screening committee. . . .” Furthermore, the “VAS would sponsor no social functions for the Juniors.”⁹⁷ The VJAS Committee had faced its problem squarely. In the context of the

⁹⁶“Minutes of Council,” May 13, 1961. Special Collections, Virginia Tech.

⁹⁷Virginia Journal of Science 14(1962), p. 63; “Academy Minute Book,” pp. 173-74. Quote taken from VJS

times, the scrapping of the exhibits and of the social activities of the Junior Academy was probably the best that could be done in the name of fairness. The submission of student papers kept the persons, both black and white, at arms-length and did not require anyone to confront angry whites or angry blacks.

In retrospect, the meetings of Council and the VJAS from 1960 indicate clearly that a change in the program of the Junior Academy was bound to happen--only in a very small part because of the size of the VJAS and the complexity of the program that had been set up in its early days. There can be no doubt that the reactions of the black students were certainly the driving force behind changing the format sooner rather than later. How, then, should one interpret such actions? It is a simple matter to say that justice ought to have required that the Academy live up to its obligation to equally treat the students it was nurturing through its efforts on behalf of science education, regardless of race. In fact, that was probably not possible for the members of the VAS at that moment. The lack of any detailed or general comment in the Virginia Academy of Science material from this period, from archives to oral histories, probably reveals that the scientific community was actually not only strongly aware of what was going on but was uncomfortable with the situation as it existed. Had this not been the case, surely there would have been overt remarks, at least in the material from the period, if not in the memories of people who survived those difficult times. To take just one example of the difficulties which continued over the next period, the Newport News system in which Susie Floyd taught did not integrate until 1972, and Newport News High itself, once a beacon of science education, was closed in the mid-seventies shortly after it was integrated on the specious ground that the building was unsafe.⁹⁸

(1973), p. 26.

⁹⁸From conversation with Jane C. Webb, member of the Newport News School Board, 1981-1986. Sold to

The blind eye that the Virginia Academy of Science turned toward the racial confrontations going on all over the state brings one to the question, to what extent does the social context provide justification for certain actions--or the lack thereof? The Supreme Court had seven years earlier denied the legality of "separate but equal." Yet Virginia had not yet accepted the reality--by 1962, when this problem with the Junior Academy first arose, only one percent of the schools had desegregated. Why, then, would one expect a group of educated white Virginia scientists to integrate? Interestingly, that there were expectations within the group itself may be indicated by some rare, isolated comments. In 1962, Scott said, "As far as the VAS and the VJAS are concerned, they have always been, as far as I know, completely integrated."⁹⁹ But later, in an interview with Harry Staggers, Scott noted: "there were problems. . .with racial overtones. . . inherent in the VJAS organization."¹⁰⁰ Scott continued, stating that he and others on the Committee has worked very hard to overcome such "devastating" sentiments.¹⁰¹

The remaining two years of Scott's Chairmanship did not involve any overt political or moral decisions; rather, the Virginia Junior Academy of Science calmly and steadily extended its influence both within the state and among the other state academies of science. At the 1962 November Council meeting, the VJAS made several requests, all of which were supported by the VAS. First, the Junior Committee requested one hundred dollars from the Finance Committee to help pay the cost of sending three Junior Academy

the Newport News Shipyard, today the building is quarters for Navy personnel stationed in Newport News while their ships are overhauled.

⁹⁹Dean W.W. Scott to Harry J. Staggers, Harrisonburg, Va., Dec. 5, 1967. Special Collections, Virginia Tech.

¹⁰⁰Dean W.W. Scott to Harry J. Staggers, Harrisonburg, Va., Dec. 5, 1967. Special Collections, Virginia Tech.

¹⁰¹Dean W.W. Scott to Harry J. Staggers, Harrisonburg, Va., Dec. 5, 1967. Special Collections, Virginia Tech.

members and Scott to that year's AAAS meeting in Philadelphia. Second, the committee asked for another one hundred dollars to publish a Junior Academy of Science brochure edited by Marc Salzberg, a student at Norfolk Academy. Salzberg's brochure or handbook remains an essential reference for all clubs. The committee also informed Council of a second publication, The Virginia Junior Academy Proceedings, edited by Trudie Thaxton of Bedford High School. The Proceedings included records of the annual meeting and copies of the winning research papers. Finally, as chair, Scott requested the possible financing of two students, their two science sponsors, and himself to a National Science Seminar to be held in conjunction with the National Science Fair that May in Albuquerque, New Mexico.¹⁰² Thus the Virginia Junior Academy of Science--confrontations and crises averted by a strategy of avoidance--moved smoothly into the next decade.

Part III. Concluding Remarks

This period saw the VAS make a definite--although not fully acknowledged by Academy members--shift in its focus away from support for professionalism within the academic scientific community and toward protecting the environment, improving education, and increasing the public understanding of science. The move away from an emphasis on professionalism is easy to understand, given the strong influx of funding that resulted from federal involvement in research at institutions of higher learning. The universities and colleges did not need the support of the VAS as they once had, especially following Sputnik and the resulting competition with the Soviet Union. Further, it is a testimony to the VAS that its members were early to recognize that the environment was in

¹⁰²"Minutes of Council," November 3, 1962. Special Collections, Virginia Tech. On May 10, 1963, Scott reported that in the summer, thirteen students and three teachers attended the National Science Seminars in New Mexico.

serious need of attention, and they did so before environmentalism became a watchword with certain groups inside the United States at large. Finally, the very beginning of the realization of the long-deferred science museum in Virginia came at a time when most scientists saw that the scientific community had left the general public far behind in scientific literacy, and that efforts were called for to remedy that information gap. As Nancy Smith Midgette has pointed out, by altering their focus, state academies of science discovered a means of remaining a significant if not a vital professional force within the lives of professional scientists.¹⁰³

To turn to the issue of race, it is noteworthy that the matter only arose with the VJAS and not with the VAS itself. Exactly what might that mean? One might take Harshbarger's words that he had "investigated" and found that there was no "other scientific organization or any other organization in the south that rejected segregation except for the Virginia Academy" at face value in this matter.¹⁰⁴ His comment on the policy of the Academy supports an argument that the members of the VAS were themselves, while certainly not integrationist, fair-minded people who were not in support of institutionalized racism. And there is no support in the records for the position that the VAS was a racist group, even though at the same time, there is also no support for the converse. As Harshbarger went on to say, "To try to imply that the Academy had, at any time, been racist is a mistake." Based on the record, it is probably fair to say that the VAS held itself aloof from the fray, perhaps understanding the essential injustice, not to mention unconstitutionality, of the position of Massive Resistance and of racism in general, but at

¹⁰³Nancy Smith Midgette, To Foster the Spirit of Professionalism (Tuscaloosa: University of Alabama Press, 1991), p. 205.

¹⁰⁴Boyd Harshbarger to Walter S. Flory, Blacksburg, Va., April 19, 1967. Special Collections, Virginia Tech.

the same time unwilling to risk the dangers certain to result from any action in support of integration.

The VAS, through the VJAS, was finally driven to confront the issue of segregation because of two events: one was the outspoken response of the black students themselves when they were turned away from their natural geographic regions, and the other was that the planned twentieth anniversary ball would bring about an integrated social occasion. "We were at the time," wrote Rae Carpenter, Jr., professor of physics at Virginia Military Institute, then a member of the Local Arrangement Committee, "still somewhat sensitive about how to handle an integrated activity. This was in addition to the reservation which most of the members of the Local Arrangements Committee had about an integrated dance."¹⁰⁵ Sensitive the VAS was, on both fronts, with the not-unexpected result that the physical proximity of black and white students was reduced to those survivors of the paper competitions. Such intellectual shoulder-rubbing was acceptable, where dancing together obviously was not.

As much as one might like, in the 1990s, to point to the Virginia Academy of Science as having been a leader in a troublesome social matter, an argument can be made that the organization by its very neutrality protected its ability to act as a center for science education, for science educators, for inspiring the young and giving support to the professoriate. Such an argument would hold that had the VAS involved itself in a social issue that was causing enormous upheaval in the community, its essential mission would have suffered. While this may not be viewed as admirable in the arena of civil rights, seemingly, the Academy tacitly felt that it could best serve by deflecting confrontation and

¹⁰⁵ D. Rae Carpenter to Harry J. Staggers, Nov. 25 1967. Copy in Harry Staggers's file. Special Collections, Virginia Tech.

by preserving a tranquil arena within which the pursuit of excellence in science at all levels could continue.

CHAPTER FOUR

Translating Industry, Transforming Science:

Making a Transition in Virginia, 1963-1976

From 1963 to 1976, Virginia's business community gradually gained an awareness of the valuable contributions made to industry by organized scientists. Often assuming center stage in research and development, Virginia scientists rose in stature, both professionally and socially. Increasingly, scientists were called in to lend their expert knowledge, offering various explanations for events in the natural and physical world as well as providing mechanisms by which social groups--especially political--could accomplish objectives they viewed as necessary. At first, the Virginia Academy of Science benefited from the new role of scientists, achieving a fairly strong position in many of the webs of negotiations defining the course of Virginia science. Most notably, the Academy was able to translate political interest in research and development into political action benefiting science education. This initial success did not last, however, in large part due to the inability of the VAS to continue to accommodate itself to the changing context of scientific professionalism.

Part I. Setting the Stage: Virginia, 1963-1976

By the mid-sixties, Virginia at last could breathe a small sigh of relief. Massive Resistance--which many Virginia historians cite as the most crucial, shaping event of the century in the Commonwealth--by and large had come to an end, and the Old Dominion

had begun the slow journey away from the evil of racism towards a more moderate social and political order. The Civil Rights Movement rendered more power to the state's African American population, and the "new" black vote changed the tenor of campaigning and elections for good.¹ With the death of Harry Flood Byrd in 1966 came the decline of his organization, making way for a new tradition in which the ideals of "prosperity and respectability" reigned supreme.² The election of Republican Governor Linwood Holton in 1970 halted nearly a century of rule by the Democrats, and for the first time since Reconstruction, the potential for a genuine two-party system emerged in the state. It was, perhaps, no accident that the emergence of the Republicans came at a time when new attitudes toward prosperity through business were sweeping the Commonwealth. Partly as a result of this prosperity and partly as a cause, a large number of people moved to Virginia.

Virginia's population rose from 3, 996, 949 in 1960 to 4, 648, 494 in 1970 to approximately one-half million more in 1975.³ Accompanying this phenomenal growth in population was an enormous leap in industrial capacity. From 1962 to 1966 alone, more than a billion dollars was invested in Virginia by private companies, both in new and expanded plants.⁴ The following decade, the amount more than doubled, as a program of economic expansion and urban renewal became a gubernatorial priority. It is quite clear

¹For an excellent overview of this early period, see Andrew Buni, The Negro in Virginia Politics, 1902-1965 (Charlottesville: University of Virginia Press, 1967.)

²Ronald Heinemann, "Virginia in the Twentieth Century: Recent Interpretations," The Virginia Magazine of History and Biography 94(April, 1986), p. 131.

³Emily J. Salmon and Edward D.C. Cambell, Jr., eds., The Hornbook of Virginia History (Richmond: The Library of Virginia, 1994), p. 91.

⁴For an overview of this period see Louis D. Rubin, Jr., Virginia: A History (New York: W.W. Norton & Company, Inc., 1976).

that Virginia was able to attract the new companies and business investments as a consequence of the weakening not only of the Byrd machine but also the decline of the philosophy that gave primacy to rural interests. The urban areas, once viewed as a source of sin and left-wing persuasion, now became centers of development that not only brought people into the Commonwealth but also political power. In particular, the geographic area that would in the '80s become known as the urban crescent-- stretching from Northern Virginia through Richmond to Hampton Roads and over to Norfolk and Virginia Beach-- gained population that would eventually translate into the election of new Democrats of liberal persuasion. The businesses and urban centers also were characterized by an interest in the educational institutions that supported the rapid industrialization of their areas: in the business schools, in the sciences and the technologies that were important to their endeavors.⁵

Rapid industrialization often translates into an equally quick depletion and pollution of natural resources, and by the early 1970s, Virginia's Governors, reluctant though they may have been, were beginning to see that ahead of them lay the difficult job of implementing conservation legislation without scaring off businesses. Conservation had never been a Virginia priority, however, despite the efforts of the academic scientific community. Furthermore, booming business meant rising incomes for many, making Virginia's politicians leery of introducing too many environmental regulations. As a consequence, conservation efforts were minimal until 1974, when the almost accidental discovery that Life Science Products, Inc. of Hopewell, a spin-off of Allied Chemical, had been dumping tons of the polychlorinated hydrocarbon Kepone into the James unveiled the

⁵Ronald Heinemann, "Virginia in the Twentieth Century: Recent Interpretations," The Virginia Magazine of History and Biography 94(April, 1986).

most severe ecological drama in Virginia's history. This event was to mark the second term of Mills Godwin in a manner that neither he nor his predecessors could have foreseen.

Among those predecessors was a native of Brunswick County, the calm and collected Albertis S. Harrison. Harrison could count among his forebears a signer of the Declaration of Independence and two Presidents of the United States, placing him squarely in the traditional mold of Virginia leaders. While his family was by no means affluent--his father a farmer, his mother a school teacher--they did make every effort to ensure their son's eventual attendance at University of Virginia's School of Law. The legal training served the dedicated Democrat well. After sixteen years of public service--save for time out taken for the military--as his County's Commonwealth Attorney, followed by ten years in the state senate, and four years as Attorney General, Harrison's gubernatorial victory in 1962 came as little surprise. Although steeped in the Byrd philosophy, Governor Harrison moved beyond such rigid and often repressive politics, making the leap from the conservatism and reactionism of the fifties to the more moderate and progressive sixties. "If I were to fix one goal for Virginia during the final decades of this century," he said in his inaugural speech, "it would be the expansion of the minds of our people within the tradition of Virginia character."⁶ Guided by these 'politics of transition,' the state made steady, though not by any means remarkable, progress during Harrison's administration. His low-key manner did much to soothe the ever-present racial tensions, notably in addressing the problems of school integration. Most importantly, Governor Harrison was able, as Virginius Dabney commented, to "bring the Commonwealth to the threshold of far-

⁶Edward Younger and Jane Tice Moore, eds., The Governors of Virginia, 1860-1978 (Charlottesville: The University of Virginia Press, 1982), p. 365; See also Albertis S. Harrison, Jr., Commonwealth of Virginia Inaugural Address and Addresses Delivered to the General Assembly of Virginia (Richmond: Commonwealth of Virginia, 1966).

reaching advances in education and industrialization. . . . set[ting] the stage for the moderate administrations of Mills Godwin and Linwood Holton.”⁷

A close personal friend of Harrison, Governor Mills E. Godwin Jr., remains the only man twice-elected to Virginia’s highest post. Elected first as a Democrat in 1966 and second as a Republican in 1974, the native southsider shared with the popular Governor Colgate Darden a significant gift: the ability to move smoothly between the most conservative and the most liberal camps. During his first race, for example, Godwin enjoyed the backing of not only the Byrd organization but also Virginia’s AFL-CIO and black leaders. A one-time architect of Massive Resistance, Godwin, by his administration’s policies, marked the end of the Byrd organization as a dominant factor in Virginia politics. It is fittingly symbolic, therefore, that during Godwin’s first year in office, Harry Flood Byrd died. Byrd, although in youth a forward-looking man who appeared to promise progressive policies, with the passage of years had become not only extraordinarily powerful but also exceptionally right-wing, in both his social and his fiscal policies. Looking back, it is clear that when Mills Godwin moved to the gubernatorial mansion, he brought Virginia’s future with him.

Throughout both of his terms, 1966-1970 and 1974-78, Mills E. Godwin strove to move Virginia into a position of leadership among the states through emphasizing economic expansion, improvement of state services, and urban renewal.⁸ While his first administration focused on resurrecting the Constitution of 1902--two major tenets of which increased the chief executive’s ability to direct the state agencies and explicitly guaranteed

⁷Edward Younger and Jane Tice Moore, eds., The Governors of Virginia, 1860-1978 (Charlottesville: The University of Virginia Press, 1982), pp. 370-1.

⁸See M. Carl Andrews, No Higher Honor: The Story of Mills E. Godwin, Jr. (Richmond, 1970).

every child the right to a quality public education--Godwin's second four years were characterized by the constant struggle between maintaining and encouraging urban and industrial development while protecting natural resources and the environment. Godwin's first term was considerably more tranquil, therefore, than his second, but his reputation as a statesman and leader of vision survived the second term intact.

Between the two Godwin terms, A. Linwood Holton--who had run against Godwin in the 1966 primary--was elected as the first Republican Governor of the twentieth century.⁹ A native of Southwest Virginia, Governor Holton valiantly attempted to prove that public service can come before partisanship. Among his achievements may be numbered a commitment to protecting the environment--one that continued to endure throughout the long years of quiet and low-ranking public service that followed his term--and the creation of the Old Dominion's first gubernatorial cabinet. Yet perhaps more than anything else, Governor Holton's belief in racial harmony, a belief that probably resulted from his origins in the southwest where blacks numbered fewer than ten percent in any county, marked his time in office.¹⁰ Laying the ground rules for his administration, Holton's first executive order read: "I will not tolerate nor will any state official tolerate racial or ethnic prejudice in the hiring or promotion of state employees."¹¹ In a state that remained torn by racial passions, Holton's example was a remarkable one, for he meant exactly what the Executive Order laid out. Holton practiced what he preached in his personal life as well; nationwide, the governor is remembered for escorting his thirteen year

⁹For an overview, see Ralph Eisenberg, "Virginia: The Emergence of Two-Party Politics," in William C. Harvard, ed., The Changing Politics of the South (Baton Rouge, La., 1972).

¹⁰Edward Younger and Jane Tice Moore, eds., The Governors of Virginia, 1860-1978 (Charlottesville: The University of Virginia Press, 1982), p. 393.

¹¹Edward Younger and Jane Tice Moore, eds., The Governors of Virginia, 1860-1978 (Charlottesville: The University of Virginia Press, 1982), p. 397.

old daughter to a predominantly black Richmond public school during his first year in the state's capitol. By the end of Holton's tenure, black employment had risen twenty-five percent. His inability to remain a major player on the Virginia political scene has been attributed to a naiveté about the realities of party politics. Yet Holton had governed well and followed a vision that few could fault.

These twelve years changed the type of society that Virginia was to one that was more like the rest of America. The rise of the Republican party meant a scramble for realignment among politicians and voters alike. New so-called liberals became a force within the Democratic party, and they created a situation where black votes both counted and were courted and where environmental concerns became important. The once-moribund Republican party--indeed at one time the outcast across the board in the old Confederate states--now attracted the new conservatives. Pro-business, wary of racial preferences, uninterested in the African-American voters, the Republican party increasingly offered a safe haven for those conservatives to whom some of the policies of Byrd and of the old Virginia remained attractive. The national uproar that took place over the war in Viet Nam, while it has little place in a discussion of the VAS, did affect the political scene in Virginia because highly traditional Virginians who put considerable stock in public order and mannerly discourse moved toward Republicanism as they were repelled by the images projected by the national Democratic party. In that sense, there is tremendous and instructive irony in the role played by Holton in revitalizing a party soon to turn into one in which he probably did not belong, and in the actions that Godwin was forced to take on behalf of the environment in the Kepone debacle.

Part II. Sections, Committees, and Related Events

For the Virginia Academy of Science, 1963 and 1964 marked the inevitable beginning of the passing of the “Old Guard.” The membership had hardly recovered from the deaths of Allan T. Gwathmey and Sidney S. Negus in 1963,¹² when, less than one year later, in early 1964, Ivey F. Lewis, “founder” of the Academy, died.¹³ To honor Lewis’s contributions, the Awards Committee unanimously recommended that the Distinguished Service Award be renamed the Ivey F. Lewis Service Award.¹⁴ And, with help from a monetary gift left to the Virginia Academy by Sidney Negus, Council was able to honor his dedicated service by establishing in 1965 the annual Sidney S. Negus Memorial Lecture.¹⁵ The vitality and the dedication of these important men to the Virginia Academy of Science is unquestioned.

Indeed, in 1973, the Virginia Academy of Science celebrated its fiftieth anniversary at the University of Virginia, reminiscing over the organization’s history over the fifty years since scientists and science educators had gathered to listen to Ivey Lewis define the scope and function of their new Academy.¹⁶ Celebration was also in order three years

¹²Virginia Journal of Science 15(1964), pp. 1-5.

¹³Virginia Journal of Science 15(1964), pp. 159-61.

¹⁴Virginia Journal of Science 15(1964), p. 227.

¹⁵Other dedicated and vibrant members of the VAS who died during the early sixties are: on July 17 1967, Guy Winston Horsley (1905-1967), surgeon and long-time member of the VAS died. He was the son of J. Shelton Horsley. His strongest contribution was his participation on the Finance and Endowment Committee of which he was a member for nineteen years--1948 until his death. On March 26, 1969, Ladley Husted of the University of Virginia died (1906-1969). William George Guy (1899-1969), Professor and Head of Chemistry at William and Mary died on June 14, 1969. Less than two months later, Foley Smith died on August 9, 1969. Smith had served as chemist with the Division of Chemistry of the Virginia Alcoholic Beverage Control Board for thirty-five years. Foley Smith left the VAS a bequest of \$8000.

¹⁶Virginia Journal of Science 17(1966), pp. 1-2.

later, when the Virginia Academy of Science joined the nation in honoring the country's bicentennial. Chaired by Dorothy Bliss of Randolph-Macon Women's College, the Virginia Academy's Ad Hoc Committee on the Bicentennial organized several commemorative activities: three invitational papers delivered at the Annual Meeting, "The Development of Technology and Industry in Virginia," "The History of Biological Sciences in Virginia," and the "History of Physical Sciences in Virginia;" a competition among secondary school students for the best research paper on an historical figure in Virginia science; and a special Wednesday evening program during the annual meeting treating colonial science.¹⁷

By 1973, three additional sections had joined the already existing twelve, providing the membership of the Virginia Academy of Science with ample opportunity for professional presentations. Materials Science and Space Science, both spin-offs of the original Astronomy, Mathematics, and Physics Section, presented full programs at the 1966 annual meeting in Harrisonburg.¹⁸ The immediate response to the new sections was positive: in their first three years, the two averaged twenty-one and twenty-three papers per year respectively. Throughout the sixties and into the seventies, however, attendance at many of the older, more established sections, slowly declined--a phenomenon that did not go unnoticed by Council. Concerned over this trend, in late September of 1965, President Roscoe Hughes challenged Council and section leaders to direct their attention to creating a "challenging and interesting scientific program at the annual meeting where the Academy is, so to speak, exhibiting its wares."¹⁹ It is fruitful to consider where, exactly, the problem

¹⁷"Minutes of Council," May 8, 1975. Special Collections, Virginia Tech.

¹⁸Virginia Journal of Science 17(1966), pp. 220, 226-7.

¹⁹Roscoe Hughes to Virginia Academy of Science Council, September 25, 1965. Special Collections, Virginia Tech.

lay. Was this a result of the increasing specialization taking place in the world of science? Or was it a slow disengagement on the part of aging leadership in the older sections?

Despite the problems of lackluster attendance at the established sections, Council continued to receive requests for new sections. Not all attempts at starting a section, however, were successful. At the 1966 meeting, S. L. Emory, representing the geographers of Virginia, asked Council to reconsider establishment of a Geography Section. Although Council encouraged Emory to proceed with his organizational efforts in “accordance with the regulations of the VAS,” the geographer did not choose to take the matter any further.²⁰ While analysis of the archival evidence does not reveal the reason behind Emory’s failure to persist, one might speculate that he did not have the necessary backing from the state’s geography community. Such was not the case with the botanists, however. On October 25, 1970, at the Council meeting, Stewart Ware of William and Mary proposed a Botany Section, and Council agreed that at the May annual meeting, a Botany Section might try a trial run.²¹ On the basis of excellent participation, the following year Botany was approved as a new section, with Stewart Ware as its first chair and Leonard Morrow as its first Council representative. Over its first three years, the section averaged twenty-five papers annually.²²

²⁰Virginia Journal of Science 17(1966), p. 219.

²¹Virginia Journal of Science 21(1970), p. 100.

²²The influx of young botanists to Virginia not only precipitated a new Botany Section, but also revitalized the Flora Committee. In the Fall of 1968, the Flora Committee took on the large task of revising the vascular plant groups. Six years later, with the “revisions” nearly finished, chair Peter Mazzeo contacted Perry Holt, chair of the Publications Committee, to review tentative plans for the publication of an Atlas of Virginia Flora (see “Minutes of Council,” November 2, 1974). By January 1976, the first part of the Atlas was off to press, with a plan to print 1000 copies. At an estimated cost of \$2000, the Flora Committee decided to handle all distribution, selling them at a price to recover the publications costs that were advanced to them by Council. See, “Minutes of Council,” November 9, 1975. Special Collections, Virginia Tech.

Membership

Regardless of total attendance at the Annual Meetings, membership numbers as a whole remained strong during the second half of the sixties and the first half of the seventies, with a gradual growth from approximately 1110--interrupted by some fluctuations--to roughly 1800. Nevertheless, Council continued to focus on retaining existing members and attracting new ones to the Virginia Academy of Science. And, by the mid-1960s, quite a few active members had conceded that to maintain a high-quality of organization, an "overhaul" of the "system" was in order. In a letter to Academy President Sam Obenshain, President-elect Hughes presented the following six "random" suggestions by which Council could "possibly upgrade the Virginia Academy of Science:" develop the means to have one or two associate editors in training; consider a more attractive format for the Journal; attract better research papers covering a wider range of fields; seek more advertising of "good taste;" consider compensating a business manager; and ensure that the VAS "should be the voice of science in Virginia."²³ With the advantage of hindsight, it is clear that Hughes' intuitive grasp of the potential for erosion was correct. While Hughes' recommendations were not acted upon officially, over the next few years Council gradually incorporated them in some form into the functioning Virginia Academy.

Despite all of these efforts, five years later, in 1970, section attendance remained low, with an ever-decreasing involvement and participation by the senior scientists in the Virginia Academy of Science threatening to damage the membership base of the organization. Within Council, there was an overwhelming sentiment that the seniors "have an obligation to share with and encourage younger scientific people," and the extent to which they actively were fulfilling that duty was a point of contention.²⁴ Other than

²³Roscoe Hughes to S.S. Obenshain, February 16, 1965. Special Collections, Virginia Tech.

²⁴"Minutes of Council," September 12, 1970. Special Collections, Virginia Tech.

advising the senior scientists of their responsibilities as older members of the scientific community, Council did not have other means to encourage participation. Unfortunately, the problem worsened as growing numbers of top-notch scientists in the state failed to show any interest in the Virginia Academy. By 1974, Past-president Franklin Flint had grown sufficiently worried about the “brain-drain,” that he wrote to chair of the Long Range Planning Committee, Dale Ulrich of Bridgewater College.

It seems to me that the Long Range Planning Committee needs to turn its attention to concern for the involvement in the Academy of prestigious scientists of the state. As the Academy involves increasing numbers of lower level science teachers, it runs the risk of becoming a less prestigious scientific organization and of having increased difficulty in attracting the devotion of prestigious scientists.²⁵

Over the following year, the Long Range Planning Committee recommended to Council that it would benefit both the prestige of the Academy and science in the state for the VAS to begin sponsoring “respectable scientific activities and conferences” within the Commonwealth.²⁶ One wonders how the Long Range Committee defined “respectable scientific activity.” Certainly, the Virginia Academy of Science had long encouraged and tried to engage in scientific activities of the highest caliber; indeed, one need only consider its efforts with the Science Museum of Virginia, the Virginia Institute for Scientific Research, and the American Association for the Advancement of Science. Furthermore, conferences and symposia held at the annual meeting--the most recent treating various aspects of the quality of the environment--were well-attended and often led by upper-level government officials and “prestigious” scientists, the latter from both academia and industry. The Virginia Academy of Science had worked hard at extending and

²⁵Franklin Flint to Dale Ulrich, June 13, 1974. Special Collections, Virginia Tech.

²⁶“Minutes of Council,” November 9, 1975. Special Collections, Virginia Tech.

strengthening its network, both within and without the scientific community, and, in fact, its attention to industry and to government reflected the VAS's awareness of the changes taking place in the Commonwealth as a whole. Erosion of the membership base, which was just a minor problem in the late sixties, had begun to gather force in the mid-seventies. Efforts from within the VAS, however, were simply not effective. Taking the viewpoint of many members of the Virginia Academy, member Arthur Burke explained, "the most regrettable situation is that many college presidents look at the Virginia Academy of Science and sniff and say, so what?" Burke reported that he was a third party to a conversation in which a dean of a College of Arts and Sciences was asked by the president of a major Virginia company why he did not, as dean of a large college, encourage his faculty to join the Virginia Academy of Science. The Dean replied: "I don't regard it as being of enough significance to their careers and I regard it beneath my dignity to do it."²⁷ In very large measure, it appears that while the VAS's presence in public service endeavors, such as initiating the SMV and the VISR was apparent and accorded proper recognition, the organization's role in contributing to the professional lives of Virginia scientists was no longer seen as integral by the scientists and their institutional administrators.

Given the exodus of Virginia's senior scientists from the Academy's activities and the consequent efforts of the VAS to halt such movement during the late sixties and early seventies, it is not surprising that in 1968, Council approved a new category of membership. Article 4 in the Academy Constitution now read:

From active membership, there shall be a body of Scholars known as 'Fellows of the Virginia Academy of Science,' selected because of their contributions to science in one or more of the following ways: a) outstanding scientific research; b) inspirational teaching of science; c) highly significant leadership in the Academy.²⁸

²⁷Arthur Burke to Charlotte Webb. Interview. April 11, 1995.

²⁸Virginia Journal of Science 22(1971), pp. 23-25; Rules and Procedures: 1) A Fellow must be nominated

In mid-March, 1970, Council approved the first class of elected Fellows: Jesse W. Beams, John C. Forbes, Thomas E. Gilmer, Boyd Harshbarger, Roscoe D. Hughes, Clyde Y. Kramer, J. Douglas Reid, and William T. Sanger.²⁹

Given the changing ideas of professionalism in science and of the pressure in the direction both of funded research and of publication in peer-reviewed journals that were taking place all across the United States, it seems very likely that it was nothing that the VAS did or failed to do that led to the decline in senior members. Arthur Burke's comment reinforces this position. There was no reward at all for first-class scientists or for those with significant ambition to participate in state-level scientific activities. Further, the professional niche that the VAS had represented had been taken over by national organizations, and increasingly, state colleges and universities put membership in such national organizations into standards for promotion and tenure. Finally, the Virginia Journal of Science, which had struggled from its inception, remained a completely regional journal. Publication in the VJS would not go far in either fulfilling the needs of probationary faculty or of tenured faculty for validation of their work. In fact, this situation was not unique to the VAS. Other states' academies of science were undergoing much the same pressures.³⁰ Forward-looking leaders were bound to recognize the seriousness of the dilemma that they faced.

by at least three members of the Academy. The Academy Council must approve each "Fellow" by a majority vote, and will establish the limiting date for receipt of nominations. It will be the usual procedure to announce new Fellows at an annual meeting. 2) No more than twenty-five fellowships will be approved the first year. After the first year no more than one-half of one per cent of the total active membership shall be selected in any one year. The limiting number of Fellows shall not exceed five percent of the total active membership of the Academy.

²⁹Virginia Journal of Science 21 (1970), p. 100. Membership in the "Fellows" was and continues to be a great honor. At the annual meeting in 1976, E.L. Wisman announced that the Fellows would begin an annual breakfast meeting as part of their participation in the annual meeting. Fellowship notwithstanding, the event would perform a useful service to the VAS by reviewing the activities of the Academy and recommending courses of action which might be followed.

³⁰See Nancy Smith Midgette's To Foster the Spirit of Professionalism (Tuscaloosa: University of Alabama

Long Range Planning Committee

As it had in the past, the Long Range Planning Committee continued to play the role of a subtle, yet forceful and influential, strategist. For example, in 1968 when William Hinton, the outgoing chair, delivered his last report to Council, he recommended four questions the Virginia Academy of Science might ask itself in thinking ahead to a prosperous future. First, how could the Academy best assist in directing people with high quality potential to the scientific professions? Second, in what ways could the VAS further assist with the education of teachers, students, and the lay public? Third, how might the Virginia Academy strengthen support throughout the state for carrying out scientific activities? And fourth, how might the VAS accomplish its objective while working harmoniously and productively with the state and federal governments?³¹ Over the next four years, Hinton's provocative questions served as a basis for many projects of the Virginia Academy of Science. In view of the VAS's previous efforts to tie together a viable network of individuals, companies and government agencies, it is significant to observe that at least at some level, Hinton and others were aware that it was, at best, a tenuous network. And it was one in which the VAS had little power.

Press, 1991) for a discussion of this problem as it pertains to southern state academies of science.

³¹Concerning the matter of state financial support, a number of other State Academies received more than Virginia. On November 17, 1969, Robert W. Hanson, Executive Secretary-Treasurer of the Iowa Academy of Science, wrote to Rodney C. Berry, Executive Secretary of the Virginia Academy of Science, about the matter. He indicated that the Iowa Academy was attempting to change the nature of their appropriation from the legislature to a direct appropriation rather than support only for the printing of the proceedings, which amounted to about \$8000 annually. He was interested to know what the other academies did. Berry responded on November 24, that the VAS received no direct support from Virginia. The Journal got about \$5000 from subscription and ads and another \$8000 came from the general fund of the VAS. For the following year, Berry stated, it looked as if the operating budget for the VAS would be about \$35,000, with the Research Trust Fund standing at about \$50,000. Berry also informed Hanson that sufficient funds were always a problem and that on October 20, 1967, Council had authorized a Fund Raising Committee. Letters in Special Collections, Virginia Tech.

Publications Committee

Towards the end of 1965, it became apparent to Council that with the growing number of publications issued annually by the Virginia Academy of Science, an “oversight,” or Publication Committee might be a good idea. Embracing the idea, then-President Roscoe Hughes directed Walter Flory to chair an Ad Hoc Committee on Academy Publications.³² Over the next decade, this committee would substantially influence the course of all Virginia Academy publications, but especially that of the Virginia Journal of Science and the Dismal Swamp project.

Virginia Journal of Science

By 1964, the hard work of Editor Paul Siegel over two years had begun to take effect. For the first time since Boyd Harshbarger led the publication, the Virginia Journal of Science left the press in a timely fashion. In October, Siegel reported that the last volume was, in fact, thirty percent larger than its 1963 counterpart, and he anticipated that the 1965 edition would boast a fifteen percent increase.³³ Constantly thinking ahead to ways of improving the quality of the Journal, in late 1965, Siegel announced in the VJS that effective with the issue of January 1966, a new “Letters to the Editor” section would be printed in an “effort to stimulate thought and discussion on pertinent subjects.”³⁴ In May,

³²Roscoe D. Hughes to Walter Flory, January 14, 1966. Special Collections, Virginia Tech. According to Hughes, the initial responsibilities of the Publications Committee were threefold: 1) Study the publication problems of the Academy and arrive at an over-all long-range policy. 2) Determine whether or not the VJS was satisfactory as it presently stood. Should it be published more often, e.g. monthly or bimonthly? Would a “newsletter” published at even more frequent intervals satisfy VAS needs better than a journal? . . . The committee would also recommend editors and staff for the Journal. 3) The Publications Committee should also consider finances for all publications.

³³“Minutes of Council,” October 18, 1964. Special Collections, Virginia Tech.

³⁴Virginia Journal of Science 16(1965), p. 248.

1966, Siegel resigned as editor of the Journal. He had served as editor since 1961--in addition to Harshbarger, only Siegel had completed his term of five years.³⁵

Over the summer of 1966, the new Publications Committee recommended Herbert McKennis, Jr., of the Medical College of Virginia, as the new editor. Council approved the recommendation, and by January, 1967, the VJS was issued under McKennis' name. The new editor assumed his position during a time of change. Rapidly increasing costs of printing and issuance mandated a substantial cut in the detail of the published reports of the Virginia Academy of Science's yearly activities. To save money, the "Program" of the annual meeting was published separately beginning in 1966; however, abstracts continued to appear in the fall issue of the VJS. Despite the different layout, during his two-year leadership McKennis managed to lead the Journal forward, introducing a new format using high quality paper, maintaining subscription levels, and keeping the publication "out of the red." As Academy Fellow Arthur Burke remembered McKennis' time as editor: "Herb McKennis felt that the Journal, and he was adamant, should be a presentable piece, but that its real mission was to provide space to publish graduate articles, favored student articles, or things from minor persons that would not get published in national journals."³⁶ In view of the problems arising from the lack of prestige of the VJS, one is forced to question the impact of this "adamant" policy, but it was to remain in effect for some time, with predictable results--helping aspiring, especially younger scientists but not gaining a reputation as a serious professional journal.

³⁵Virginia Journal of Science 17(1966), p. 227.

³⁶Arthur Burke to Charlotte Webb. Interview. Richmond, Virginia. April 11, 1995.

In 1969, Lynn Abbott, Jr., a biochemist at the University of Richmond, succeeded McKennis. During his three-year editorship, Abbott continued to work with the new format introduced by McKennis and maintain subscription levels. “It was a hard job,” Abbott recently commented. “I think I spent more time on that than I did on any other thing I did in the Academy. Trying to get people to turn their manuscripts in. . . . It was hard to get people to review them. I reviewed them myself.”³⁷ One of the most unique accomplishments of Abbott’s tenure was the series of Journal covers he commissioned from Richmond artist Doug Hensley.³⁸ Bright and colorful with excellent design quality, the covers brought a new sense of style to the VJS. When Walter Flory reported at the annual meeting in 1971 to Council that Lynn Abbott’s term would expire in August--and, most unfortunately, other commitments precluded his reappointment--the leaders of the VAS turned to the Publications Committee for counsel as to who might best fill the editor’s shoes. The Committee recommended Charles H. O’Neal, biophysicist of Virginia Commonwealth University, Health Science Division, and starting in September of 1972, O’Neal began his term.

Unfortunately for O’Neal, his entry into the “realm of the Journal” coincided with a downward turn, as manuscript submissions decreased, and timely publication became increasingly difficult. In 1973, Perry Holt of Virginia Polytechnic and chair of the Publications Committee, submitted an editorial to the VJS, in which he begged the entire membership to support the publication, especially senior scientists, who, he declared, “must be encouraged--urged--to publish more frequently some of their best work in the Journal.” It is no secret, stated Holt, that “senior scientists” seek out national journals as

³⁷Lynn Abbott to Charlotte Webb. Interview. Richmond, Virginia. March 13, 1995.

³⁸Lynn Abbott to Charlotte Webb. Interview, Richmond, Virginia. April 13, 1995.

vehicles for promoting their research and enhancing their reputations “nationally and internationally.” Furthermore, it is equally known that “the administrative officers of at least some of the institutions of higher education in the state have actively discouraged their staff from publishing in the Journal.” Determined to prove that the VJS was an important publication with value to the wider scientific community, Holt pointed out that his articles in the Virginia Journal of Science “have been as widely cited as those published in national or international journals.” While Holt’s plea should have nudged a few senior scientists into the direction of the publication, in actuality, it did nothing to change their publication preference from national to regional. Before the end of his term, on March 16, 1974, O’Neal, citing professional obligations, although frustration was the more likely cause, stepped down. The Publications Committee moved that David West of Virginia Polytechnic and State University be named to fill the remaining portion of the unexpired term of office as editor of the VJS.

Hoping to bring the Journal back onto schedule and to “strengthen it as a scientific publication,” West assumed the editorship.³⁹ But West’s report to Council of March 1975, coming one year after O’Neal’s resignation, did not bode well for the Virginia Journal of Science. Not only had the last issue of Volume 25 come out approximately seven weeks after its anticipated date, but also its slim size attested to the small number of papers submitted. “One obvious factor in submission rates,” pointed out West, “is the desirability of the VJS as a place to publish. For academic people this will depend on the attitudes of their superiors towards the Journal, in other words its ‘respectability.’ ” In order to increase respectability, West said that he had tried to strengthen the review system by requiring the manuscript to be read by at least “two out-of-state and recognized

³⁹“Editors Report,” March 20, 1976. Special Collections, Virginia Tech.

reviewers.” Another problem, he asserted, is the interdisciplinary nature of the VJS, for “achieving quality among diversity” is not always possible. Finally, West stated, the articles in the Journal are not always of “general enough interest.” Far too many articles focus on biological sciences, as very few manuscripts are received from mathematics, the physical sciences, and social science.⁴⁰ Although he was clearly discouraged, West’s decision to step down in March of 1976 was due to personal reasons.⁴¹

It is clear that the leadership of the VAS understood the reasons behind the on-going plight of their Journal. At this point, the most obvious difficulty was the impossibility of competing with national journals. Those same reasons that affected membership, particularly from the level of senior scientists, were affecting the VJS. Compounding these problems was the narrow focus of the articles. Given this recognition, it is curious that Council did not formally consider that in the absence of a radical restructuring--from the mission of the Journal to its content and distribution--the VJS could only limp along into the future, hanging by the thread of good-will and limited financial support provided by the parent organization. Surely such a restructuring must have occurred to at least some of the members of Council, but there is no evidence in the “Minutes,” in correspondence, or in oral interviews of such a consideration. It therefore appears likely that so closely was the idea of the Journal tied to Council’s conception of the Virginia Academy of Science and the Academy’s own sense of itself that any major change, at least for the time being, literally was unthinkable.

⁴⁰“Editors Report,” March 20, 1975. Special Collections, Virginia Tech.

⁴¹“Editors Report,” March 20, 1975. Special Collections, Virginia Tech.

Great Dismal Swamp Project

In April, 1964, J. T. Baldwin, Jr., reported to Council on his long study and editorial work on the proposed Academy publication, The Great Dismal Swamp. According to Baldwin, the manuscript, initiated in 1951, had reached completion in 1963 and recently had been reviewed by a reader for the University Press of Virginia. On the basis of this review, Baldwin declared the manuscript not fit for publication; indeed, a number of chapters required extensive rewriting and updating. However, Baldwin assured Council that the editing would be done expeditiously, as he was all-too-aware of the efforts of commercial groups to obtain control of the swampland.⁴² Five months later, Baldwin mailed his progress report to Council, claiming all but two sections were finished; such claims were to become a constant refrain over the next few years.⁴³ In late November, 1967, Baldwin sent the following memo to Virginia Academy President Stanley Williams, promising:

I can have the manuscript for a general book on the Swamp ready for publication by the end of the semester under two conditions: that I am assured that there are funds for publishing and that a competent individual be found to write an acceptable chapter on the soils of the Swamp. . . It has been suggested that the manuscript be published piecemeal or that the manuscript be xeroxed and distributed: I accept neither of these suggestions.⁴⁴

After hearing Baldwin's conditions, Council addressed each point in turn. First, available funds for publication remaining from money in the Academy Trust Fund resulting from the James River Basin publication might be used for the publication. Second, Council informed Baldwin that, in fact, Edwin Henry, whom expert Sam Obenshain

⁴²"Minutes of Council," April 5, 1964. Special Collections, Virginia Tech.

⁴³"Minutes of Council," October 18, 1964. Special Collections, Virginia Tech.

⁴⁴"Minutes of Council," November 2, 1967. Special Collections, Virginia Tech.

considered the “most knowledgeable person available on Swamp soils,” already had revised the chapter on soils and had “done a good job on this chapter.” As chair of the Publications Committee, Flory then lamented:

It is desirable to complete this project by publication of the manuscripts available. Your chairman is “stymied.” If you have any suggestions for procedure, your help on this problem--in any appropriate manner--is earnestly solicited. I am sure some Dismal Swamp chapters have been written for some time. Use should be made of them before they get “too cold.”⁴⁵

Exactly one month later, Baldwin still had not corresponded with any member of Council or the Publications Committee. In a letter to Rae Carpenter of Virginia Military Institute, Flory remarked that he “knows Baldwin fairly well” and would try a second letter to him--he had sent one earlier, in October, but received no response. “If that doesn’t bring an answer, I will call him and perhaps can arrange to meet him in Williamsburg to discuss this.”⁴⁶

In January, 1968, Flory tried yet another letter to Baldwin. Flory said, “Prior to our October 22 Council Meeting in Charlottesville, I wrote to you, on October 18, asking if you would let me know the status at that time of the Dismal Swamp manuscript so that the Council could take action concerning its publication. I have never had a reply to that inquiry.” Flory continued, indicating that Council had agreed that both too much time and money had gone into the project to allow it to “become more obsolete than it already may be.” He informed Baldwin that editor Herbert McKennis of the Virginia Journal of Science

⁴⁵“Minutes of Council,” November 2, 1967. Special Collections, Virginia Tech.

⁴⁶Walter Flory to D. Rae Carpenter, December 1, 1967. Special Collections, Virginia Tech.

had offered to arrange for the study to be issued through the Academy publication. Flory concluded by asking Baldwin to contact him before the close of the week.⁴⁷

Baldwin did reply, on February 15, 1968, curtly and authoritarily stating: "I plan soon to give further attention to the Dismal Swamp manuscript. When it is ready for publication, I shall let you know. As I have previously stated, I can not [sic] agree to piecemeal publication of this study."⁴⁸ Upon receiving Baldwin's letter, Flory promptly forwarded it, with what must have been dismay, to his fellow members of the Publication Committee, reminding the group that the Dismal Swamp project had been initiated sixteen years previously, with publication of manuscripts pending for many years. Furthermore, pointed out Flory, the spring, 1967, action that had been promised by Baldwin had yet to materialize, and Baldwin's most recent memo did not amount to anything, "except to again delay indefinitely." Flory proposed to turn the matter over to Council at its next meeting.⁴⁹

During the March Council meeting, Flory and the members discussed various strategies for preparation of the Dismal Swamp manuscript. James Midyette moved, and it was accepted, that Council authorize the Publications Committee to do whatever necessary to "assemble, edit, and publish" the project manuscripts.⁵⁰ Secretary Rae Carpenter agreed to inform Baldwin of this decision via the post.⁵¹ Baldwin's subsequent lack of response forced Flory on April 12, 1968, to send the biologist the following ultimatum:

⁴⁷Walter Flory to J.T. Baldwin, January 20, 1968. Special Collections, Virginia Tech.

⁴⁸J.T. Baldwin, Jr. to Walter Flory, Jr., February 15, 1968. Special Collections, Virginia Tech.

⁴⁹Walter Flory to Members of the Publications Committee, February 22, 1968. Special Collections, Virginia Tech.

⁵⁰"Minutes of Council," March 24, 1968. Special Collections, Virginia Tech.

⁵¹D. Rae Carpenter to J.T. Baldwin, March 25, 1968. Special Collections, Virginia Tech.

“Accordingly, I request you mail or express these [the Dismal Swamp manuscripts] to me at once, to be in hand here by not later than 10 days hence, that is by April 22, 1968.”⁵²

Flory’s letter had some effect, in that six days after its issuance, Baldwin finally acknowledged Secretary Carpenter’s letter of March 25th. Not surprisingly, the correspondence was neither friendly nor agreeable. After staunchly defending his position of February 15, Baldwin proclaimed that should the Academy terminate its agreement with him, he would publish on his own: “and my understanding with collaborators is as it should have been from the beginning that manuscripts will be returned upon request.”⁵³ Furthermore, Baldwin declared:

It was my idea, and mine alone, that I put together a popular book on the Dismal Swamp, and I have assembled a rather good one. I have had good cooperation from a number of individuals. But not from others. . . . The book was outlined entirely by me, and I estimate that at least seventy-five percent of the work done on it has been by me. I have edited--often severely--every manuscript submitted at my request and have rejected several. . . . So, you see, this is my project, and I have not the slightest notion of anybody “taking over.”⁵⁴

In trying to make sense of Baldwin’s letter, Carpenter wrote Flory that Baldwin had responded in the “worst possible ways.” Carpenter wondered whether or not legal action might have to be taken, and suggested the original agreement between Baldwin and Council be located in the “Minutes.”⁵⁵

⁵²Walter Flory to J.T. Baldwin, April 12, 1968. Special Collections, Virginia Tech.

⁵³J.T. Baldwin to D. Rae Carpenter, Jr., April 18, 1968. Special Collections, Virginia Tech.

⁵⁴J.T. Baldwin to D. Rae Carpenter, Jr., April 18, 1968. Special Collections, Virginia Tech.

⁵⁵D. Rae Carpenter to Walter Flory, April 19, 1968. Special Collections, Virginia Tech.

In May, 1968, James Midyette wrote Carpenter. In the course of addressing separate legal questions Carpenter had raised concerning the governing body of the Virginia Academy, Midyette mentioned that he had taken the liberty of also discussing with the VAS's attorney the present difficulty of extracting the Dismal Swamp manuscripts from Baldwin. Specifically, Midyette had asked him whether or not paragraph (j) of the Academy's Charter which reads:

Property Rights of Members: No part of any net earnings of the corporation shall inure to the benefit of any private member or individual. All interest of any member of the cooperation in its property shall terminate and vest in the corporation upon his ceasing to be a member thereof by death, resignation, expulsion, or otherwise,

might bear relevance to the present "Dismal Swamp" situation. In Mr. Keith's view, all manuscripts or documents compiled by any chairman of a committee or project of the Virginia Academy of Science "are the actual property of the Academy" and "legally must be relinquished by the individual when he ceases to function in behalf of the Academy." Therefore, Midyette asserted, it seemed as if all collaborators on the Dismal Swamp project relinquished ownership rights when they delivered their manuscripts to Baldwin; likewise, Baldwin relinquished his own property rights to any of his "personal contributions" when he agreed to chair the Dismal Swamp project. Finally, Midyette said that while this action may not be "gracious or pleasant" to consider, it was legal and was therefore ethical. Perhaps, he suggested, the VAS might use paragraph (j) of the Charter to "persuade Dr. Baldwin that his withholding of the manuscripts without just cause is futile."⁵⁶ Whether Baldwin was shaken at the threat of a lawsuit or simply decided to give up his claims of ownership over the Dismal Swamp material is unclear. What is clear is that the material slowly was returned to its authors. Indeed, one year later, on May 8, in his report to

⁵⁶James Midyette, Jr. to D. Rae Carpenter, Jr., May 17, 1968. Special Collections, Virginia Tech.

Council, Flory stated that some progress was being made retrieving the manuscripts on the Dismal Swamp.⁵⁷

Over the next few years, several papers in which various aspects of the Great Dismal Swamp were featured were published in the Virginia Journal of Science. Initially, two articles-- "The Birds of the Dismal Swamp" by Joseph J. Murray of Lexington and "Forests and Forestry in the Dismal Swamp" by George W. Dean, Virginia State Forester-- appeared in the fall issue of Volume 20 of the 1969 Journal.⁵⁸ In the spring of 1970, two additional articles were published in the VJS: "Waters of the Dismal Swamp" by Elmer W. Ramsey, Kenneth R. Hinkle, and Lawrence Benander and "Soils of the Dismal Swamp of Virginia" by Elvin F. Henry.⁵⁹ At the same time, Alexander Crosby Brown, maritime historian from Newport News who had been assigned the section on the history of the swamp years before, was at work on what would be a book-length work on the subject titled Juniper Waterway.⁶⁰ Yet, perhaps surprisingly, despite this spectrum of publication activity, the Virginia Academy's interest in issuing the full series of the Dismal Swamp project did not wane. Plans went forward to find a new editor.

In presenting the report of the Finance Committee to Council in October 23, 1973, chair Rae Carpenter noted a request for funding for publication of the swamp project by the Publications Committee and asked the chair of the Publications Committee, Perry Holt of Virginia Polytechnic Institute, to discuss the status of the long-overdue project and the

⁵⁷"Minutes of Council," May 8, 1969. Special Collections, Virginia Tech.

⁵⁸Virginia Journal of Science 20 (1969), pp. 158-173.

⁵⁹Virginia Journal of Science 21 (1970), pp. 81-83; and 41-46.

⁶⁰Alexander Crosby Brown, Juniper Waterway: A History of the Albemarle and Chesapeake Canal (Charlottesville: University of Virginia Press, 1980).

justification for such monies. Holt reviewed the swamp project's latest progress before informing Council that while the University Press of Virginia had endorsed the project, suggesting an early 1975 publication date, they had not settled on an exact dollar amount needed from the VAS to begin publication. Without this data, the Finance Committee recommended, and Council accepted, that VAS appropriations be postponed until further information became available.⁶¹ Holt also reported that he had selected Richard Hoffman, a professor of biology from Radford College, as editor for the project, confidently expecting that under new leadership, the long-delayed major publication would come into being.⁶²

In July, 1974, chairman Holt wrote his friend Richard Hoffman inquiring: "How are the plans for the Great Dismal?" Holt said that at the upcoming Council meeting in November, he would like Hoffman to present the results of his editing, impressing upon Council that the final stages of editing in fact were underway. In this "attempt to get Hoffman moving," Holt declared:

I made no mistake in picking you as the best writer--editor in the state--I will go down swearing that. But others. . . are getting anxious, and remember, I swore to Council that we would finish off the 'Great Dismal' project on time or "kill it" once and for all. I must know within the next six weeks what to do at the next Council meeting (November 2). . . If, for any reason, you feel that you cannot take the raw data or get it in time, and, in effect, write a 500 page book between now and next April, there are many honorable ways out for you and I will support you in them.⁶³

⁶¹"Minutes of Council," October 28, 1973. Special Collections, Virginia Tech.

⁶²"Minutes of Council," October 28, 1973. Special Collections, Virginia Tech.

⁶³Perry Holt to Richard Hoffman, July 23, 1974. Special Collections, Virginia Tech.

Faced with what must have seemed a daunting project of unmanageable size, Hoffman decided he could not edit the VAS-sponsored book on the Great Dismal Swamp, and he so informed Perry Holt. Writing Paul Kirk of Old Dominion University, Holt proposed that E. Fred Benfield and Arthur L. Buikema, both biologists and departmental colleagues at Virginia Polytechnic, collaborate with Kirk on the Dismal Swamp project. Holt said that all manuscripts should be in Kirk's hands by December, that the book would go to the University Press of Virginia by the spring of 1975, and he expressed his hope that it might be on shelves in 1976, the Bicentennial year.⁶⁴ Kirk accepted the task, but not before he offered his opinion that ". . . the worthwhile and timely project suggested many years ago by I. D. Wilson may be an anachronism today, when much up-to-date popular and technical information is becoming available on the swamp."⁶⁵ In early November, 1974, chairman Holt announced that the Publications Committee further recommended the publication of a series of volumes, perhaps paperbacks, on the Great Dismal Swamp, and that the following persons be appointed as a Board of Editors for the Great Dismal Swamp Series: Robert Ake (ODU), E. Fred Benfield (VPI), Arthur L. Buikmann (VPI), and Paul W. Kirk (ODU). Council approved the suggestion, and required the Board of Editors to report to it with the specifics, such as publication, schedules, and costs.⁶⁶

The plans of the new Editorial Board to "once and for all" issue a prompt and concise series on the Dismal Swamp did not reach fruition, as over the next year and a half, severe funding problems and difficulties in obtaining manuscripts continually blocked forward movement. Finally, in a discouraged letter to Ake, Benfield, and Buikema, Kirk

⁶⁴Perry Holt to Paul Kirk, August 20, 1974. Special Collections, Virginia Tech.

⁶⁵Paul Kirk to Perry Holt, September 17, 1974. Special Collections, Virginia Tech.

⁶⁶"Minutes of Council," November 2, 1974. Special Collections, Virginia Tech.

proposed on January 8, 1976, to “disband our august Dismal Swamp editorial committee for the lack of a raison d’etre.”⁶⁷

Three principal reasons persuaded Kirk to take this course of action. First, the general consensus was that the swamp itself would benefit little from the original concept of a semi-popular work: a number of people already were focusing on this sort of educational direction. Second, other than Benfield and Buikema, Kirk could not locate any collaborators willing to publish fresh material on the swamp for the Academy, especially in the VJS--indeed, more prestigious journals or government research reports held much more appeal. Third, the VAS Executive Council and the Publications Committee did not appear to have committed sufficient funds for soliciting monographs of excellent quality. Finally, and this, Kirk emphasized, was his overriding reason:

[S]ome biological and especially physical scientists have understandably become critical of the implication that the Virginia Journal may give special treatment or preference to Dismal Swamp papers in this time of soaring publication costs. . . I would much prefer to see the Virginia Journal identified nationally with scientific excellence than with any particular habitat or discipline. . . . Please consider this my (our) resignation from the Swamp Publications Subcommittee, so Perry (Holt) can officially and quietly pronounce the death of this last vestige of the Dismal project he inherited.⁶⁸

In March, 1976, the Publications Committee recommended to Council that the Dismal Swamp Editorial Board be dissolved and the Virginia Academy of Science “drop the project.” The following initial motion made by E. L. Wisman and seconded by Morrow did not pass, but was defeated by majority vote: “That the Virginia Academy

⁶⁷Paul Kirk to Robert Ake Fred Benfield, and Art Buikema, January 8, 1976. Special Collections, Virginia Tech.

⁶⁸Paul Kirk to Robert Ake Fred Benfield, and Art Buikema, January 8, 1976. Special Collections, Virginia Tech.

through action of Council and approval of the Academy Conference formally abandon the so-called "Great Dismal Swamp project" as an official part of the activities of the Academy with thanks and appreciation to the many people who have labored long and unselfishly in this effort over the years albeit unsuccessfully."⁶⁹ Instead, Council passed unanimously a first motion by Carpenter: "That the Academy approve the recommendation to dissolve the Dismal Swamp Editorial Board" followed by a second, "That the Academy suspend at this time any efforts toward continuing the Dismal Swamp project, that those persons who have been involved be thanked for their efforts and enthusiasm, but that we reiterate our interest in the study of the Dismal Swamp and publications on the swamp at some future time."⁷⁰ That future time would never come.

What does this ending of the Great Dismal Swamp project, "not with a bang but a whimper," say about the Virginia Academy of Science? Certainly over a long span of years, the leaders of the VAS indicated their full support of this project. On the basis of the ultimate fruition of the James River Basin project, which also dragged out over many years, the Academy had every reason to expect that it could ultimately also bring the swamp volume "to the shelves." The choice of Baldwin as editor was obviously unfortunate, and one wonders whether the stress of this very large project may not have had a negative impact on the temperament of this man. Perhaps expectations of the Publications Committee and Council were unrealistic. Certainly, the letter from Holt to Hoffman, giving the latter eight months, mostly during the academic year, to take "raw data" and turn it into a "500-page book" would be enough to give any accomplished editor pause. Ultimately, however, the need of a purely volunteer organization to depend upon largely

⁶⁹"Minutes of Council," March 20, 1976. Special Collections, Virginia Tech.

⁷⁰"Minutes of Council," March 20, 1976. Special Collections, Virginia Tech.

unrewarded (and certainly unpaid) labor to accomplish a task relies on three things: the importance and usefulness of the task in the overall scheme of things, the perceived professional reward or recognition, and the willingness of a single individual or small team to drive the project forward. The James River Basin project obviously needed doing. The Great Dismal Swamp project, in contrast, suffered from a declining perception within the VAS of the urgency of the task. To Academy members, professional recognition was not seen as forthcoming from the swamp project. And finally, those to whom this project at one time has meaning were no longer interested in devoting the necessary time for its completion. That said, it is noteworthy that the long-running VAS interest in and support of the swamp research did have a desirable outcome, although not the outcome the Academy desired. When Brown's Juniper Waterways was published by the University Press of Virginia in 1980, it was a testimony to the staying power of an aging historian; in making it to a second printing, it was also evidence of the validity of the original conception so many years before. And interest in the swamp fit well into the general area of commitment to the environment that characterized the Virginia Academy of Science.

Environmental Conservation Efforts

The Virginia Academy of Science had long viewed conservation of the environment as an avenue for Academy activity. Indeed, three years into its existence, the VAS established the Committee on the Preservation of Natural Resources, only to change its name to the Committee on the Conservation of Natural Resources one year later. A successful effort to save Goshen Pass, the publication of the James River Basin: Past, Present, and Future, and the foray into the Great Dismal Swamp testify to the commitment of Academy members to protecting Virginia's natural resources--both through active lobbying and education of the voting public. Yet in the early days of the Academy, interest

in the environment was far from widespread, and public involvement among Virginians was almost nonexistent.

During the mid-sixties, it would be surprising--although supporting evidence is not available in the Academy archives or in the oral interviews--if Rachel Carson's 1962 serialized publication Silent Spring had not strengthened the commitment of at least some members of the VAS to fight for the "rights of nature."⁷¹ Certainly, Carson's dramatic publication awakened a sleeping public to the problems at their doorstep, and, as time would tell, nowhere was there a public more in need of awakening than in Virginia. By the 1970s in the nation at large, fighting for the "rights of nature" gained an entirely new meaning, as slowly the environment was brought under federally mandated protective regulation. President Nixon's authorization of the Environmental Protection Agency (EPA) in 1970 was cheered by environmentalists throughout the nation. In 1972, amendments to the 1955 Clean Air Act and the 1960 Clean Water Act turned what amounted to minor recommendations into national, powerful agents of change. Indeed, these acts, broadened and deepened, represented a substantial rallying point for the many people whose growing awareness of the problems of pollution moved them into activist positions.⁷² And academic scientists, who had long been generally aware of the potential for ill posed by the pressures of population and industrial pollution, were among those drawn into the quickening public debate.

As one would expect, in the Commonwealth of Virginia, institutions of higher education welcomed the "push" for the environment. The new interest in the environmental

⁷¹Rachel Carson, Silent Spring (Boston: Houghton Mifflin Company, 1962).

⁷²For a comprehensive overview of this period, see Kirkpatrick Sale, The Green Revolution: The American Environmental Movement, 1962-1992 (New York: Hill and Wang, 1993).

sciences translated into many programs and scientific opportunities. For example, the Virginia Institute of Marine Science (VIMS), which had been affiliated with the College of William and Mary since its beginnings in 1938, was made an independent institution by the Acts of Assembly in 1962, and the explosion of interest in environmental matters put considerable new funding into the Institute.⁷³ The Institute was charged with planning and carrying out basic and applied research on marine life within Virginia's tidal waters and those eventually emptying into the Atlantic Ocean, and it was to act as the advisory arm of the Marine Resources Commission, the state's regulatory body for fisheries.⁷⁴ In May of 1970, Virginia Polytechnic Institute opened the doors to its Center for Environmental Studies designed to foster research activity aimed at offering solutions to environmental problems, solutions that might be helpful to the government and industry. The Virginia Institute of Scientific Research in Richmond formed a Division of Aquatic Biology to conduct "both laboratory and field investigations in aquatic ecology with particular emphasis on determination of the degree and kind of industrial use to which bodies of water can be put without degrading their quality for recreation, food production, and other uses."⁷⁵ Finally, on September 16, 1970, Governor Linwood Holton announced "the Governor's Council on the Environment for the purpose of advising and assisting the Governor on matters pertaining to man's environment and the quality of life in the Commonwealth." The Executive Order mandated that, "[T]he Council shall assist and encourage the programs and activities of those agencies of state and local government dealing with any aspect of the environment. . . Membership of the Council shall not exceed

⁷³William Jennings Hargis, Jr., "Research, Education, and 'Proper Extension Work:' The First 50 Years of the Virginia Institute of Marine Science" (Williamsburg: College of William and Mary, 1990), p. 2.

⁷⁴VIMS returned to the control of the College of William and Mary in 1979 as a result of funding difficulties.

⁷⁵"Minutes of Council," March 28, 1971. Special Collections, Virginia Tech.

twenty in number.”⁷⁶ As alarming as the developments pointed to by Carson and a chorus of others might have been, in many ways this was an exciting time for scientists who for many years had been alone in voicing concern for the environment. Like the other groups, the Virginia Academy of Science would take new heart from the public attention.

Chaired by the indefatigable Roscoe Hughes, the activity level of the Committee on Conservation and Natural Resources reached new heights. Following a new “eco” theme, the Committee sent out an informative letter to members of the Virginia Academy of Science in February, 1971. The letter was divided into three parts: “Eco-Tips,” “Eco-Shocks,” and “Eco-Institute.” Under the first heading, “Eco-Tips,” Lynn Abbott, Editor of the VJS, asked to have all items about “courses, forums, and programs in ecology throughout Virginia” sent to the Journal for publication. “Eco-Shocks” introduced a more involved, “activist” endeavor:

It has been said that a quality environment should be everyone’s business. A first step in preserving our natural resources and preventing further ecological imbalance would be to identify environmental threats and potential threats. Once identified the Academy can play a leading role in bringing about concerted action to correct such imbalances. Therefore, would you provide the Committee with information of this type in your community?

Finally, the committee introduced the idea of an Eco-Institute. A Virginia Institute of Human Ecology would focus on long-range planning for the whole environment and could potentially serve as a “clearing-house for locating ecologists and other eco-oriented professional and technical personnel throughout the Commonwealth.”⁷⁷

⁷⁶Governor Linwood Holton, “Executive Order Number Eight,” September 16, 1970. Special Collections, Virginia Tech.

⁷⁷To Members of the Virginia Academy of Science from The Committee on Conservation and Natural Resources, February 2, 1971. Special Collections, Virginia Tech.

By March 28, Maurice Rowe, VAS President for 1970-71 and Commissioner of the Virginia Department of Agriculture and Commerce, announced to Council that he had presented the idea of a Virginia Institute of Human Ecology before the Governor's Council on the Environment. That Council, Rowe said, had appointed a three-man study committee of Roscoe Hughes, Charles Williams, a White House staff member, and Rowe himself to determine the feasibility of such an institution. As conceived by Hughes, the Institute would be non-profit, "financed, and governed by a large board of approximately one hundred people from all professions and areas within the Commonwealth. Women's groups, industry committees, and similar organizations would "assist in identifying problem areas" in environmental health. Though the recommendations of the three men were positive and the Governor's Council along with the Virginia Academy of Science appeared supportive of the undertaking, the support never translated into action. Perhaps because of the number of activities springing up and problems being identified, only those recommendations satisfying twin conditions of a solid base of financial support and filling an immediate need had tangible results.

Under Hughes' aggressive leadership, the members of the VAS Committee on Natural Resources actively promoted the importance of environmental concern. For example, in May, 1972, Hughes persuaded Council to pass the following resolution: "The Virginia Academy of Science recognizes the importance of preserving our wilderness area and therefore urges its members to write the President of the United States requesting him to utilize the powers of his office to accelerate the programs of review of lands covered by the Wilderness Act of 1964."⁷⁸ Not only were copies sent to President Nixon, but also to

⁷⁸Virginia Journal of Science 23 (1972), p. 93.

the Representatives and Senators of Virginia. The very next morning, with Hughes' help, the Virginia Academy of Science sponsored a colloquium entitled "Virginia's Environment: Where Do We Stand Today?" with six speakers from various institutions around the Old Dominion.⁷⁹

Where the Commonwealth actually stood, unknown to anyone in either the state government or the Virginia Academy of Science, was on the brink of a disaster that would bring national attention to Virginia of a particularly unfavorable sort: the Kepone crisis. The Kepone crisis would also involve the VAS in a new and important relationship with the government. So significant to Virginia politics was the Kepone situation, however, and so closely was it tied to the science advisory system that it will be dealt with in that context near the end of this chapter.

Science Education

As it had over the last three decades, the Virginia Academy of Science continued its emphasis on improving the quality of science education, both secondary and higher, within the Commonwealth. Beginning in the early 1960s, the VAS primarily focused on raising the pedagogical standards of the State's two thousand-plus high-school science teachers. Organizing the Virginia Academy's efforts, the Science Education in Virginia Committee directed its attention to two similar areas: first, bringing together the state's teachers to introduce new techniques and knowledge in the sciences and second, refining requirements for certification of science teachers. Also contributing to excellence in science education,

⁷⁹Following Roscoe Hughes death in 1976, President Burke announced that "by action of Council on May 12, 1976, the Ecology Fund was designated the Roscoe D. Hughes Ecology Fund in Memory of Dr. Hughes." Special Collections, Virginia Tech.

the Visiting Scientists Committee and the Science Talent Search Committee demonstrated to high-school students the excitement of “doing science” and promoted scientific careers.

In October, 1964, the Science Education in Virginia Committee, under the leadership of John Forbes, listened as member Fred Millhiser, Director of E. I. du Pont de Nemours and Company’s Benger Laboratory in Waynesboro, asked that the VAS consider post high-school technical education in the Commonwealth as part of its mission. Millhiser pointed to the new State Department of Technical Education established by the 1964 General Assembly and the recently appointed Governor’s Commission on Higher Education as indicators of the need for the VAS to “jump on board.” “Virginia really has an educational problem and frequently has a strong vocational problem,” he said. “Further, in view of this committee, when you talk vocational and technical education--you are talking science.” Millhiser went on to urge the Science Education in Virginia Committee to sponsor a conference or symposium devoted to post-technical high-school education at the next annual meeting. Such a conference, he stated, would “best bring to the attention of the membership the needs in this area, and would produce not only interest but perhaps some movement in the direction of a desirable solution.”⁸⁰

Millhiser did not have much difficulty persuading his fellow committee members to recommend such a symposium to Council, and the latter readily moved that on May 8, 1965, the VAS would hold a symposium titled “Planning for Technical and Scientific Post High School Education in Virginia.”⁸¹ Since a necessary goal of the symposium was to reach the science teachers of the state, chairman Forbes made every effort to encourage

⁸⁰Fred Milhiser to Science Education in Virginia Committee, October 8, 1964. Special Collections, Virginia Tech.

⁸¹“Minutes of Council,” October 18, 1964. Special Collections, Virginia Tech.

their attendance. For example, in January 1965, he wrote to members of his committee that Supervisor of Science for the State Department of Education and active VAS member Frank Kizer had said that approximately 2300 science teachers filled Virginia's high-schools. Accordingly, Forbes arranged to send several copies of the program to each high-school principal, requesting that they post the program and verbally promote the symposium. Also on the suggestion of Kizer, Forbes contacted the Virginia Association of Science Teachers and asked for the Association's help with publicity.⁸²

The program opened with the following statement prepared by Millhiser:

It is generally recognized that post high-school technical and scientific education is one of the major problems facing Virginia. This results not only from the worldwide knowledge explosion but also from the increased population of the post high-school age group. In recent past, the government and the legislature have undertaken new programs and studies in this area. The purpose of this conference is to discuss the needs and possible new directions under consideration to provide for them.⁸³

Judging by the encouraging comments throughout and attendance of over one hundred teachers, the conference was a success. Millhiser, along with the Science Education in Virginia Committee, had secured four speakers--George L. Sandwig, Director, Division of Vocational Education, State Department of Education; Dana Hamel, Director, State Department of Technical Education; Prince Woodward, Director, State Council of Higher Education; and Henry Tulloch, Manager, Employee and Public Relations, Specialty Control Department, General Electric in Waynesboro. The diverse

⁸²John C. Forbes to Members of the Science Education in Virginia Committee, January 12, 1965. Special Collections, Virginia Tech.

⁸³"Minutes of Council," May 8, 1965. Special Collections, Virginia Tech.

expertise of these men allowed them to address the wide-range of concerns relevant to technical and vocational education.⁸⁴

The success of this first endeavor resulted in the VAS's continued sponsorship over the years of other symposia and conferences relevant to science education, both within the framework of the Annual Meeting and in conjunction with other educational organizations. An excellent example of the Virginia Academy reaching outside the boundaries of its own meetings took place in 1975 at the recommendation of Frank Kizer. Earlier, at the Council meeting in November, 1974, Kizer had described the annual State Science Teachers Conference, held usually the last weekend in September or the first weekend in October. According to Kizer, the VAS could reach a number of science teachers should the Academy assist with the Conference. Specifically, the Virginia Academy might offer four services: co-sponsor the conference at no cost to the VAS; handle commercial exhibits; have a member on the Planning Committee; and arrange for Visiting Scientists to take over classes so teachers could go to the conference during school hours. Leonard Morrow endorsed Kizer's motion and Vera Remsburg seconded it.⁸⁵ Council named a special sub-committee chaired by Virginia Ellet with Marvin Scott and Ertle Thompson--all three of the Science Education in Virginia Committee--to assist.

The Virginia State Teachers Conference took place in October, 1975, at the Hotel Roanoke. Ellet's Committee set up five VAS "events:" a Metric Workshop by Daniel Yates of the Mathematics and Science Center in Richmond; a Chemistry Demonstration by Robert Bell of the University of Richmond; "Forestry Stories Worth Telling" by Leo Cheeseman, of Southern Forest; "Sea Urchin Embryology," by R. Wesley Batten for the Mathematics

⁸⁴"Minutes of Council," May 8, 1965. Special Collections, Virginia Tech.

⁸⁵"Minutes of Council," November 2, 1974. Special Collections, Virginia Tech.

and Science Center; and two field trips--the first a Natural History Tour of the Roanoke Valley and the second, a visit to the Virginia Science Museum, by Don Kunze of Virginia Western Community College. On the basis of an evaluation of the participants' reactions, Ellet, Scott, and Thompson declared the Virginia Academy's contribution to the conference a complete success.⁸⁶

While focusing on the symposia and conferences, the Academy did not neglect the more mundane aspects of science education. Obviously, Virginia's certification requirements struck at the core of fostering excellence in science education, as the competence of the educator translated into the quality of education the students received. As Past-president Jackson Taylor explained to Council on May 8, 1965, the Science Education in Virginia Committee recently had submitted a resolution to the State Superintendent of Public Instruction and the State Board of Education in Virginia in which it outlined its preliminary study of the undergraduate preparation of teachers in science and mathematics. Many members of the Virginia Academy of Science had contributed to the analysis through their respective colleges. As noted in correspondence to Taylor, the positive response of the state agencies was encouraging, and conditions appeared conducive to an on-going analysis by the State Education in Virginia Committee as a means of constantly staying "on top of" the caliber of Virginia teachers.⁸⁷

Another aspect of science education in which the VAS members found themselves interested was the selection of science textbooks for elementary and secondary school students. Frank Kizer relates the story of the Academy's initial involvement in the early seventies:

⁸⁶"Minutes of Council," March 4, 1976. Special Collections, Virginia Tech.

⁸⁷"Minutes of Council," May 8, 1965. Special Collections, Virginia Tech.

I went to Senator Lloyd Bird and said Lloyd, the Academy really needs to be involved in textbook selection in the State. I think you ought to take a look at the criteria. I found when I went to the State Department of Education that it was atrocious. There is no way you can judge a textbook by this criteria. I said, who cares if the book falls apart or the print is large or the qualifications of the writer. How do you determine his qualifications except for the written word? Here it is in print. This is what you have to look at. I don't care if he [the author] went to Cornell or MIT.⁸⁸

Kizer's point was well-taken, and for the duration of the 1970s, the VAS unofficially was involved in the textbook selection process, advising Kizer and his aides.⁸⁹

Visiting Scientists Program

Instituted in 1959 through a grant received by the Virginia Academy from the National Science Foundation (NSF), the Visiting Scientists Program continued to move forward, though not with great speed. In 1965 at the March meeting of Council, Roscoe Hughes announced that \$5000 had been requested and subsequently granted from the NSF to finance the Visiting Scientists Program under the new direction of Colonel S. M. Heflin of Virginia Military Institute, who was retiring from the Physics Department.⁹⁰ Three months later at the Academy Conference, Council informed the membership that about sixty visitation days for professors to speak at high-schools throughout the state would be arranged.⁹¹ While several members pointed out that the Virginia Academy of Science had tried such a lecture program several years earlier and it had failed due to conflict with high-school administrators, the prospect of Heflin's able leadership seemed to raise expectations

⁸⁸Frank Kizer to Charlotte Webb, Interview. Lancaster, Virginia. April 18, 1995.

⁸⁹"Minutes of Council," October 25, 1969. Special Collections, Virginia Tech.

⁹⁰Virginia Journal of Science 16(1965), pp. 270, 277.

⁹¹Virginia Journal of Science 16(1965), pp. 275-6.

that the program would be worthwhile. Such expectations were on target, and three years later at the Academy Conference, the new chair of the Visiting Scientists Committee, I.D. Wilson, was able to report that seventy-seven high-schools had requested visits and were “frequently most complimentary about last year’s program.” In fact, 117 scientists were listed as prospective visitors.⁹²

At the annual meeting in 1968, President Paul Siegel informed Council that when the NSF-supported Visiting Scientists Program funds expired, as specified in Academy regulations, it would become his duty, as leader of the VAS, to head up the Academy’s Visiting Scientist Program. Given the responsibilities of his presidential position, Siegel suggested the program might be administered by the President-elect. As the current President-elect, Rae Carpenter was agreeable to Siegel’s recommendation.⁹³

Carpenter used his excellent ability to network, and in August of that year, the Superintendent of Public Instruction gave his permission, once again, for the program to be operated in public schools. That same month, forty-two college presidents agreed to support the Visiting Scientists Program by providing travel expenses for any of their faculty who volunteered to speak. All in all, 237 speakers from twenty colleges volunteered and provided topics on which they would speak. To give order to what might have been an unwieldy program, Carpenter wrote a set of guidelines for operation of the program and included an extensive list of the speakers and their topics. By September, 1968, Carpenter announced that over 400 requests had been made for this list.⁹⁴ Seven

⁹²“Minutes of the Academy Conference,” March 24, 1968. Special Collections, Virginia Tech.

⁹³“Minutes of Council,” May 10, 1968. Special Collections, Virginia Tech.

⁹⁴“Minutes of Council,” September 12, 1968 and “Minutes of Council,” October 27, 1968. Special Collections, Virginia Tech.

months later, Carpenter reported to Council that over two dozen visits had been reported.⁹⁵ The response of the public schools quite obviously had been enthusiastic, and it was evident that the program had successfully met a need the VAS had long perceived.

The continued level of activity of the Visiting Scientists Program encouraged James Midyette, Jr., Chairman of the Constitution and Bylaws Committee, to submit in May, 1975, the following constitutional changes for adoption:

Amend Article VIII, Section I as follows:
Insert "Visiting Scientists Program Director" in 3rd sentence.
Amended sentence to read "In addition to the foregoing, the Chairman of the Standing Committee, the Editor of the Virginia Journal of Science, and Visiting Scientists Program Director shall be members of Council."⁹⁶

Midyette's changes passed Council.

In 1976, the first director of the Visiting Scientists Program, Dale Ulrich of Bridgewater College, informed Council that while the program remained successful, fewer requests for speakers from high-schools had come into his office over the last year--the number had dropped from 101 in 1974-75 to seventy-nine in 1975-76. On the other hand, requests from two-year colleges had increased from thirteen to twenty-one. Hence, Ulrich did not find any immediate reason for alarm. However, Ulrich planned to distribute the Speaker's List in late August, and to the principals of the schools rather than the chair of the science departments as he had in the previous years.

⁹⁵D. Rae Carpenter to Council on the Visiting Scientists Program, 1968-1969," May 1, 1969. Special Collections, Virginia Tech. Over the next few years, Alex Clarke and then Dale Ulrich of Bridgewater College ran the program.

⁹⁶"Minutes of Council," May 8, 1975. Special Collections, Virginia Tech.

It is revealing to speculate on the reasons for the success of this program at this particular time. Certainly the fundamental elements of the educational system in the Commonwealth had changed very little in the years between the first failed attempt to inaugurate such a program and the successful one. What does appear to have changed were the VAS people in charge. Both Helfin and Carpenter were able and pragmatic leaders. They had worked together at VMI for years. But perhaps even more important than that was the marked ability of Carpenter, which reveals itself again and again, to tap into a network of friends and supporters that he had astutely developed and maintained. This case is yet another example of the critical role in a volunteer organization of the individuals assuming leadership and of their ability to see a project through to inauguration or completion--often with the help of well-placed colleagues around the state. Further, it represents one of the many efforts made by the VAS to interest young people in the sciences. The chief of these efforts was, of course, the Virginia Junior Academy of Science.

Virginia Junior Academy of Science

Following in the footsteps of W.W. "Bill" Scott, E. L. "Chick" Wisman assumed the leadership of the Virginia Junior Academy of Science in 1964, a position he would hold until 1972. With his personable, easy-going manner, the biochemistry professor from Virginia Tech proved an excellent choice. Under his guidance, the VJAS continued to strengthen both in numbers and in quality--leading to its national recognition in 1971 by the AAAS as one of the "strongest Junior Academies in the nation."⁹⁷ The interest of senior scientists in the youngsters in the schools was especially important in a state where the quality of science education was highly variable among the school systems.

⁹⁷"Minutes of Council," May, 1971. Special Collections, Virginia Tech.

At the annual meeting in 1968 at Massanetta Springs, the Virginia Junior Academy of Science celebrated its silver anniversary, proudly boasting a total of 124 affiliated clubs with a membership of 4,125. As part of the event, the VJAS Committee invited two speakers, Carl W. Gottshalk, professor of medicine and physiology at the University of North Carolina-Chapel Hill, and Walter Brown, scientist at the Bell Telephone Laboratories. As young students, both men had participated in the 1941 VAS meeting at Roanoke, the former exhibiting a collection of butterflies, while the latter receiving the Academy Award. In addition, the Academy held a cake-cutting ceremony to honor the original VJAS Committee members appointed by President Wortley Rudd.⁹⁸ Marking this significant achievement, for the first time, the Publications Committee printed the Junior Program with the Senior Program.⁹⁹

The combining of the two programs was an appropriate linkage, since the research interests of the Junior Academy increasingly began to mirror those of their Seniors. Reporting to Council in 1971, Wisman stated: “[I]n keeping with the changing times, the [junior] program shows a change in paper categories. For example, the Astronomy and Space Science Category has been replaced by a new one--Environmental Science. Last year five papers were submitted in Astronomy and Space Science; this year 35 were submitted in Environmental Science.” Wisman ended by noting that “the interest in our junior scientists is no longer all “up in the stars” but rather, is turning towards ecology and problems of “down to earth” concern.”¹⁰⁰ In addition to creating new sections, the VJAS also divided its larger sections according to specialty. As described by Wisman:

⁹⁸Vera Remsburg, “VAS--Its Beginning and Development from 1941-1973,” presentation delivered at the 50th Anniversary of the VJAS, May 2, 1973. Special Collections, Virginia Tech.

⁹⁹Virginia Journal of Science 19(1968), pp. 163-4.

¹⁰⁰Virginia Journal of Science 22(1970), pp. 74-75.

We just changed categories. A breakdown--our Biology Section got so big and there were so many papers that we finally decided on Molecular Biology and whatever. We revised categories. That is the one big thing we [the VJAS Committee] did, although I guess since we screened the papers for those who could come to the Annual Meeting, there was excellent competition.¹⁰¹

The strong ties between the senior and junior members could not be more evident than by this shift in sections. The juniors were reflecting the senior members' research interests. In every way it was a healthy situation, and it was one that held promise for even further development. That development was shortly to come.

Not long after the 1972 meeting, Wisman resigned as chair of the VJAS. Lee S. Anthony of Roanoke College succeeded him, a position he would hold for the next three years before being relieved by John L. Hess. The time in office of both men was characterized by their mutual drive to further develop the level of scientific performance of the VJAS. Hess, especially, was acutely aware of the vital interplay between the Junior and Senior Academies of Science. Indeed, after attending the 1976 AAAS meeting where he met with delegates from the country's junior academies, Hess observed: "Of greatest importance was my recognition that the model of cooperation and mutual respect now functioning between VAS and VJAS is among the best in the country. I clearly see the concerns and mission of VJAS best nurtured within the relationship it has with the VAS."¹⁰² The guidance of the VAS would, in the view of both Hess and his predecessor Anthony, assure the high quality of the research and the papers submitted by the young people.

¹⁰¹E.L. Wisman to Charlotte Webb. Interview. Blacksburg, Virginia. March 20, 1995.

¹⁰²"Minutes of Council," March 20, 1976. Special Collections, Virginia Tech.

At the annual meeting in 1976, the leadership of the Virginia Junior Academy of Science had reviewed a total of 300 papers, from which 193 were selected for presentation. 582 students and chaperones attended the meeting, along with thirty-nine judges.¹⁰³ Despite the high attendance, Hess informed Council that only about twenty percent of Virginia's secondary schools participated in the Junior Academy--giving him cause to ask Council to consider ways to "get more high-schools involved."¹⁰⁴ Hess was, as usual, forward-looking in his concern for Virginia's youthful citizens.

By 1976, the Virginia Junior Academy of Science was clearly well-established, both as a part of the Virginia Academy itself and in those secondary schools that were sufficiently interested to take part. One may take the point of view that the VJAS allowed the VAS successful entree into the school systems' science divisions--one that might have failed with a more direct approach. The antagonisms between the worlds of higher education and the public schools had been well-illustrated by the early difficulties with the Visiting Scientist Program, and it is a tribute to the leadership of the VJAS as well as to the interaction of the members with the young people that such antagonisms did not arise. The success of the Junior Academy and its importance and centrality to the mission of the VAS meant that the VJAS--by design--had now become and would remain for the foreseeable future a major focus of the Senior Academy.

¹⁰³"Minutes of Council," May 12, 1976. Special Collections, Virginia Tech.

¹⁰⁴"Minutes of Council," May 14, 1976. Special Collections, Virginia Tech.

State Museum of Science¹⁰⁵

If the VJAS represents an example of a VAS program showing steady, successful progress, the same cannot be said of a state museum in science. By the early 1960s, the Long Range Planning Committee, led by Henry Leidheiser, had resurrected the Virginia Academy of Science's long-dormant enthusiasm for the establishment of a state science museum. In 1963, the committee directly approached Governor Albertis Harrison:

Whereas the need for an inspiring science museum in the Commonwealth of Virginia has been apparent for many years. . . . Be it hereby resolved that the Virginia Academy of Science recommends to the Honorable Albertis S. Harrison, Governor of Virginia, that he appoint a committee of dedicated Virginians to study the present Museum of Minerals, Timber, and History, to consider means for short-range and long-range improvement of the Museum, and to make recommendations concerning the scope and objectives of the Museum.¹⁰⁶

Undoubtedly, the resolution influenced Governor Harrison's decision to bring the matter before the State Legislature. The following year, the General Assembly directed the Department of Conservation and Economic Development "to make a study" in concert with a gubernatorially appointed nine-member Virginia Legislative Advisory Council and "to offer a plan for the encouragement or establishment of a properly located, designed, and operated museum of science, archaeology, and natural science. . . ." ¹⁰⁷ Furthermore, this

¹⁰⁵The following is a brief summary of the enormous effort of the Virginia Academy of Science to establish the Science Museum of Virginia. It is not by any means comprehensive, as such an account should itself be the subject of a book-length treatment. Instead, this summary is an attempt to both highlight the vital stages of the endeavor and to convey the deeply held conviction of most members of the VAS that this Museum was/is necessary for the continued "scientific health" of Virginia. Accordingly, each Academy member who participated in the Science Museum project is not mentioned. This should not in any way be viewed as an attempt to write individuals out of the history, but rather as the unfortunate result of trying to present a macro rather than a micro account.

¹⁰⁶"Minutes of Council," May 10, 1963. Special Collections, Virginia Tech.

¹⁰⁷"Report of the Virginia Museum of Science Study Commission," 1969, p. 6. Special Collections, Virginia Tech. The bill was in the form of Senate Joint Resolution No. 26 and House Joint Resolution No. 76.

Advisory Council shall request the cooperation of the Virginia Institute for Scientific Research, the Virginia Academy of Science, and other interested groups."¹⁰⁸ The bill also authorized the closing of the old State Museum and dispersal of the exhibits and fixtures.¹⁰⁹ In June, Governor Harrison named the Advisory Committee and directed it to report to him by the beginning of September, 1965. The committee met several times before recommending that a Study Commission be named to look further into the matter. In fact, in 1966 a draft bill (House Bill #618) was introduced to implement such a Study Commission. Governor Harrison, however, did not act on the bill, and it would be another administration that named the suggested commission several years later in February, 1969.¹¹⁰ In the eventual Study Commission's final report, the delay was explained as "probably due to the lack of a legislative sponsor and the absence of a concerted effort on the proposal's behalf by the citizens of Virginia."¹¹¹ Whatever doubts may have lain behind the government's slow start, the Virginia Academy of Science did not appear to share them.

Virginia Academy President Foley Smith detailed the legislature's recent actions concerning the proposed science museum at Council during the annual meeting in 1964. After urging the VAS to work with the Virginia Legislative Advisory Council and the general public for establishment of the Museum, President Smith listened with concern as several Council members voiced their apprehensions as to the value of "inanimate natural science exhibits" and questioned the "need for a Museum so close to the nation's capitol."

¹⁰⁸"Minutes of Council," April 5, 1964. Special Collections, Virginia Tech.

¹⁰⁹"Minutes of Council," April 5, 1964. Special Collections, Virginia Tech.

¹¹⁰K.P. Bovard to State Senator George Aldhizer, December 26, 1967. Special Collections, Virginia Tech.

¹¹¹"Report of the Virginia Museum of Science Study Commission," 1969, p. 6. Special Collections, Virginia Tech.

The group raised sufficient doubts for President Smith to refer the matter to the Long Range Planning Committee for full consideration.¹¹² Some of the anxiety concerning the attractive potential of a museum of science so close to the many offerings of the Smithsonian and other attractions in Washington, D.C., might have seemed on target, but in fact they ignored the potential for outreach offered by a state museum that could interact on a more intimate level with the schools of Virginia.

Several months later, the Long Range Planning Committee carefully considered the statements made by all Council members before unanimously reaffirming the previous action of the Virginia Academy of Science favoring the establishment of a state museum of science. It was obvious that the committee had concluded that the problems in establishing a museum were beyond their immediate purview and should be dealt with by some other group. Hence, the Long Range Committee recommended to Academy President Sam Obenshain and Council that a permanent Museum Committee be established with responsibilities to the President and Council rather than the Long Range Committee. Furthermore, the committee indicated that the interim Ad Hoc Museum Committee, which earlier had examined the feasibility of a museum of science, might be an excellent “nucleus” for the new permanent committee.¹¹³ In following these suggestions, Council asked James Midyette, Foley Smith, and Roscoe Hughes to be part of a “special museum committee” until a standing Science Museum Committee could be named. It would not be until October, 1968 that the new committee became official; yet progress under this Special Committee and the consistent efforts of the VAS science museum advocates moved the project steadily forward.

¹¹²“Minutes of Council,” May 7, 1964. Special Collections, Virginia Tech.

¹¹³“Minutes of the Long Range Planning Committee,” October 4, 1964. Special Collections, Virginia Tech.

Anxious for the museum to become a reality, in May, 1967, James Midyette reported for the Special Committee before Council, suggesting that the following resolution to be sent to Governor Mills Godwin. Not surprisingly, Academy President Roscoe Hughes moved for its adoption and the following statement unanimously passed:

WHEREAS, the improvement of education and the need for educational resources have most urgent priority in Virginia, and
WHEREAS, there is a growing need to create a public awareness of the role that science plays in technology vital to the continued economic and industrial growth of Virginia, and
WHEREAS, all citizens of Virginia, both young and old, need the opportunity to become more scientifically oriented and motivated, and
WHEREAS, a Virginia Museum of Science, adequately staffed and equipped, could make a paramount contribution to the advancement of scientific activities in Virginia,
THEREFORE BE IT RESOLVED, that the Virginia Academy of Science reaffirm its endorsement of the establishment of a functional state museum of science, and
BE IT FURTHER RESOLVED, that the Governor of Virginia be respectfully requested to use his good offices to promote and further the objectives for which the Virginia Museum of Science Commission was established in 1946, and
BE IT FURTHER RESOLVED, that the Virginia Academy of Science offer its assistance to the Governor and the Virginia Museum of Science Commission to achieve these ends.¹¹⁴

Slightly over seven months later, Council met to discuss methods by which it might encourage the state to take action on the science museum. The idea of securing a General Assembly resolution during the 1968 session to have the Virginia Advisory Legislative Council undertake the already recommended study seemed to hold the most chance of success. Hughes moved that the Virginia Academy's Ad Hoc Museum of Science Committee be continued and that this matter be pursued in a "dignified persuasive manner."¹¹⁵ President James Cole of the VAS followed up this recommendation in letters

¹¹⁴"Science Museum Resolution," May 4, 1967. Special Collections, Virginia Tech.

¹¹⁵"Minutes of Council," October 22, 1967. Special Collections, Virginia Tech.

to the Academy membership and to a variety of people throughout the state in which he pointed out the following:

Recently a committee of the Virginia Academy of Science made a study which re-emphasized the need for a modern, dynamic State Museum of Science, showing the evolution of science, illuminating science as it is today and projecting science for the future. . . . You may recall at the annual spring meeting held in Norfolk this year, the Academy passed a resolution requesting the Governor to reactivate the old Museum of Science Commission, originally appointed in 1946. . . . It now seems that a better course toward our goals by working through a Science Museum Study Commission of the Virginia Advisory Legislative Council (VALC) rather than reactivate the Old Science Commission. . . . In order for the VALC to appoint a new museum of science commission, it appears that a resolution must be adopted by the 1968 Assembly. . . WE URGE YOU TO TAKE TIME OUT TO SEE THE DELEGATE OR SENATOR FROM YOUR REGION WHOM YOU KNOW BEST, AND OTHERS IF YOU HAVE TIME, AND ASK THEM FOR THEIR SUPPORT. ”¹¹⁶

On February 29, 1968, a “Committee Amendment in the Nature of a Substitute for House Bill No. 524 was Passed”--its passage arguably spurred on by the efforts of the Virginia Academy of Science. “There is hereby created,” the Bill stated:

the State Museum of Science Commission, to be composed of five members, three to be appointed for four year terms by the Governor from the State at large; and one member from the State of Virginia, to be appointed by the President of the Senate, and one member from the House of Delegates to be appointed by the Speaker thereof for terms coinciding with their terms as members of the respective houses. The Commission is hereby directed to conduct a study to determine the feasibility of establishing a Virginia Museum of Science and to determine what the scope and financial requirements should be of such a museum including the appropriateness of concluding a History Division.

The Bill required the commission to conclude its study and make recommendations to the governor and legislature no later than October 1, 1969.¹¹⁷ Governor Godwin

¹¹⁶James Cole to Miscellaneous Group, December 15, 1967. Special Collections, Virginia Tech.

¹¹⁷“Committee Amendment in the Nature of a Substitute for House Bill No. 524,” February 29, 1968. Special Collections, Virginia Tech.

appointed Virginia Academy of Science member Roscoe Hughes, along with Zan Stuart, A. Stewart, Representative Glenn Yeattes, and Senator Parkinson. Hughes asked Virginia Academy of Science President Paul Siegel to appoint a Standing Science Museum Committee of Virginia Academy members to provide expertise to the Governor's Commission. In response, Siegel asked Ed Harlow to chair such a committee, and Susie Floyd, Senator Lloyd Bird, Horton Hobbs, Perry Holt, James Midyette, Michael Kostarob, Gwynn Ramsey, Harry Holloway, and Randolph Gladding to serve as well.¹¹⁸ A humorous--yet revealing--incident occurred when, upon being asked to serve on the Museum Committee, Horton Hobbs responded: "I am beginning to wonder if perhaps I am a jinx to such a committee, for twice in the past I have been a member of Academy Museum Committees, the efforts of which were apparently not very effective. In spite of this poor record, if you [Paul Siegel] and Ed [Harlow] think that I might be of some assistance then I shall be pleased to contribute what I am able."¹¹⁹

At the first meeting of the Science Museum Committee, chair Harlow asked Roscoe Hughes of the commission to convey to the new group the ways in which it might be useful to the commission.¹²⁰ Specifically, explained Hughes, the VAS Museum Committee "through its association with all disciplines of Science in Virginia, would

¹¹⁸"Minutes of Council," September 12, 1968. Special Collections, Virginia Tech.

¹¹⁹Horton H. Hobbs, Jr. to Paul Siegel, July 30, 1968. Special Collections, Virginia Tech.

¹²⁰The following members and guests were present at this first meeting: Perry Holt, Biology Department, Virginia Polytechnic Institute; Gwynn Ramsey, Lynchburg College; Susie Floyd, Newport News High-School; Horton Hobbs, Jr., United States National Museum; Senator Lloyd Bird; D. Rae Carpenter, President-elect of the VAS and of Virginia Military Institute; E.S. Harlow, Chairman, The American Tobacco Company; Rodney Berry, Executive Secretary of the VAS; James Midyette, Virginia Department of Agriculture; Roscoe Hughes, Vice-Chairman, State Museum of Science Commission; Harry L. Holloway, Jr., Roanoke College; Colonel Howard McCord, State Archaeologist and Advisor to the Committee; Blanton Bruner, The American Tobacco Company; Randolph Gladding, The American Tobacco Company. Listed in "Minutes of Meeting of the Science Museum Committee," October 9, 1968. Special Collections, Virginia Tech.

provide guidance and advise on the procedures to create a Science Museum in Virginia. . . . the commission will rely heavily upon the Committee and the Virginia Academy of Science."¹²¹ At the close of the meeting, Harlow appointed a small subcommittee, chaired by Susie Floyd and composed of James Midyette and Gwynn Ramsey to compile information on areas of interest to be included in a state museum of science and to prepare a statement to be presented at the next meeting of the Governor's Commission on a Museum of Science. Towards the end of October, the subcommittee submitted a proposed statement on a Virginia Museum of Science to Harlow who, in turn, read the statement before the commission and gave its copy to the secretary of the commission. The resolution read:

1. That the Virginia Academy of Science had maintained a continuing interest in the establishment of a state museum of science since the early 1940s;
2. that the Commission may be assured of the enthusiastic support of the entire Academy membership, which now numbers close to 2000;
3. that a more definitive and comprehensive statement would be prepared and sent to the Commission in the near future;
4. that in the opinions of representatives of industry, a state museum of science would not only be an important adjunct to the educational services of the state, but also of more import in attracting industry, as it would demonstrate a dynamic interest by the people of Virginia in technological advancements; and
5. that the Commission could be assured of the full cooperation of the Academy in undertaking the establishment of a state museum of science in Virginia.¹²²

Several months later the Virginia Academy Science Museum Committee met again. Each member presented a statement expressing their conception of a state science museum. After compiling their responses, it became clear that the conceptions were more alike than different. Overwhelmingly, the members advocated a museum of science that would

¹²¹"Minutes of Meeting of the Science Museum Committee," October 9, 1968. Special Collections, Virginia Tech.

¹²²Ed Harlow to Paul Siegel, November 15, 1968. Special Collections, Virginia Tech.

illustrate “pure and applied science,” while serving the “functions of science.” “[S]cience sets the limits and provides the conceptual framework for the world view; science provides the basis from technology; science keeps certain people (scientists) busy; and science has aesthetic and entertainment values for not only scientists but for the educated lay public.” Furthermore, “a state museum of science should be given the responsibility for inventorying and preserving collections of, presenting exhibits of, and collating and explaining the principles that determine the wise use of the natural resources of Virginia, both non-living and living.”¹²³ In order to satisfy these many requirements, the committee agreed that establishing two coordinate centers of the state museum of science would be necessary. The first center might focus on educational and administrative matters and included the following: exhibit and lecture halls for public viewing and instruction at the center itself, audio-visual capabilities, and the means by which mobile exhibits could be prepared. The second center’s concentration, to be called the University Center of the science museum, would follow that of a more traditional research institution: curating and preserving specimens of flora and fauna. In addition, this center would control publication.¹²⁴ If this vision of the science museum seems ambitious, it was, particularly the dream of the museum taking the form of a research institution. While the members recognized the importance of education for the public, they were also, perhaps understandably, captured by their enthusiasm for an establishment modeled on one of the famous “science museums”—such as the Smithsonian Institution, with its dual commitment to “the increase and diffusion of knowledge.”

¹²³Perry Holt to Council, December 10, 1968. Special Collections, Virginia Tech.

¹²⁴Perry Holt to Council, December 10, 1968. Special Collections, Virginia Tech.

Ever pragmatic, President-elect Carpenter of Virginia Military Institute commented on the Science Museum Committee's views, pointing out in mid-December, 1968: "I must state again that any museum complex which is worthy of state funding as a separate entity must appeal to a broad segment of Virginia citizens whose average educational level is barely above that of a high-school graduate. Tourists will be attracted to it but will probably visit only once in many years. Area schools will provide the bulk of its visitors. . . . Research, while it is an important function and should be provided for will not serve many people." Carpenter continued in the same vein, arguing from his well-developed sense of the political: "To me, the planetarium is an absolute first because it provides an excuse for a building and a staff at the outset and demonstrates an immediate and tangible benefit to the taxpayer in return for funds appropriated." He agreed with the idea of mobile display units, before offering his opinion on the particular disciplines--"biology, chemistry, physics, geology, medical and agricultural science, engineering including space and material science and technology"--that he thought should be included in planning the museum. History of science, on the other hand, should not be examined except as it "naturally creeps into each of the areas." Archaeology and natural history, although perhaps regionally-driven--also might be considered. Despite his obvious interest in the subject and his position as President-elect, Carpenter hastened to add: "I am not a member of the committee and you should not feel obligated to use any part of this."¹²⁵ In many ways, Carpenter's words were prescient, however, particularly the concern with funding that lay behind his desire to allow taxpayers to see "immediate and tangible benefits" of the public funds on which the museum must, at least initially, rely.

¹²⁵D. Rae Carpenter to Edward Harlow, December 12, 1968. Special Collections, Virginia Tech.

In January, 1969, a public hearing sponsored by the State Museum of Science Study Commission was held in Richmond to inform the citizenry about the proposed museum of science and to listen to their suggestions. While the hearing was not sponsored by the Virginia Academy of Science, its members were present and played an important role in the hearing. During the three hour hearing, sixteen speakers endorsed the museum, including William Sanger, VAS member and Chancellor Emeritus of the Medical College of Virginia and Ed Harlow, chair of the Science Museum Committee of the VAS.¹²⁶ The commission held other hearings as well, in Norfolk, Roanoke, and the Northern Virginia Areas. Encouraged by the public hearings and hoping to bring the entire Academy membership into the discussion surrounding the museum, chair Harlow proposed in February at a meeting of the Science Museum Committee that a symposium on the state museum of science be held at the annual spring meeting of the VAS. Topics could be covered such as: the need for a state museum; what its objectives and purposes might be; possible branches or sections of the museum itself; a discussion of proposed locations; suggestions concerning how the museum might be financed; and overall timetables or goals. The results of the symposium could then be reviewed by members outside of the Museum Committee proper. Harlow named Susie Floyd, Gwynn Ramsey, and Lloyd Bird to a Symposium Planning Committee with Michael Kostarob as the chair.¹²⁷

Outside action continued in addition to planning the symposium. Towards the end of February, Carpenter wrote to Malcom U. Pitt, Jr., Head of the Collegiate Schools in Richmond, Edgar Shannon, President of the University of Virginia and Association of

¹²⁶“Proceedings of the Hearing on a State Science Museum,” January 8, 1969. Special Collections, Virginia Tech.

¹²⁷“Minutes of Meeting, Science Museum Committee,” February 19, 1969. Special Collections, Virginia Tech.

Virginia Colleges (AVC), and Lewis Warrington Webb, Jr., President of Old Dominion College and chair of the Virginia Council of College Presidents (VCCP), informing the three men of the widespread need for a state museum and of the commission appointed by the governor to look into the matter. The Study Commission's report would be due out in November 1969, explained Carpenter, and would address "itself to the needs expressed by persons throughout the state by various communications and to the commission including these public hearings and private communications." Carpenter maintained that the museum would serve a large body of educational institutions, including "secondary, high-school, college, research, and adult education." Accordingly, Carpenter requested on behalf of the VAS that the men consider submitting resolutions to Senator William F. Parkinson, chair of the Virginia Museum of Science Commission in favor of a state museum of science.¹²⁸

Pitt and Webb supported the project. In fact, until his death in 1984, Webb spoke highly of the efforts of all involved in establishing the Science Museum of Virginia, believing that a museum ought to function as a necessary part of the scientific education of Virginia's youth. Shannon did not share his colleague's affirmation, however, forwarding the following response to the director of the State Council of Higher Education, the state superintendent of Public Instruction, the members of the Executive Committee of the VAS, the Association of Virginia Colleges, the provost of the University of Virginia, and the chancellor of Mary Washington College:

My personal reservations in part result from the unhappy experiences both of Washington and Lee University and the University of Virginia with museums established by private philanthropy, but more importantly from the knowledge of the vastly higher costs of scientific education as opposed to humanistic education. The Commonwealth ought to invest much more

¹²⁸D. Rae Carpenter to Malcom Pitt, March 12, 1969; and Carpenter to Lewis Webb, Jr. and Edgar Shannon, February 26, 1969. Special Collections, Virginia Tech.

than it has done hitherto in scientific education, but not necessarily in an enormously expensive state-wide museum system.¹²⁹

In some sense, Shannon's letter was a cannon shot from an opposition that some of the VAS members had expected. In a letter to Carpenter, James Midyette wrote:

Commissioner [Maurice] Rowe has asked me to comment to you on President Shannon's letter relative to the anticipated position of the Association of Virginia Colleges, in regards to the proposed Virginia Museum of Science. . . . I am not at all surprised at Dr. Shannon's comments, in that it has been apparent that many members of the Academy from State supported Institutions of Higher Education, have not openly supported the idea of a Museum of Science, apparently for fear that it would compete for public funds that they may need. I personally believe that they are missing the point. . . . First, a basic concept of the Museum of Science is that it be a center for scientific endeavor in which all institutions of higher learning may function. . . . It would, therefore, be supplementary and complementary to the Educational and Research activities of other institutions. Second, . . . it would serve to motivate our citizens, both young and old. . . . I feel that those of us who believe the foregoing to be true should conduct an all out campaign to convince the "Higher Educators": that such an institution will benefit rather than compete with their scientific efforts.¹³⁰

With these varying degrees of support and the lack of it finally surfacing, the Symposium on a Museum of Science in Virginia was held in May, 1969, at Mary Washington College. After much consideration, the Science Museum Committee had decided to invite experienced representatives from other museums to first speak to the members of the Virginia Academy in a panel format and then to have a quasi-round table discussion in which the membership would have the opportunity to direct questions to the speakers and express their own opinions. With Russell J. Rowlett, Jr., editor of *Chemical Abstracts* at Ohio State University as moderator, the panel consisted of S. N. Hallock, II, Director of the Center for Science and Industry in Columbus Ohio; Mr. Robert C. Haynes,

¹²⁹Edgar Shannon to D. Rae Carpenter, Jr., April 8, 1969. Special Collections, Virginia Tech.

¹³⁰James Midyette to D. Rae Carpenter, April 29, 1969. Special Collections, Virginia Tech.

Director, Mathematics and Science Center, Richmond, Virginia, and Dr. Raymond B. Manning, Chairman, Department of Invertebrate Zoology, Smithsonian Institution. The three spoke, respectively, on: "What is a Modern Museum--Its Objectives and Purposes;" "What is the Present Museum Situation in Virginia and What Would be the Impact of a Museum on Education;" and "Branches of a Museum--their Location, Organization, and Goals."¹³¹ Judged by the large and active participation, the symposium was a success for those members of the Virginia Academy of Science who supported the state museum. The difficulties raised at the symposium by those representing the opposition--both within VAS membership and within the general public--were addressed by people with expertise in these areas, not simply by VAS members or Virginians who thought the museum would be a good thing. But despite the symposium, all was not to be clear sailing for the museum proponents as the issue of funding remained an ever-present difficulty.

Two days later at Council's meeting, Roscoe Hughes spoke of the financial difficulties the State Study Commission on the Virginia Museum of Science was having relative to collecting data. In reviewing the history of the legislation for Council, Hughes indicated the root of the problem: the commission was not funded, except for \$1500 to be used for travel expenses. Hughes wondered if perhaps the VAS would want to contribute private funds. James Midyette moved that \$1000 be used, and after slight modification of his motion, Council passed a motion that "the VAS authorize the appropriation of \$1000 for the study of the establishment of a Museum of Science in Virginia; that the Executive Committee be empowered to receive donations to supplement this fund; the manner in which it is to be used to be left to the discretion of the Executive Committee."¹³²

¹³¹"Symposium on a Museum of Science in Virginia, Mary Washington College," May 8, 1969. Special Collections, Virginia Tech.

¹³²"Minutes of Council," May 10, 1969. Special Collections, Virginia Tech.

In the late summer of 1969, the Virginia Academy of Science Committee on a Museum of Science in Virginia offered the following final statement to Council--which forwarded it to the Commission--before the results of the State's Study Commission formally were issued.

1. A Central Museum of Science be established in the Richmond area. The Richmond area center is to develop and administer a statewide system (mobile exhibits, lectures, films, etc).
2. Education should be the major goal of the museum and public participation should be emphasized. Its goals should include: a. Documentation and cataloging of the state's natural resources. b. Interpretation of these natural resources to the citizens of the state.
3. That initial consideration should be given to establishing a planetarium and a botanical garden as starting units.
4. The following Richmond area sites should be given consideration: Maymont-Byrd Park area; State-owned Elko Tract; Broad Street Station area.
5. The major industries in the area should be contacted to ascertain if current exhibits would be available to the museum.
6. The Council of the Virginia Academy of Science enthusiastically endorses the concept of a Museum of Science for Virginia and offer its support and assistance to the Study Committee in implementing this concept.¹³³

In mid-October, 1969, the Virginia Museum of Science Study Commission handed its report to Governor Godwin. At the very beginning of the thirty-two page report, the commission bestowed accolades upon the VAS, stating: "The Virginia Academy of Science deserves immense credit for vigorously making the concept of the Virginia Science Museum during several past administrations of that administration of that organization as well as the present one, and also for making a substantial financial contribution available to the Study Commission."¹³⁴ Following this acknowledgment, the Commission immediately addressed the purpose and goals of a state science museum:

¹³³"Report of the Virginia Academy of Science Ad Hoc Committee on A Museum of Science in Virginia," 1969. Special Collections, Virginia Tech.

¹³⁴"Report of the Virginia Museum of Science Study Commission, 1969," p. 2. October 15, 1969. Special Collections, Virginia Tech.

To deepen our understanding of man and his environment; to promote a knowledge of the scientific method and thus encourage objectivity in everyday affairs of man; to educate citizens of all ages in the concepts and principles of science and these concepts and principles form the foundation upon which rests our technological society and its economy; to motivate and stimulate young people to seek careers in science; to encourage an understanding of the history of scientific endeavor; to provide special facilities and collections for the study of Virginia's natural resources; to foster a love of nature and a concern for its preservation.

Following these lofty ambitions, the commission set forth its precise recommendations, but not before issuing the proviso that the phrase "Science Museum of Virginia" refers to "the total state museum of science complex and would include regional science museums if and when established." The statement reads:

That a science museum under state control be established that would be known as The Science Museum of Virginia
That The Science Museum of Virginia be one of quality as befits the status and traditions of Virginia
That The Science Museum of Virginia be so organized and administered that it will serve all regions of Virginia
That a basic function of The Science Museum of Virginia be to complement science education at all levels of learning from the elementary school through the university
That The Science Museum of Virginia be financed primarily by the State in the initial stages and increasingly in later stages by private citizens, private foundations, admission charges, and local and federal sources
That The Science Museum of Virginia emphasize the history of science as appropriate, but that a special division of history, encompassing all aspects of that subject, be not included
That The Science Museum of Virginia be an autonomous institution governed by a board consisting of seven trustees, appointed by the Governor. . .
That first priority be given to the establishment of a museum headquarters, or The Science Museum Center in a centrally located and populous area of the State
That The Science Museum Center coordinate, on the basis of mutualism and upon invitation, science museum activities throughout the State. . .
That The Science Museum Center incorporate the best features of traditional science museums and modern, dynamic science centers
That The Science Museum Center by means of its professional staff, administration, and other resources aid and encourage the establishment of local, regional museums as appropriate wherever local support and funds are available.¹³⁵

¹³⁵"Report of the Virginia Museum of Science Study Commission," p. 19. October 15, 1969. Special

The Commission's Study Report did not stop at these recommendations, but continued, comprehensively covering another seven sections. "Part Two" focused on the "Need For a State Science Museum," reviewing topics such as: the science museum's role in educating young and "elder learners," serving the community, and attracting tourists. "Part Three" and "Part Four" concentrated on the services of a quality science museum, such as educational television. "Part Five" listed various examples of support for a Science Museum of Virginia. For instance, the following statement issued by the Council of College Presidents indicates the willingness of the leaders of the state's institutions of higher education to aid the museum in its efforts to reach the public: "Whereas, the Council of College Presidents recognizes the value of such a museum in the education of Virginians at all levels: secondary, college, graduate and adult education, therefore: Be it resolved, that the Council express to the Study Commission its support for such a museum and for the establishment of a coordinated statewide program of related activities."¹³⁶ "Part Six" detailed a possible basic plan for the museum, highlighting the physical sciences division, the botanical sciences division, the natural history division, the industry and technology division, the zoology and limnology division, and the zoological gardens division. "Part Seven" discussed the selection of a suitable location, while "Part Eight" outlined several tentative sources of revenue. Finally, the recommended enabling legislation was introduced. This should take the form of "A Bill To create the Science Museum of Virginia and declare its purposes; to provide for the appointment of the Board of Trustees thereof

Collections, Virginia Tech.

¹³⁶"Report of the Virginia Museum of Science Study Commission," p. 19. October 15, 1969. Special Collections, Virginia Tech.

and to prescribe their powers and duties.” The long-held dream of a museum was moving closer to reality.¹³⁷

As President of the Virginia Academy of Science, Carpenter responded to the excellent news of the report by writing Governor Godwin on November 29, 1969: “I have been authorized to inform you,” wrote Carpenter, “that the Council has endorsed the concept of a museum as well as the general content of the report. Your support of this museum in any appropriate way would give great impetus to the growth of science in Virginia.”¹³⁸

At the March, 1970, Council Meeting, Academy member Austin Grigg announced that the legislature had approved the Science Museum of Virginia and appropriated the requested initiating fund.¹³⁹ Two months later at the annual meeting of the VAS, Council met to discuss who might best represent the VAS on the Science Museum of Virginia Board. Unanimously, Council placed Roscoe Hughes at the top of the list and submitted his name to Governor Linwood Holton.¹⁴⁰ At the November Council meeting, Maurice Rowe announced that the Governor had made his decision with respect to the Board of Trustees and had chosen to appoint a nine-member board and had named seven of the nine Trustees of the Planned Science Museum of Virginia. These included two members of the VAS: Roscoe Hughes, a member of the Science Museum Study Commission, and Avery Catlin of the Materials Science Section. Others appointed were: J.T. Bird of Salem;

¹³⁷“Report of the Virginia Museum of Science Study Commission,” p. 19. October 15, 1969. Special Collections, Virginia Tech.

¹³⁸D. Rae Carpenter, Jr. to Governor Mills Godwin, November 29, 1969. Special Collections, Virginia Tech.

¹³⁹Virginia Journal of Science 21(1970), p. 70.

¹⁴⁰Virginia Journal of Science 21(1970), p. 94.

W. A. Stuart of Rosedale; H. Soldinger of Portsmouth; W. J. Vaughan of Virginia Beach, and W. T. Reed, Jr., of Manakin-Sabot. The General Assembly appropriated \$66,500 in planning money for the proposed Museum from the 1970-72 biennium to implement the Study Commission's report, with a portion of the money to be used in hiring an Executive Director. A site for the proposed museum had not yet been selected, and the governor and legislature were reviewing the possibility of several divisions of the museum to revolve around a central location.¹⁴¹

In 1971 the Board of Trustees reached several decisions. First, that the museum system should include facilities in three or four population centers around the state, with other outreach centers. They launched a preliminary study into the areas of Lynchburg, Norfolk, and Roanoke. Each museum site would feature something different. For instance, several areas had already been approved by the General Assembly: physical sciences, to include a planetarium and illustrate the "history, concepts, and basic principles of the chief science;" botanical sciences, to educate the Virginia public in the types of Virginia flora; natural history, devoted primarily to Virginia's natural resources, including paleontological and archaeological artifacts and specimens; industry and technology, to depict the evolution of Virginia's industry; oceanography and limnology, encompassing an oceanarium and treating Virginia's aquatic life and environment; and a zoological garden, for the preservation of wildlife viewed as a natural habitat.¹⁴²

Near the close of the year, in November, 1971, the Virginia Academy of Science Museum of Science Committee recommended that each section of the Academy be encouraged to read a paper at the next Academy annual meeting that would inform all of its

¹⁴¹Virginia Journal of Science 22(1971), pp. 19, 30.

¹⁴²Virginia Journal of Science 22 (1971), p. 76.

section members about the museum plan and its tie to that particular section and to solicit the formation of advisory groups from each section. In addition, though not unanimously because of three dissenting votes--the Museum of Science Committee suggested that Council authorize the Executive Committee to approve the expenditure of a portion of the Museum Fund which remained for preparation and printing of an informational brochure on the museum to be distributed by the Academy to its members, civic groups throughout the Commonwealth, and other possible supporters or benefactors of the museum.¹⁴³

Not surprisingly, because of its widespread promotion, the Science Museum received heavy support and, in 1972, the General Assembly appropriated nearly 140,000 dollars for the 1972-74 biennium. In April of 1972, the SMV's project report was completed, documenting the typical initial facilities, sites, and costs. Also in April, Rae Carpenter was appointed a Trustee of the Science Museum to take the place of Avery Catlin. At a Science Museum Committee meeting in October, 1973, Paul Knappenberger, new Assistant Director of the Science Museum, outlined the present plans for the Capitol Museum Building and Headquarters facility which were to be located on a forty-five acre tract in Byrd Park, Richmond. Carpenter and Hughes discussed with the committee the details of the Board of Trustees and the Foundation of the Science Museum of Virginia, explaining that they still endorsed a regional concept for a state-wide system. Carpenter outlined four ways in which the VAS might provide the Science Museum with aid:

1. Support all Academy Members at each individual's local-level.
2. Formal endorsement by the VAS of the Museum's programs as presently conceived.
3. Cooperation in promoting the local impact of the planned fall-winter State-Wide tour of 'Trans-Science' mobile.

¹⁴³"Minutes of the Executive Committee," September 26, 1971. Special Collections, Virginia Tech.

4. Individual member assistance in implementing, as called upon in the near future, the anticipated fund raising effort on behalf of the Science Museum.¹⁴⁴

In the 1973 Session of the General Assembly, funding limitations caused the legislators to mandate that the development of the Science Museum's physical facilities be limited to one site and authorized the preparation of schematic, preliminary drawings to be completed. In many ways, this decision came as a blow to the high hopes of the VAS. Despite its displeasure with the decision to focus on one site and with the obvious negative implications in mind of the need to prepare preliminary plans without state money, the Virginia Academy of Science continued in its support. For instance, in November of 1974, President E.L. Wisman and Rae Carpenter, the latter by then Chair of the Science Museum's Board of Trustees, wrote to every Council member explaining briefly that the Science Museum "needs our help. . . . In the next few weeks, the Museum needs support expressed to every member of the 1975 General Assembly and we are asking every member of Council to contact each legislator in their locality expressing support for the Museum program and urging that capitol outlay funds and increased operating funds be provided. In addition, we ask each member of Council to ask 4 or 5 friends and associates in your community to contact legislators also. . . ."¹⁴⁵

The following January, A.B. Niemeyer, chair of the VAS Committee for the Science Museum of Virginia, discussed ways that the Academy might help to build solid support for the Museum with members of the legislature, including emphasizing that "[l]etters should be written now to the legislators to emphasize the plight of the Museum

¹⁴⁴"Minutes, Ad Hoc Committee on Science Museum of Virginia," October 21, 1973. Special Collections, Virginia Tech.

¹⁴⁵E.L. Wisman and Rae Carpenter to Council, November 20 1974. Special Collections, Virginia Tech.

and to secure backing for this project of the Virginia Academy of Science."¹⁴⁶ The VAS had gotten too far this time to be willing to let the long-awaited science museum disappear. The members' dedication to the project was apparent from the institutional to the personal level. Virginia Academy Fellow Virginia Ellet remembers a very human example of the tenacity with which the VAS--and most notably Hughes--lobbied the General Assembly:

Well, Dr. Hughes, of course, was the backbone of the whole science museum. That man really worked on it. I remember when he was in the hospital one time after an operation. He had me come then and he was dictating things about the museum and telling me what to do. . . . I wrote letters to different people, friends throughout the state and got them to write the Legislature. . . . I was also on television a couple of times, on some of the local talk shows.¹⁴⁷

One would have thought that such tenacity would have been rewarded. But the limitations of the Commonwealth's budget were to come into play with even more grim implications for the ambitious dreams of the Academy.

In November of 1975, Carpenter reported to the Science Museum of Virginia Committee that there was little chance of government approval of the Museum's capital outlay request. Accordingly, Carpenter said, the Museum's trustees would make a strong appeal for "campaigning money" but would probably eliminate the capital outlay request. Furthermore, intense consideration would be given to using the Broad Street Station to house the Museum.¹⁴⁸ As limiting as the Broad Street Station might seem to be, it was a building, and the Museum at least might make a start there. On March 20, 1976, Carpenter

¹⁴⁶A. B. Niemeyer, Jr. to Science Museum Committee, January 22, 1975. Special Collections, Virginia Tech.

¹⁴⁷Virginia Ellett to Charlotte Webb. Interview. Richmond, Virginia. April 4, 1995.

¹⁴⁸"Minutes of Council," November 9, 1975. Special Collections, Virginia Tech.

reported that indeed, the Museum had received permission to use the Broad Street Station and that the State had earmarked \$50,000 for operating funds. Hence, the Museum is “off and running.”¹⁴⁹ Carpenter was careful to warn that since there would not be space for botanical gardens at the Broad Street Station, the Board of Trustees would continue to campaign for such an area in the Byrd Park region.¹⁵⁰ In explaining the move to the old train station to Neimeyer in September while seeking the help of the VAS in continuing to seek funds to allow the museum to fulfill the mission the Academy had originally proposed, Carpenter wrote:

The Science Museum underwent an abrupt change in philosophy last December a result of the tight state budget and the availability of the Broad Street Station. It took us about four months to reorganize our thinking concerning a future program. It now appears that this program involves using the station with as little renovation and alteration as possible for the near term and with the accumulation of participatory exhibits aimed at the level of the elementary and high-school grades. Physical science will be pursued first. . . . We would request that you discuss in your Committee the feasibility of the VAS providing on a regular basis, scientists from all areas of the state in scientific disciplines to put on programs to the lay public on topics of scientific interest . . .¹⁵¹

The Science Museum of Virginia is one of the most visible accomplishments of the Virginia Academy of Science, to be ranked with the Virginia Junior Academy of Science

¹⁴⁹Academy member and Cabinet member Maurice Rowe was instrumental in securing the Broad Street Station for the Science Museum of Virginia. As he remembers in an interview with Charlotte Webb on April 4, 1995, in Richmond, Virginia: “Well, there was a lot of interest in trying to locate a place for the science museum, and several locations were suggested, one being Maymount and I think one might have been over at the Botanical Gardens, but I can recall quite vividly that Roscoe Hughes was very much opposed to that and was very much interested in finding some location that would be central and sort of stand on its own and be recognized as a science museum rather than being part of some other conglomerate. So, at the time, I being in government and basically responsible for state properties and so on and so forth and Chairman of the Public Buildings Commission, they solicited my interest and I likewise solicited the Governor’s interest in the possibility of the Science Museum being located at the Old Broad Street Station. . . .”

¹⁵⁰“Minutes of Council,” March 20, 1976. Special Collections, Virginia Tech.

¹⁵¹D. Rae Carpenter to Bill Niemeier, September 21, 1976. Special Collections, Virginia Tech.

and the publication of the James River Basin: Past, Present, and Future. Its creation required action over many years, and the final push that brought the Museum into being required the concerted efforts of a number of players. The vigorous leadership of both Hughes and Carpenter was essential to the birth of the Museum, particularly their ability to marshal the VAS members to provide the political clout essential to the project.¹⁵²

Working together, the Virginia Academy was able to muster the necessary forces. The Academy's role is one that is easy to forget, now that the Museum is an entity standing largely on its own. But the Science Museum is an achievement of which the Academy should be justly proud. In 1995, for example, approximately 350,000 people of all ages visited the Museum, while eight outreach programs reached another 150,000 people directly. And teacher training programs sponsored by the Museum encouraged science among countless students. The Museum represented only one of the areas of impact of the VAS; another was demonstrated by its interaction with the State Board of Education over science education in the public schools.

Science Advisory Committee

By 1961, several members of the Virginia Academy of Science had expressed real concern that the State Board of Education did not include an expert whose primary training and interests rested in a scientific field. Over the next four years, the VAS became increasingly aware that many state agencies whose task area included one or more fields of science lacked an expert in their very targets of investigation. This realization on the part of

¹⁵²The Science Museum of Virginia heralds Roscoe Hughes as its founder. To honor his dedication and service to the Museum, the Roscoe Durrall Hughes Memorial Plaque was dedicated on August 11, 1989, at the Science Museum of Virginia. In the dedication address given by then-VAS President Michael Bass, he closed by stating: "Roscoe Durrall Hughes has honored us by having this great, big vision of a Virginia science museum, the ability to develop, nurture, and create it into existence. Especially, we are grateful to Roscoe for developing in each of us such a great feeling of accomplishment and pride in this our Virginia Science Museum." Address printed in Virginia Journal of Science 40(1989), pp. 242-43.

the Virginia Academy translated into the idea that it might serve the Commonwealth by making available to the governor the expertise of its members.

In late 1965, physicist Tom Joyner of Hampden-Sydney College wrote to Council: “Feeling that the present State Board of Education does not fairly reflect our state community, the Section of Astronomy, Mathematics, and Physics last year requested the Council to resolve to the governor that at least two members be appointed from the scientific community. The Council having failed to act, I was instructed to return this matter to Council [again] for consideration.”¹⁵³ Finally, at the annual meeting in 1966, the Executive Committee discussed at great length the possibility of creating a VAS “Science Advisory Board” to the governor. Following the Executive Committee’s lead, Council decided that a study committee was in order.

In July, 1966, Virginia Academy President Stanley Williams wrote to James Cole, Jr., at the School of General Studies, University of Virginia, asking him to chair a Committee to Study State Science Policy. Joined by Roscoe Hughes and Tom Joyner, Cole would be responsible for examining the viability of a “Science Advisory Board” to the governor. Perhaps, suggested President Williams, the three men should consult others, such as Senator Lloyd Bird, who might offer an “insider’s” perspective on the legislative scene. According to Williams, the committee’s goal would be a recommendation to Council on “what should be done.” For, as the president pointed out, over the past year the possibility of a Science Advisory Board or an Advisor on Scientific Affairs had been discussed repeatedly, with the idea that the governor might well use a Science Advisory Board or an Advisor on Scientific Affairs, and the VAS might suggest a “plan or a man.” Williams was quick to note that “[c]learly, we as an Academy do not wish to be nosy,

¹⁵³Tom Joyner to Members of Council, November 1, 1965. Special Collections, Virginia Tech.

futile, or foolish. . . . Better to make some small effective move than to sit silent, unless, of course, doing nothing is all that can be done.”¹⁵⁴ It appears likely that in the collective memory of the members on Council and the Executive Committee, the friction between the Virginia Academy of Science and the State Board of Education functioned as a reminder of how many pitfalls lay in the way of a satisfactory (to the VAS) resolution of this issue.

At the 1968 annual meeting, Council discussed the latest plans of the Advisory Committee, namely that the Virginia Academy of Science formally offer its services as a Science Advisory Committee to the Governor. Based on communication with state officials, Hughes felt fairly confident that the state administration would be receptive to such a move. Cole said that this approach should be through the State Council for Higher Education. In addition, he suggested that the Virginia Academy of Science should work through Senator Bird, thus affording the VAS the opportunity for a two-pronged approach to the Governor. Harshbarger moved, and Council passed the motion, that all such interactions be handled by the President and the President-elect.¹⁵⁵

Heeding Council’s directive, President Paul Siegel wrote to Senator Bird slightly over one month later. After explaining that numerous times over the past few years the Virginia Academy had discussed the “necessity” of an advisory group on state science to the governor, President Siegel said that an advisory panel would offer “the state an opportunity to utilize available expertise in an advisory capacity for decision making processes involving science and technology.” Indeed, he remarked, to date in Virginia

¹⁵⁴Stanley Williams to James W. Cole, Jr., July 12, 1966. Special Collections, Virginia Tech. It is interesting that in a handwritten note dated 12 October 1967 at the top of the letter, Rae Carpenter wrote to Cole: “I have heard nothing of this and I am quite interested. I know Joyner first brought this up at a Physics Section meeting about five years ago. How about continuing this for 1967-68?”

¹⁵⁵“Minutes of Council,” May 10, 1968. Special Collections, Virginia Tech.

there are not any groups whose sole purpose is to advise on scientific matters. To support his position, Siegel declared that scientific advisory committees were prevalent not only in the federal government but also within the states of North Carolina, Maryland, and Kentucky--Virginia's closest neighbors. "These groups provide input on scientific matters to the decision making units thereby enabling a fuller understanding of such in the development of modern technology."¹⁵⁶ Two months later, Siegel wrote to Governor Mills Godwin, generally repeating the contents of his letter to Senator Bird, but also adding that he and President-elect Rae Carpenter would be happy to discuss the advisory committee with the governor's office should he show an interest in the proposal.¹⁵⁷

Godwin's office invited Siegel and Carpenter to meet with Archer L. Yeatts, Jr., Executive Assistant at the governor's office in September, 1968.¹⁵⁸ The meeting went well, and in a letter to Yeatts nine days later, President Siegel reviewed the substance of the meeting, outlining four areas in which a Science Advisory Group might be of use to the state:

1. They [would] provide peer judgment to assist the Executive in appointments to State agencies, boards, and commissions that deal with scientific and technical problems. . . . Examples are: Advisory Council on Virginia Economy, Commission on the Industry and Agriculture, Commission on a State Museum of Science, Radiation Advisory Board, State Board of Education, Commission on Game and Inland Fisheries, Marine Resources Commission, Air Pollution Control Board, Board for the Certification of Architects, Professional Engineers and Land Surveyors, State Water Control Board, Advisory Council on Education Television Library Board, and Board of Conservation and Economic Development.

¹⁵⁶Paul B. Siegel to Senator L.C. Bird, June 24, 1968. Special Collections, Virginia Tech.

¹⁵⁷Paul B. Siegel to Honorable Governor Mills Godwin, August 19, 1968. Special Collections, Virginia Tech.

¹⁵⁸Maurice B. Rowe to D. Rae Carpenter, Jr. and Paul B. Siegel, September 26, 1968. Special Collections, Virginia Tech.

2. To provide a source of scientific expertise to the Executive and any state agency or commission for the solution of problems or for planning advice on scientific matters relating to State policy and administration.
3. To assist the Industrial Development Commission in its efforts to attract industry to the State by providing information on the breadth and depth of facilities and talent in public and private educational institutions. This approach is well-demonstrated by the Research Triangle.
4. To identify problems of the scientific of the scientific community and serve as a vehicle of communication between that community and the Executive and General Assembly to more adequately meet the needs of the State through new existing and development of Technical Schools and Community Colleges.¹⁵⁹

The combination of the meeting with Yeatts and Siegel's letter to Yeatts appeared to the VAS to have met with partial success, for in November, 1968, Yeatts replied to Siegel. He had discussed with Governor Godwin the pros and cons of creating a Science Advisory Group, and had "come to the conclusion that to appoint such a group would be a duplication of effort." However, Governor Godwin did feel it appropriate that members of the Virginia Academy of Science sit on the various standing boards and commissions and encouraged the VAS to recommend its qualified members for appointments to these boards: "[I]t would seem appropriate that the Academy advise appropriate state agencies of its willingness to assist by providing technical and scientific help in carrying out their statutory responsibilities."¹⁶⁰ Unfortunately, only the naive would have been taken in by the governor's offer to encourage the VAS to recommend appropriate appointees to the various boards and commissions in question, since all of these appointments were then and remain today entirely political in nature and under the control of each governor, thus reflecting his philosophy and/or patronage needs. It also seems apparent that Godwin was unmoved by the reference to North Carolina's science advisor and the Research Triangle--shortly to

¹⁵⁹Paul B. Siegel to Archer L. Yeatts, October 8, 1968. Special Collections, Virginia Tech.

¹⁶⁰Archer L. Yeatts, Jr. to Paul Siegel, November 12, 1968. Special Collections, Virginia Tech.

become the envy of its neighbors--since he made no immediate movement in the direction of appointing a state science advisor.

Interestingly, the archives of the Virginia Academy contain a letter from January, 1969, addressed to the Honorable Governor Mills Godwin by M. Frank Hersman, a staff associate for the Office of the Planning and Policy Studies at the National Science Foundation (NSF) in Washington, DC. What, inquired Hersman, is the name of the state science advisor with whom he might be working in the future? Hersman continued, explaining that he was responsible for an experimental planning program in the NSF to improve understanding about how state and local governments might make better use of science and technology in developing plans, policies and programs to deal with public problems. Recently, he said, “[a] number of states have established science advisors to the governor for the purpose of keeping the governor’s office and state agencies informed of the implications of new scientific and technological development that either bear on existing governmental programs or, more importantly, those that may not fall within the established missions of existing state agencies.”¹⁶¹ As Executive Assistant to Godwin, Archer Yeatts responded for the Chief Executive: “[T]here is no individual or group that may be considered in the science advisory category. . . . The Virginia Academy of Science is an organization of long and reputable standing, made up of Virginia’s leaders in science and technology. . . . it is the Governor’s feeling that the present Academy of Science, through its Executive Committee and by working with already established boards and/or commissions, is in a position to advise the governor without the establishment of another advisory organization.” Yeatts listed VAS President Paul Siegel at Virginia Polytechnic Institute as a contact person.¹⁶²

¹⁶¹M. Frank Hersman to Honorable Mills E. Godwin, Jr., January 2, 1969. Special Collections, Virginia Tech.

¹⁶²Archer L Yeatts, Jr. to M. Frank Hersman, January 8, 1969. Special Collections, Virginia Tech.

By the end of April, Siegel reported to Yeatts with pleasure that he had received several contacts from Frank Hersman “re the name of a science advisor to the Governor and a person whom the National Science Foundation may work with in Virginia” However, Siegel asked whether or not when he finished his term as Virginia Academy President in May and Carpenter assumed the position should the role of science correspondent roll over to Carpenter as well.¹⁶³ Yeatts responded that although he had not been able to speak with Governor Godwin, it seemed to him that the most appropriate action would be for the Academy’s past president to serve in this capacity since the duties of the past president were somewhat limited and would allow more time for the advisory position.¹⁶⁴

Obviously Godwin’s office was satisfied with Siegel’s representation, for at the October Council meeting, Academy President Carpenter announced that the Governor had suddenly appointed Siegel to the position of science advisor to the Governor, especially for counsel on issues relating to the National Science Foundation. The President continued, informing Council that a concerted effort was now underway to have the science advisor appointed to membership on the State’s Research and Development Advisory Committee of the State Council for Higher Education (RDAC).¹⁶⁵ The effort was successful, and in November, Bruce Miller, an Executive Assistant to the Governor, wrote to Prince B. Woodward of the Council of Higher Education: “May we suggest your consideration for appointment to the Research and Development Committee of the State Council of Higher

¹⁶³Paul B. Siegel to Archer L. Yeatts, April 29, 1969. Special Collections, Virginia Tech.

¹⁶⁴Archer L. Yeatts to Paul B. Siegel, May 6, 1969. Special Collections, Virginia Tech.

¹⁶⁵Virginia Journal of Science 21(1970), p. 24.

Education, Paul Siegel.”¹⁶⁶ Siegel may have been Godwin’s science advisor, but, as is the custom in the Commonwealth, when the administration changed, all such appointments lapse. With the close of Godwin’s term, then, the science advisory position became vacant.

The following November, in 1970, Godwin’s successor, Governor Linwood Holton, wrote to Maurice Rowe, President of the Virginia Academy of Science, that he was constantly called upon to make decisions which needed expert advise from persons with scientific credentials. “You are quite aware, I am sure, that the Governor of Virginia has had a science advisor, but the past history and activities of that position have lacked needed direction. . . With that in mind, I would like to call on you as President of the Virginia Academy of Science, to seek from the Academy recommendations of three persons who might serve as my science advisor. It is my feeling that the Executive Council of the Virginia Academy of Science should serve as a broad-based ad hoc committee to the Governor as his science advisor.”¹⁶⁷ Immediately, the VAS moved that Siegel, Carpenter, and Edward Turner (President -Elect for 1971), a physicist from Washington and Lee University, be proposed to Holton for his appointment as Science Advisor.¹⁶⁸ In early 1971, the governor’s administration interviewed each candidate.

The immediate action of the Virginia Academy of Science to deliver three nominations was not followed by equally prompt action by the state’s chief office. Indeed, at the end of March, 1971, a decision from Holton’s office was noted only as “expected

¹⁶⁶Bruce Miller to Prince B. Woodward, November 12, 1969. Special Collections, Virginia Tech.

¹⁶⁷Governor Linwood Holton to Maurice Rowe, November 2, 1970. Special Collections, Virginia Tech.

¹⁶⁸“Minutes of Council,” 1970-71. Special Collections, Virginia Tech.

shortly.”¹⁶⁹ Finally, on July 2, 1971, Carpenter wrote to Rowe, saying: “I have not heard anything further on the issue of the science advisor. It seems a shame to have the opportunity for the Academy to have some influence in science matters just disappear, especially after various people had attempted to get such a position over many years. At the very least, I would hope that the position as it existed under Governor Godwin, could be continued. . . .”¹⁷⁰ Very concerned, Rowe responded ten days later to Carpenter that “this is rather embarrassing since I had high hopes that Godwin would reach a decision prior to our annual Academy meeting. . . .”¹⁷¹

Almost two years later, Godwin still had not contacted the VAS nominees, or, apparently, reached a decision. For Virginia Academy members and other citizens interested in bringing science and technology “experts” to the government, the struggle therefore continued. For example, in December, 1972, Dennis Barnes, Associate Provost for Research at the University of Virginia, summed up the previous day’s meeting of the Research and Development Committee (RDAC) regarding advisory assistance to the State Government on Science and Technology.¹⁷² First, RDAC had reached consensus on two points: that there was within the state government a “recognized and unfilled need for assistance in coping with public problems which are caused by or are amenable to solutions by science and technology” and second, a great need existed within the new Governor’s cabinet itself for a science advisor. In considering the role of advising, the RDAC

¹⁶⁹“Minutes of Council,” March 28, 1971. Special Collections, Virginia Tech.

¹⁷⁰D. Rae Carpenter to Maurice B. Rowe, July 2, 1971. Special Collections, Virginia Tech.

¹⁷¹Maurice B. Rowe to D. Rae Carpenter, July 12, 1971. Special Collections, Virginia Tech.

¹⁷² Dennis W. Barnes to James Midyette, Department of Agriculture and Commerce; Maurice B. Rowe, Secretary of Commerce and Resources; Earl J. Shiflet, Secretary of Education; Clifford Adams, Old Dominion University; D. Rae Carpenter, Virginia Military Institute; Warren Heeman, College of William and Mary; Randall M. Robertson, Virginia Polytechnic Institute and State University; Daniel T. Watts, Virginia Commonwealth University; Daniel E. Marvin, State Council of Higher Education for Virginia; Edward F. Turner, Jr., Washington and Lee University. Special Collections, Virginia Tech.

envisioned two functions. First of these was the “anticipatory” role, in which advisors would attempt to forecast scientific and technological opportunities and problems in the future. And the second, the “technical assistance” role, involved activities such as technology and information transfer. In the course of discussing the latter role, Barnes offered a particularly revealing glimpse into the decade’s perception of the academic scientist:

The academic community is acknowledged to be a major resource for providing “assistance” to the governor’s cabinet but the present mechanisms for mobilizing interested, qualified, academic expertise are inadequate and unreliable. For a variety of reasons, including previous obligations to and higher priorities for teaching and research, the academician is less likely to contribute effectively to the solution of “brush fire” problems than to the “anticipatory role.”¹⁷³

This stereotypic picture of the academic scientist’s inability to act promptly should have been disheartening to the activist VAS members, many of whom had shown themselves over the years well able to deal with “brush fires” with both vigor and dispatch. In this case, it was not the academic sector as represented by the Virginia Academy of Science that was unable to move with dispatch, for the issue of the science advisor remained hanging fire within the office of the governor for some time.

Two years after RDAC’s meeting advocating the appointment of a science advisor to the Governor’s cabinet and four years after the Virginia Academy of Science offered its three recommendations to the governor, much remained the same. In writing to Maurice Rowe in March, 1974, Carpenter informed him of Jim Midyette’s report at the last Council meeting that the “question of a mechanism to provide science advice or expertise to the governor and/or Legislature is still under discussion and that suggestions were welcomed.” Carpenter went on to say that in April, after nearly two years of inactivity, the RDAC was

¹⁷³Dennis Barnes to aforementioned group, December 14, 1972. Special Collections, Virginia Tech.

going to meet again, and without doubt, a topic of discussion would be the points laid out by Barnes in his December, 1972 memo.¹⁷⁴

It was not until the May, 1974, annual meeting, however, that the VAS attempted any further concrete action towards establishing a science advisor or panel. Council moved to appoint an Ad Hoc Committee to Plan Science Advisory System, chaired by Ertle Thompson of the University of Virginia's School of Education. Since Council did not precisely account for the duties of the new committee, several months after its inception the Ad Hoc Committee issued a memo to Council in which certain ideas and questions were presented as an "attempt to better understand the "charge" of Council to the committee."¹⁷⁵ In outlining the present status of the committee, its chair Thompson stated:

1. The total field of research problems relative to the Commonwealth of Virginia appears to be ill-defined.
2. There appears to be a lack of consensus of goals and priorities among decision makers.
3. The social, political, and economic conditions appear to dominate the approach to solving most of our problems, yet it is in these areas that we seem to have an inadequate knowledge base to provide acceptable solutions.

Next, Thompson outlined six questions for the committee to consider in its possible role as state science advisor, the three most central being:

1. Is it possible for our committee to identify key individuals from state and local government, industry, colleges and universities, and lay citizenry to provide the necessary input for problem-identification?
2. Is it possible to identify more clearly defined research goals for the Commonwealth of Virginia?
3. Is it possible to assess technological development in Virginia with sufficient precision to permit recommendations which would assure

¹⁷⁴D. Rae Carpenter, Jr. to Maurice Rowe, March 18, 1974. Special Collections, Virginia Tech.

¹⁷⁵Ertle Thompson to the Virginia Academy of Science Council, November 1, 1974. Special Collections, Virginia Tech.

adequate transfer of newly developed suitable technology to all levels of government, education, and industry?¹⁷⁶

Of these questions, the first is the most illuminating. What can be said about the networking capabilities of a state-wide organization like the VAS if a committee has to ask whether it is “possible” to identify people who would help them discover what the state’s problems are? The third question fits in a similar category, while the second is significant in view of the existence of NASA-Langley in Hampton and some of the high-powered research going on around the Commonwealth, most notably at the University of Virginia and at Virginia Polytechnic Institute. But at least the ad hoc committee was in place to offer its service, should such service be needed.

While the Governor did not immediately or directly recognize the Ad Hoc Committee, in the Spring of 1975, he did invite its chair, Ertle Thompson, to be a member of the Standards Review Committee of the Water Control Board of the Commonwealth--an indication of an understanding of the advisory function the Virginia Academy could perform.¹⁷⁷ It seems likely that Maurice Rowe, Past-President of the VAS and by then Secretary of Administration and Finance for the governor--hence a member of his inner cabinet--influenced the governor’s decision to appoint Thompson. As Carpenter remarked in an interview, “Maurice Rowe was a key player in trying to get Virginia to have a Science Advisor. He was such a confidante to the governor. . . . He had the ear of the Governor and knew what the problems were. When the problems surfaced, it was natural that

¹⁷⁶Ertle Thompson to the Virginia Academy of Science Council, November 1, 1974. Special Collections, Virginia Tech.

¹⁷⁷“Minutes of Council,” May 7, 1975; See also the full “Report of the Ad Hoc Committee to Plan Science Advisory System,” May 8, 1975. Of this committee, Ertle Thompson, Hunter D. Hamlett, P. Howard Massey, James Midyette, and Maurice B. Rowe submitted the report. Special Collections, Virginia Tech.

Maurice Rowe would have said to the head of the Commonwealth: 'Here is an option.'¹⁷⁸ Fortunately, given the problems that the state would shortly face, the Virginia Academy's actions did provide the Governor with help he badly needed.

In December, 1975, Rowe contacted Thompson, suggesting that the Ad Hoc Committee to Plan Science Advisory System ask Academy President Arthur Burke to write the Governor and offer the service of the Academy in "the area of providing and /or consultation to support the decision-making process. . . ."¹⁷⁹ Rowe's timing was well-planned, for the disastrous environmental tragedy of the Kepone pollution of the James was beginning to be felt with the discovery in November of the presence of the chemical in shellfish. Certainly the Governor understood that the expert services of the VAS would be unquestionably valuable, given the fact that he would shortly have to make some difficult and unpopular decisions stemming from the pollution of the James. The James itself occupied a central position in the Old Dominion, both historically and economically. It was the latter role that was particularly critical in the Kepone poisoning, for the James was the seed bed for the entire Virginia oyster industry and the heart of the shad fishery. Virginia was renowned for the quality of its oysters, which then represented an important part of the seafood business, and the shad, particularly the roe, were exported to northern markets in significant quantities during the spring spawning run. The James was also a nursery for the famous blue crab, although by the 1970s the marked decline in soft-shell crabs had sent a warning, unheeded, that all might not be well with the mighty James River.

¹⁷⁸D. Rae Carpenter to Charlotte Webb. Interview. Newport News, Virginia. June 13, 1995.

¹⁷⁹"Minutes of Council," November 9, 1975. Special Collections, Virginia Tech.

The pollution of the James had been discovered in a very roundabout fashion, despite the fact that the Air Pollution Board, the State Water Control Board, and the Town of Hopewell all had ample evidence that there was trouble stemming from a small, new company, Life Sciences Products. In April of 1974, Life Sciences Products, Inc., a spin-off of Allied Chemical that held the patent on Kepone, began full-scale manufacture of this polychlorinated hydrocarbon pesticide in Hopewell on the James River. Produced in a crude plant that was actually an abandoned gas station, the substance was manufactured under exceptionally primitive conditions. The magnitude of the crisis was discovered when a sickened employee's bloodwork results were sent by a doctor who suspected Kepone poisoning to the Center for Disease Control (CDC) in Atlanta. Confirming the doctor's suspicions, the CDC contacted the Virginia State Health Department. In July of 1975, under pressure from the Health Department, Life Sciences agreed to shut down production. Subsequent testing of the water column and the sediment showed a high level of contamination in the James River itself. Sampling stations were set up for miles by the State Water Control Board under the authority of the Marine Resources Commission, with the discovery that for fully sixty miles downstream of Hopewell, the water and sediments were heavily contaminated. Estimates of the amount of Kepone in the James ran as high as 100,000 pounds. Examination of finfish and shellfish by both the EPA and VIMS in November, immediately preceding Rowe's letter to Burke, revealed that these animals were contaminated at a level hazardous to the health of people who ate James River seafood. As a consequence of these discoveries, in December, the Governor closed the James to fishing for both shellfish and finfish. It was a decision that caused an uproar in the entire seafood industry, from watermen to packers to the Virginia Seafood Council, many of whom viewed the Kepone problem as a trivial matter blown entirely out of proportion. It was

clear the governor needed some support. At the very least, he needed some external validation from Virginians that his decision had been correct.¹⁸⁰

As soon as VAS President Burke received Rowe's suggestion that the Virginia Academy of Science offer its support, Burke wrote to the Governor. For the first time in the history of the VAS, a governor's administration had issued a direct request to the Virginia Academy for help.¹⁸¹ Specifically, Governor asked President Burke to recommend three members of the Virginia Academy of Science to assist him and "render scientific advice regarding Kepone and other pertinent matters of immediate concern." President Burke immediately suggested Herbert McKennis, Professor of Pharmacology, Medical College of Virginia and Virginia Commonwealth University; Kuldip Chopra, Professor of Physics and Geophysical Science, Old Dominion University; and Ertle Thompson, Professor of Science Education, University of Virginia.¹⁸² In explaining his choice of advisors, Burke said:

The reason I had Thompson is that he's from the field of education and is politically oriented in the field of education toward Science as a chemist. Herb McKennis had been in the Navy Research Department during World War II and was an authority on toxic chemicals and the metabolism of nicotine. Chopra, a one-time marine, had done some work on the effect of sediments by the flow of currents. So I figured a politician and a research biochemist and a marine would be it, and they did a fine job.¹⁸³

¹⁸⁰For an in-depth analysis of this crisis, see George and Jane Webb, "Kepone: The Poisoning of the James River" (Smithfield: Smithfield Times, 1978-79). Edited by John Edwards, this analysis was written as part of a public service science residency funded by the National Science Foundation.

¹⁸¹In an interview with Charlotte Webb on April 4, 1995 in Richmond, Rowe explains that going to the Academy was the wise thing to do since those chosen as advisors would represent first and foremost the Virginia Academy of Science and second their professional institutions. Thus, no one university or college could cry favoritism.

¹⁸²"Report of the Ad Hoc Committee to Plan Science Advisory System," May 13, 1976. Special Collections, Virginia Tech.

¹⁸³Arthur Burke to Charlotte Webb. Interview. April 11, 1995. Richmond, Virginia.

In March, 1976, the three met with Governor Godwin, joined by Rowe, Earl Shiflet, Secretary of Commerce and Resources, and Otis L. Brown, Secretary of Human Affairs. The Governor was enthusiastic, expressing enormous interest in counsel from the membership of the Virginia Academy of Science. Indeed, his enthusiasm was not unwarranted, for by March, the watermen's instinct for public relations had made itself felt, particularly on television. Footage of distressed and outraged watermen, their picturesque, homemade, wooden dead-rise workboats, and the serene James itself appeared on nearly every local station in Virginia. Immediate discussion with the Governor and the group focused on the various "policies, rules, regulations, and standards" controlling the Water Control Board, Board of Health, and the Board of Conservation and Economic Development. In addition, the Kepone disaster--the underlying reason behind the existence of the three-person Academy panel--was discussed for the first time.

According to Rowe, the panel was instrumental in aiding the Governor during an extremely controversial situation in which a clearly defined solution did not exist. Data from different labs analyzing the same samples of water, sediment, finfish and shellfish gave conflicting results. No one was entirely sure what the effects of Kepone in small amounts might be on human beings-- although the experience of the Life Science employees made abundantly clear what damage very great exposure could cause. It was also abundantly clear how much political damage Kepone could cause, which was considerable. The new panel "gave guidance to those in authority positions, like health people . . . they enabled the Governor to make decisions that were based upon the best science input the state could muster. . . .they prepared press releases in anticipation of all possible reactions and results. . . ." ¹⁸⁴ In February of 1976 when Governor Godwin sent

¹⁸⁴Maurice Rowe to Charlotte Webb. Interview. April 4, 1995. Richmond, Virginia.

a proposal to the state to inventory all toxic substances manufactured in the state and to provide for both civil and criminal penalties for violation of public health requirements, it was with the Panel's input. At the same time, the Governor's Office designated Ertle Thompson as "Science Advisor to the Executive Branch of Government" to represent the Commonwealth of Virginia at the National Governor's Council on Science and Technology to meet later that spring.¹⁸⁵

With the help of the Virginia Academy of Science, the Commonwealth and its Governor managed to weather the greatest environmental crisis to occur in Virginia's history. It is a telling commentary on the nature of the political scene that it took an event of this magnitude to bring Governor Godwin to call into the Richmond arena the very people whose advice would have been the most helpful to him even earlier. In fact, had Maurice Rowe not been so close to Governor Godwin, it is likely that Godwin would never have asked for the help of the VAS. Both the presence of Rowe, then, and the magnitude of the problem made it possible for the Virginia Academy to offer its support. At base, perhaps, the difficulty arose from the fact that the worlds of politics and of science are separated widely. The VAS--while it continued to have vigorous leadership during this period--lacked the full enrollment of the high-prestige scientists whose presence on the membership rolls might have given the scientific organization a higher visibility within the political scene. Then too, the loose organization of the Virginia Academy of Science and its lack of an organized, political action group rendered it ineffective over the long run. For Virginia, which only after the death of Harry Flood Byrd turned away from its emphasis on rural values, the coming of the age of high technology and the importance of science to the economic development of the Commonwealth were simply not recognized. In this context,

¹⁸⁵"Report of the Ad Hoc Committee to Plan Science Advisory System," May 13, 1976. Special Collections, Virginia Tech.

Ertle Thompson's remark-- "the social, political, and economic conditions appear to dominate the approach to solving most of our problems"--describes an attitude that all of the efforts of the VAS could not overturn.

Part III. Concluding Remarks

The years 1963 to 1976 marked the most active period of outreach and growth during the history of the Virginia Academy of Science. While the beginning of these years saw the death of the founding figures of the VAS, these men and women were replaced by equally vigorous and equally committed leaders. Some of the difficulties that had appeared in previous decades remained in place. The tendency of the Virginia Academy to fail to follow up with sufficient vigor on initiatives continued to reveal itself, as, for example, was the case with the Great Dismal Swamp project. On the other hand, when everything fell in place, as was finally the case with the Museum of Science, tenacious leadership was actually able to boot home long-standing projects of great importance to the VAS.

The Virginia Academy remained true to its self-image throughout this period, sometimes with striking results. The Virginia Junior Academy of Science, for example, represented one of the great successes of the VAS and is the best example of its outreach philosophy. On the other hand, the inability of the Virginia Academy of Science to see itself in terms of the changing context of scientific professionalism--one in which participation in national associations and forums became both accessible to the majority of Virginia scientists and necessary for professional advancement--led to problems. Such difficulties ranged from the disappointing state of the Virginia Journal of Science to the

decline in membership among the very senior scientists who could have offered support to the state-based group that was actively recruiting young people into the sciences.

Perhaps the most important area of activity--that of interaction with the dominant figures on the Virginia political scene--was one with decidedly mixed results. The Virginia Academy of Science may in no way be faulted for what would shortly reveal itself as Virginia's failure to see the shape of the new technological age that was dawning. The state was well-placed to take the active role that both its research-oriented institutions of higher learning and the presence of one of the large national laboratories, such as the Continuous Electron Beam Accelerator Facility (now known as The Jefferson National Laboratory), should have brought about. That it failed to do so is in no small measure one result of the failure of the state government to enter into a partnership with its local scientists. The Virginia Academy certainly did its best to offer its services to the Commonwealth. What caused the failure of any significant union was a combination of short-sightedness on the part of politicians, not excluding the governors, and turf battles. In the latter, the obvious unwillingness of the State Board of Education to allow faculty members from higher education to have any say in the science offerings within the public schools set up a dynamic that was difficult to undo. And the position against the Science Museum taken by President Shannon of the University of Virginia and his supporters led to internal division within the VAS itself which did the organization no good. Even when Governor Godwin called in an advisory committee, he did so with his back against the wall because of the extremely bad press that Kepone was causing the entire state. He needed more than advice. He needed home-grown experts to lean on when his unpopular but necessary decisions were attacked by Virginians.

CHAPTER FIVE

Repositioning Membership:

Entering the 'State of the Art Virginia,' 1977-1989

From 1977 to 1989 the Virginia Academy of Science struggled to retain a position of power within the ever-changing web of Virginia science. From the interaction between several members of its Council to the lobbying of the General Assembly for higher standards in science education or an increased awareness of an environmental problem, the VAS sought to maintain its level of power within the Commonwealth. The effectiveness of the Academy in repositioning itself was limited by both the weakened social and political power of its individual members and by the restricted freedom of these members to act on behalf of the group when necessary. Gradually, the VAS fought to redefine itself, considering various avenues it might take in order to remain a vital participant on the scientific, academic, and political scene in the Commonwealth of Virginia.

Part I. Setting the Stage: Virginia, 1977-1989

In keeping with the conservative nature of the state, social and consequential political changes--while mirroring the shifts taking place across the nation at large--were slow to take place during this period. Contributing to the climate of new opportunities emerging, however glacially, was the rise in population, as people continued to move to the so-called Sun Belt. The state grew in numbers of people from 5,346,818 in 1980 to, by

the end of the decade, 6, 187, 358.¹ Women gained more power in Virginia. While Kathryn Stone had won election to the House of Delegates in 1953, it was not until 1979 that Eva Scott became the first woman to win an election to the Virginia Senate. When in 1984 Edythe Harrison of Norfolk became the Democratic Party nominee for the United States Senate, her nomination to stand against the very popular Republican incumbent John Warner meant that she was being offered up by the Democrats as a sacrificial lamb, and, in fact, Senator Warner coasted to an easy victory over his unknown, liberal, female opponent.² In 1985, however, Mary Sue Terry of Henry County won election as Attorney General of Virginia, and she won again in 1989--seemingly a victory that would open what had come to be viewed as the traditional route to the Governor's mansion.³

Basing their power on the demographics of the urban areas, African Americans also gained a measure of political participation during this period. By the end of the decade, African Americans had won mayoral elections in many of Virginia's major cities, including, for example, Newport News, where Jessie Rattley was not only the first African-American mayor but also the first female mayor--a major accomplishment in a city that lacked an overall black majority. The first black member of a governor's cabinet and also the first woman cabinet officer in Virginia was Jean Harris, Secretary of Human Resources from 1978 to 1981. Thereafter, every governor's cabinet has included both blacks and women.⁴

¹Emily J. Salmon and Edward D. C. Cambell, Jr., eds., The Hornbook of Virginia History (Richmond: The Library of Virginia, 1994), p. 91.

²Frank B. Atkinson, The Dynamic Dominion: Realignment and the Rise of Virginia's Republican Party Since 1945 (Fairfax, Virginia: George Mason University Press, 1992), p. 408.

³Historically, a high percentage of Virginia's attorneys general are elected to the office of governor.

⁴Emily J. Salmon and Edward D. C. Cambell, Jr., eds., The Hornbook of Virginia History (Richmond: The Library of Virginia, 1994), p.91.

It was an indicator of the new political atmosphere dawning in the old south that Mills Godwin, the Democrat turned Republican and only man to serve two gubernatorial terms, was succeeded by another Republican: John N. Dalton. Virginia, home to Robert E. Lee, was once again leading her sister states of the Confederacy as she turned more Republican. The Republican resurgence in Virginia profited from the fact that many Democrats, increasingly unhappy with the national party's ever more liberal platforms and presidential nominees, began to vote for Republican candidates as the passage of time and the dying of the older generations blunted the memories of Reconstruction. In the November, 1977, election, the Republican party won nine of the state's ten seats in the House of Representatives and one seat in the United States Senate, and gained seats in the General Assembly as well.⁵

Governor John Dalton was the last of the trio of Republican Governors in the 1970s. Born in Emporia, Virginia, in 1931, Dalton grew up in a thoroughly Republican family, with his father, "Ted" Dalton, known across Virginia as "Mr. Republican." The younger Dalton went to the College of William and Mary as an undergraduate and then to the University of Virginia Law School. After serving in the Virginia House of Delegates and the Virginia Senate, in 1974 he was elected Lieutenant Governor of Virginia, where he worked with Mills Godwin and became his logical successor. In November, 1977, John Dalton became Governor of Virginia. Given his history and the new, highly conservative Republican influences, it is not surprising that as governor, Dalton worked hard to build his party's base. By the end of four years, he had made the Virginia Republican Party synonymous with business-like, fiscally responsible management. Of his own term, he

⁵For an in-depth look at this election and others contributing to the resurrection of the Republican party in Virginia, see Frank B. Atkinson, The Dynamic Dominion: Realignment and the Rise of Virginia's Republican Party Since 1945 (Fairfax, Virginia: George Mason University Press, 1992).

said, "I tried to slow down the growth of the government in those four years and to leave government. . . with the people having a higher percentage of their tax dollars."⁶ However nurturing Governor Dalton was of his party, there was little he could do about the Lieutenant Governor, Democrat Charles S. "Chuck" Robb. Political novice though he was, Robb's personal charm, easy style, made-for-television personal appearance, and ties to both money and politics by virtue of his marriage to Lyndon Johnson's daughter Lynda had made it easy for Virginians to split the ticket.

Like Dalton before him, Robb used the position of Lieutenant Governor to solidify his political base. He easily received nomination, and in the gubernatorial campaign, he defeated Republican Marshall Coleman, taking 53.3% of the vote.⁷ A centrist without perceptible leftist leanings, Robb had worked hard to bring Democrats together during his tenure as Lieutenant Governor. However, he did hold some important agenda items in sympathy with popular Democrat positions. He was in support of better funding for education, was interested in transportation issues, in public safety, and in the environment--all positions which, although probably perfectly genuine, were also calculated to win the hearts and minds of the national Democratic party--and many in Virginia were confident that the well-connected Governor Robb had national aspirations. But two thorny issues began to show themselves in Robb's term: first, the unsolved, and over the short term probably unsolvable, problems in race relations; and second, abortion policy. In both, the attitudes of the younger voters were radically different from the older class.⁸ A problem

⁶Emily J. Salmon and Edward D. C. Cambell, Jr., eds., The Hornbook of Virginia History (Richmond: The Library of Virginia, 1994), p. 91.

⁷For an interesting if rather partisan view of the born-again Virginia Republican party, see Frank B. Atkinson, The Dynamic Dominion: Realignment and the Rise of Virginia's Republican Party Since 1945 (Fairfax, Virginia: George Mason University Press, 1992).

⁸For an in-depth look at Robb, see Steven Daniel Johnson, "Charles Robb and the Reserved Governorship," (Ph.D. dissertation, University of Virginia, 1990).

that Robb never adequately addressed was how to both satisfy the older, traditionally conservative Virginia voters and at the same time bring the younger people into his fold.

Riding Robb's coat-tails into the Governor's mansion was Gerald L. Baliles, who occupied the Attorney General's office during Robb's term. Baliles would nearly equal Robb's "vote-getting" power in his 1984 race, and he carried with him the first African American and first woman to win statewide office: L. Douglas Wilder of Richmond, well-spoken and seemingly charming, became the Lieutenant Governor and Mary Sue Terry, as mentioned above, the Attorney General. The race and gender cards were now face up on Virginians' table, and, as Wilder would later prove, could be powerful in the hands of the right political player.

Gerald L. Baliles was an effective, smoothly operating Governor whose passionate interest was, and continued to be after he left office, education--although he was well-known for his attention to Virginia's lamentable system of roadways. Baliles also supported the introduction of women to positions of political power, placing numerous females on the private citizen boards that wield much power in the Old Dominion. Born in 1940 in Patrick County, Virginia, Baliles received his undergraduate degree from Wesleyan University and then graduated in 1967 from the University of Virginia School of Law. After Baliles' term, he continued his service to education, chairing the Committee for Educational Quality from 1992-1993, and he remained active in regional educational ventures in the 1990. When his successor as Governor, Douglas Wilder, was forced by an unforeseen fiscal shortfall to cut funding sharply, Baliles was a vigorous defender of funding for Virginia's institutions of higher education.

Despite the new political environment, viewed from a larger perspective the Commonwealth did not change dramatically between 1980 and 1990. Most of the notable demographic and economic trends had been underway for several decades. Nor, oddly enough, was the state radically changed with the 1989 groundbreaking election of the first African-American Governor, Douglas Wilder.⁹ Of far more significance than Wilder's race were both the fiscal crisis that occurred during his tenure and his open bid for the Democratic nomination for the Presidency. Lawrence Douglas Wilder, by the time of his election an elegant, well-spoken, socially poised, and white-haired man of small stature, was born in Richmond in 1931. He did his undergraduate work at Virginia Union University and then received his law degree from Howard University in 1959. From 1969 to 1985 he served the ninth district in the Virginia State Senate as the first African American in the Virginia State Senate since Reconstruction. He was Lieutenant Governor from 1985 to 1989, and in 1989 he became Governor.¹⁰

These dynamic interactions made Virginia, in the late 1980s, a pace-setter for the nation. The Commonwealth entered the 1980s in the vanguard of the conservative Republican reform movement that would sweep the nation and usher in an era of striking economic expansion and global democratization. Reaganism brought to national prominence a libertarian conservative philosophy rooted in Jefferson's Virginia, defended through the New Deal and Cold War by stalwarts like Harry F. Byrd, Sr.¹¹ But that swing to the right was blunted by the efforts of the trio of Democrats who took over the

⁹Margaret Edds, Claiming the Dream: The Victorious Campaign of Douglas Wilder of Virginia (Chapel Hill: Algonquin Books, 1990).

¹⁰Margaret Edds, Claiming the Dream: The Victorious Campaign of Douglas Wilder of Virginia (Chapel Hill: Algonquin Books, 1990).

¹¹Frank B. Atkinson, The Dynamic Dominion: Realignment and the Rise of Virginia's Republican Party Since 1945 (Fairfax, Virginia: George Mason University Press, 1992.), p. 418.

Governor's mansion following John Dalton. In laying a centrist course for their state's party, Robb, Baliles and Wilder prefigured what would come in the United States when Reagan's Republican successor was rejected by the national electorate. Further, the efforts of Robb and Baliles, although not Wilder, in support of education would refigure a national recognition that there were problems in that important area of the life of America--problems of which the Virginia Academy of Science was all too well aware, since the shortcomings in education made themselves particularly apparent in the fields of the sciences and mathematics. The energy generated by the response to Sputnik and then to the Cold War had largely given out, and there appeared to be nothing to take its place.

In considering this issue, Ertle Thompson, Past President of the VAS, Treasurer of the National Association of Academies of Science, and Professor of Science Education at the University of Virginia wrote in 1983:

The greatest challenge for science and mathematics education in the '80s is the establishment of realistic goals for developing a scientifically literate society, and the preparation and enhancement of the talent pool for research and development, and the technological support essential for human welfare in a world increasingly dependent on science and technology. Recent studies and survey's [sic] indicate declining knowledge and interest in science and mathematics among pre-college students; yet the federal government and, in many cases, state governments have abandoned the aggressive efforts of the pre-Sputnik era to improve the quality of science and mathematics education. Teacher preparation suffers in both quality and quantity. Science and mathematics education centers are being devastated by retrenchment politics. . . . The challenge is to modify the policies and practices responsible for the present status, so that science, mathematics, and technological education for the '80s will be strengthened.¹²

In large part, Thompson's challenge became the center of the Academy's focus and drive, shaping their activities and policies throughout the 1980s.

¹²Ertle Thompson, "Federalism and Its Impact on NSF Grants and the Training of Teachers," Virginia Journal of Science 4(1983), p. 273.

Part II: Sections, Committees, and Related Events

Toward the end of the seventies and into the early eighties, the creation-evolution debate-- especially in science textbook selection in elementary and secondary schools--reared its head once again. The re-emergence of this debate--following directly on the successful public lobbying of the largely white Christian right--was felt most immediately in the south, where the heritage of the so-called Bible Belt with its conservative stance on moral issues provided fertile soil. While many southern states wrestled with the educational consequences of this intellectual, theological, political, and ultimately legal confrontation, none were as blatant as the State of Arkansas, which in early March, 1981, passed Act 590, mandating the teaching of creation science whenever evolution was also taught. Specifically, Governor Frank White signed into law the requirement that every class in science in the public school system of Arkansas offer a “balanced treatment” of the “two science model” concerning the origin of “the universe, earth, life, and man.”

Fundamentalists in Arkansas were satisfied; however, “scholarly religion, established science, and liberal teachers,” viewed the new law as overstepping the bounds of the First Amendment to the Constitution, which is applied to the states through the Fourteenth Amendment. Supported by the American Civil Liberties Union and represented by the New York law firm of Skadden, Arps, Slate, Maegher, and Flom, the resident Arkansas Bishops of the United Methodist Church, the Episcopal Church, the Roman Catholic Church, the African Methodist Episcopal Church and the principal officials of the Presbyterian Church of the United States of America came together to bring a suit against the state of Arkansas on the basis of a violation of Constitutional rights. The American Jewish Congress, the American Jewish Committee, the Arkansas Educational Association,

the National Association of Biology Teachers, and individual parents and teachers also took to court the Arkansas Board of Education, the Director of the Department of Education, and the State Textbooks and Instructional Materials Selection Committee of Arkansas. From December 7, 1981 to December 17, Judge William R. Overton of the United States District Court of Arkansas heard argument before striking down the new law, declaring it in violation of the separation of church and state.¹³

Given the tenor of the time, it is not surprising that the Virginia Academy of Science expressed concern over the possibility that creationism versus evolutionism might once again become the object of public debate within Virginia. Even before the Arkansas Governor had signed Act 590 into law, members of the VAS were well-aware of the brewing conflict. Many of the members decided to preempt the issue before any necessary reaction might be required. They thus seized the initiative in a debate that they were certain would reach the Commonwealth. For example, in an article printed in the Spring issue of the Virginia Journal of Science titled "On the Teaching of Origins," Michael Bentley of the Roanoke Valley Science Museum wrote:

Science is empirical and seeks naturalistic explanations for phenomena. Theories must be open to modification based on evidence. The theory of evolution, though it is incomplete, meets these criteria. The movement to require teaching of creationism in the public schools as an equally valid model is opposed on the grounds that it does not meet these criteria of science. Science teachers are advised to teach children the limits of science and the tentativeness of knowledge.¹⁴

Not surprisingly, the Virginia Academy was not the only scientific association interested in the debate. At its March, 1982 meeting, the Council of the Virginia Academy

¹³Theologian Langdon Gilkey gives a first hand account of the Arkansas trial in Creationism on Trial: Evolution and God at Little Rock (Minneapolis, Minnesota: Winston Press, 1985).

¹⁴Michael L. Bentley, "On the Teaching of Origins," Virginia Journal of Science 32(1981), p. 2.

of Science asked Journal editor Stewart Ware to call the attention of the membership to the statement of the American Association for the Advancement of Science (AAAS) on the teaching of creationist beliefs in public school science courses.¹⁵ Agreed upon in January, 1982--following a two-part symposium entitled "Science and Belief"--the AAAS statement is quite similar to Bentley's remarks in the VJS.¹⁶

While the outcome of the Arkansas mandate in the courts could have been expected to bring the issue to closure, it did not. Several years later, the state administration of Louisiana, in a case often likened to that of Arkansas, argued for equal time to be devoted to creationism as evolution in the classroom. Like Arkansas, Louisiana was brought to court, and when the case was finally heard before the United States Supreme Court in 1986, fifty-four Nobel Prize winners and sixteen state academies of science joined an amicus curiae brief on the side of plaintiff to have the Louisiana Equal Time for the Creationism Case struck down. When the Louisiana case was brought to the attention of the VAS both by Vera Remsburg--who from time to time aided the American Civil Liberties Union (ACLU) in its quest to drive creationist teachings from public school curricula--and Academy President J. J. Murray, the Executive Committee recommended that the Virginia Academy of Science join the brief "if still possible" at the late date when the case came to its attention.¹⁷ At Council in March, 1987, President Murray reported that it had been too late

¹⁵Ertle Thompson, "Report of Academy Representative to AAAS Meeting," Washington, D.C., January 2-8, 1982. Vera Remsburg was very involved with the evolution-creationism debate. In a letter to Rae Carpenter on October 16, 1981, she writes: "Evolution material continues to take a lot of my time. Have just received a copy of a creation unit which was developed in Pulaski County in Arkansas in response to the new Arkansas creation law. The unit was developed by three individuals after a committee of 12-15 science teachers failed to come up with a unit. Technical advisors were all either from UALR or UCA. The entire committee had to rely upon the "creation science" publications in many instances. I am to review the creation unit and will send comments to Laurie Ferber, ACLU attorney who is preparing the education part of the ACLU suit against the creation law in Arkansas. The case will begin December 7."

¹⁶Virginia Journal of Science, 2(1982), p. 2.

¹⁷"Minutes of Council," November 9, 1986. "Report of the President," November 9, 1986. Virginia Tech, Special Collections.

for the VAS to “get in on the deal;” nevertheless, the plaintiff expressed appreciation for the support of the Virginia Academy, in spite of the fact it was not timely.¹⁸

American Association for the Advancement of Science

In other ways as well, the VAS continued its involvement with the American Association for the Advancement of Science throughout the late seventies and eighties. Upon his return home from the AAAS meeting in 1977 where he was the Virginia Academy Delegate, E.L. Wisman was happy to report that of the forty-five state and city academies, the Virginia Academy of Science ranked fourth in total membership with only California, Ohio, and Wisconsin ahead of the Old Dominion. Furthermore, Wisman had the honor to announce that the AAAS Distinguished Service Award--the criteria for which is service to both the Association and the member's state academy--was given to only two people in 1977, one of whom was VAS member, Harshbarger, whose long relationship with the Virginia Academy had been marked by vigorous and creative leadership.

Harshbarger had served as President of the AAAS in 1977.¹⁹ Eight years later, in 1985, the Virginia Academy of Science could boast that member Ertle Thompson was the President of the National Association of Academies of Science (formerly the Academy Conference of the AAAS) and Dallas Cocke was Director of the American Junior Academy of Science--both associations that stemmed from the AAAS and hence held their meetings in concert with the older organization.²⁰ Over the years, the VAS consistently sent

¹⁸“Report of the President,” March 7, 1987. Virginia Tech, Special Collections.

¹⁹E.L. Wisman to VAS Council,” March 2, 1977. Virginia Tech, Special Collections.

²⁰“News and Notes,” in Virginia Journal of Science 2(1985).. Dallas Cocke was assisted by Dean Decker of

Thompson as its AAAS representative. And, as AAAS Representative, Thompson reported in 1987 that the NAAS had elected Dean Decker to a three-year term as a Director of the American Junior Academy.²¹ The involvement of Virginia Academy leaders with the national organization was a bonus for the State Academy, which gained external validation and the ability to network on behalf of its membership on the national scene. One would have expected, given both the opportunities and advantages forthcoming through Virginia Academy of Science membership, that Virginia scientists would have continued to support their Academy throughout this decade as they had in past years. But the numbers simply were not there. Membership began to slide downward, with some sections showing more weakness than others.

Membership Committee

Despite efforts initiated in the early seventies to stabilize and increase the overall membership numbers, membership continued to fall. As indicated in the chart, from 1970 to 1975, the overall membership dropped by approximately four percent--statistically speaking, not a remarkable change. However, the decline in the categories of regular and contributing membership prompted President Allan Powell in the Spring of 1977 to propose several initiatives to increase interest in the VAS.

the University of Richmond. He was the NAAS/AJAS banquet speaker.

²¹"Minutes of Council," May 26, 1987. Virginia Tech, Special Collections.

YEAR		1970	1975	1980	1985	1990
	MEMBER					
N	Regular	1280	1233	1165	914	734
U	Contributing	137	110	95	63	58
M	Sustaining	46	46	58	30	28
B	Student	63	78	138	171	264
E	Life	13	13	19	24	29
R	Business	24	26	19	13	13
	Overall	1563	1506	1494	1126	1126

First, in an attempt to introduce the general public to the current mission of the VAS, Powell announced to Council that the “Viewpoint” section of the Channel 6, Richmond newscast would offer two programs on the Virginia Academy of Science. The initial program was to focus on the history of the Junior and Senior Academies, while the second would explain the activities of the Virginia Academy’s annual meeting.²² The strategy of approaching the general public through the medium of television was sound, although it does seem that two programs offered over a single channel in one area would hardly produce more than a temporary ripple of interest among the public. A second directive designed to attract and retain members was the introduction of “poster sessions.” A poster session provides scientists with the opportunity to present a display which depicts their

²²“Minutes of Council,” March 12, 1977. Virginia Tech, Special Collections.

research.²³ Poster sessions at large, national meetings provide excellent opportunities for those in fast-breaking research areas to present findings to interested peers while avoiding the difficulties of preparation of formal papers, submission of completed abstracts in a camera-ready condition, and the like. Accordingly, the VAS believed that the informality of the poster session would be attractive, particularly to the younger scientists. Finally, chair of the Membership Committee, Warwick R. West, Jr., reported that his committee had prepared and sent letters to the chairmen of all sections of the Virginia Academy of Science requesting that they attempt to build the membership of the Academy among people within their own disciplines.

This three-pronged approach resulted in initial success, as illustrated by the sixty-one new members signed-on over the next year.²⁴ And by the fifty-eighth annual meeting held at the University of Virginia in 1980, chairman of the Finance and Endowment Committee Rae Carpenter--in his last report for the committee after a decade of service--reported that membership numbers had reached their highest since 1975, with a resulting increase in dues income. Indeed, from 1975 to 1980, the overall membership numbers fell by slightly more than half of one percent--a negligible change at best. "The Academy remains a viable and vigorous voice of science in Virginia, especially to our young people. Keep up the good work!" encouraged Carpenter.²⁵ As was usual with Carpenter, a positive attitude was always closely associated with hard work and with the potential to deliver what the group with which he was associated had promised.

²³Dale Ulrich to Section Officers of the Virginia Academy of Science, December 2, 1977. Virginia Tech, Special Collections.

²⁴"Minutes of Council," May 11, 1977. Virginia Tech, Special Collections.

²⁵"Minutes of Council," May 13-16, 1980. Virginia Tech, Special Collections.

Unfortunately, the encouraging, high membership numbers of 1980 proved to be a temporary phenomenon, and over the next seven years, the membership suffered from a steady decline. From 1980 to 1985, for example, overall membership fell by nineteen percent. At a March, 1987 meeting of Council, President Murray referred to the alarming report from Executive Secretary Blanton Bruner regarding the drop in membership from 1530 in 1979 to approximately 1121 in 1987. In fact, Bruner's report revealed a loss of 103 members over the past year alone. To try to stem the outgoing tide of scientists, Secretary Bruner suggested the Virginia Academy of Science should conduct a membership drive. In a curious moment of openness and discouragement, both Dean Decker and J.J. Murray stated that it seemed to be "easier to get support for a national meeting than for the VAS."²⁶ Both Decker and Murray were correct. It was obviously easier for academic scientists to get support for traveling to present papers at national meetings, and one does not have to look far to discover the reason for this unfortunate fact. By the end of the 1980s, every university and nearly every baccalaureate-granting college in the Commonwealth had introduced publication as a part of its promotion and tenure requirements. National associations, with their greater prestige, connections with peer-reviewed journals, and opportunities they offered to scientists to network with their colleagues from other states had a much greater built-in power of attraction than that of a state-based academy that was open to all comers. The question for the Virginia Academy of Science was what could be done to complement the national associations and to best serve those scientists and educators in the Commonwealth who would be likely to support the organization .

²⁶"Minutes of Council," March 7, 1987. Virginia Tech, Special Collections.

In its attempt to approach this problem creatively, the Executive Committee discussed a variety of solutions designed to counter the downward spiral: one faculty member per campus or industry site might be responsible for membership recruitment; more industry personnel in the VAS should be involved; administrators of the academic institutions should be encouraged to attend the annual meetings; more “special” symposia should be organized; and the VAS should acquire lists of scientists in Virginia and send each individual on the list a personal invitation to join the VAS. Such suggestions were more appropriate for decades past than for the eighties, in which personal invitations and individual relationships bore increasingly less weight. In the face of this realization, Arthur Burke--always looking to increase the visibility of the Virginia Academy of Science within the state governmental and institutional structure--suggested two alternatives. First, the Virginia Academy of Science update the “Science Advisory Catalogue” and make it available to the governor and the his staff to “help increase visibility in the Commonwealth.” And second, that the Virginia Academy approach the Center for the Study of Science and Society (CSSS) at Virginia Polytechnic and State University and propose the two organizations join forces in carrying out a “science manpower analysis in Virginia to update and expand the directory.” Bill Banks seconded the motion and Council passed it unanimously.

In view of the creativity of this two-part motion and its unanimous support, it is surprising that nothing was done to implement it. In terms of the Science Advisory catalogue, had it been tried, it might have run aground on the national political aspirations of both Governors Robb and Wilder--the former having brought in his own science advisory group and the latter so occupied with both national matters and the economic downturn. Consequently, neither would have had the interest required to consider the nature of the service that could easily be provided for the Commonwealth by its own

scientists. In considering the second part of the motion, there does not exist any archival record of any meeting between the VAS and the Center nor do long-time members of the Center recall any overtures by the Virginia Academy. Yet this particular idea might easily have borne the kind of fruit that the Virginia Academy of Science desired. To this day, there is only an anecdotal basis for analyzing the numbers of scientists at work within the borders of Virginia. Perhaps there was some concealed negativity toward the Center, since before the close of the meeting at which the two-part motion had passed, Ertle Thompson reminded Council that “we have been and are still a conservative group who have generally been reactive and not a pro-active group when addressing or participating in science and society issues.”²⁷

It is interesting to speculate on exactly what Ertle Thompson meant when he made this comment. Despite these remarks, it does not seem likely, given Thompson’s participation on the Science Advisory Committee during the Kepone crisis, that he saw his Academy as a purely reactive group. Further, in pursuing the science museum project, the James River Basin project, or even in the ill-fated Great Dismal Swamp venture, the VAS could hardly be regarded as a passive organization. Certainly its involvement with public education through the VJAS was active. At the time when this meeting took place, the themes of science and society were in vogue, although perhaps this very popularity carried with it a taint of reformism that may not have attracted conservatively-minded scientists. It therefore seems likely that there was some fear on the part of the group of a close working relationship with the Virginia Tech Center. Whatever the reasons, it was perhaps a missed opportunity.

²⁷“Minutes of Council,” March 7, 1987. Virginia Tech, Special Collections.

Two years later, in 1989, membership numbers had declined by seven percent from 1985, and President Michael Bass pointed once again to the need to increase membership--by this time, a continuous refrain--and he suggested three paths of action for the Virginia Academy. First, every person on Council should contact the deans and the presidents of their respective universities and colleges about the VAS. Second, industrial participation at every level needed to be resurrected--a specific duty of the Ad Hoc Business Relations Committee. And third, the Site Selection Committee should make its plans four or five years in advance, giving the host institution plenty of opportunity to advertise.²⁸ Not one of these suggestions was entirely new. Academy member Carvel Blair offered an interesting suggestion to increase membership: that new members from various state government organizations such as the Marine Resources Commission, the State Water Control Board, Game and Inland Fisheries, et cetera, needed to be recruited. This suggestion met with approval. Yet, like the suggestion concerning the Center, it appears not to have been implemented. Certainly no one on the Marine Resources Commission from that period remembers any overture.²⁹

Sections

As the VAS membership numbers fell, so did section attendance--with Botany, Geology, and Psychology maintaining the highest level of stability. Waning participation in the Astronomy, Mathematics and Physics Section, however, did not deter mounting enthusiasm for a new Computer Science Section. In November, 1987, Virginia Academy member Carvel Blair reported that several people in the Department of Computer Science at

²⁸"Minutes of Council," May 26, 1989. Virginia Tech, Special Collections.

²⁹Jane Carter Webb to Charlotte Webb. Interview. October 27, 1996. Newport News, Virginia. Webb sat on the Marine Resources Commission from 1988-1996.

Old Dominion University were interested in establishing a Computer Science Section of the Academy.³⁰ According to Blair, in-state camaraderie and the chance to interact with colleagues from other disciplines in a professional setting were the primary factors motivating those lobbying for the proposed section. Blair also pointed out that the Virginia Junior Academy of Science already had a separate Computer Science Section on the annual program.

Two years later, at a May meeting of Council, Michael Banks inquired about the status of the new Section on Computer Science. After Blair remarked that both Old Dominion University and Virginia Commonwealth University had indicated potential support of a Computer Science Section, Banks countered by pointing out that Council should not encourage this section--the intimation being that many undergraduate programs of computer sciences are closely associated with departments of mathematics and perhaps a new Computer Science Section would pull even more people from the Astronomy, Mathematics and Physics Section.³¹ While Banks obviously had given thoughtful attention to his argument, not everyone agreed with him, and in November, 1989, at Council meeting, President Michael Bass reported that once again he had received a request for establishing a Computer Science Section of the Virginia Academy. "I have contacted the American Computer Machinery Group, Association of Computer Machinery, and have been in contact with the Capital Region Representative. I have talked to people in computer science at some institutions and they seem to be positive about this. So hopefully [sic], at the annual meeting at George Mason we will have an organized Computer Science Section presenting papers."³²

³⁰"Minutes of Council," November 7, 1987. Virginia Tech, Special Collections.

³¹"Minutes of Council," May 26, 1987. Virginia Tech, Special Collections.

³²"Minutes of Council," November 12, 1989. Virginia Tech, Special Collections.

It is significant to reflect on this discussion in light of the explosion in the computing and information sciences--an explosion that certainly was foreseen within the universities and colleges themselves by 1989. One wonders why the Virginia Academy's leaders failed to energetically support the proposed section. Was it a lack of vision within the leadership itself? Or, perhaps the desire to support the shrinking Astronomy, Mathematics and Physics Section was uppermost in Council's thinking. By 1989, large numbers of bright and creative students were flocking to the computing sciences, businesses were converting to computers, and fortunes were being made across the country--although particularly on the West Coast--by non-academic scientists who had the good fortune to be a part of a new sort of gold rush--or, more accurately, silicon rush. Wherever the difficulty lay, the Virginia Academy of Science was fortunate that not all of its activities were suffering decline. One Committee that continued its work with vigor was the Flora Committee.

Flora Committee

As it had over the past few decades, the Flora Committee continued to expand its membership and its diligent "pursuit" of every florum in the Commonwealth. In 1977, Avril Harvill oversaw the final publication of the long-anticipated Atlas of Virginia Flora. Those involved in its publication formally thanked the VAS, proclaiming: "Over a period of many years, the Virginia Academy of Science has given both financial and moral support to work on the Old Dominion Flora, and we gratefully acknowledge our indebtedness for this invaluable and long-sustained interest."³³ With scarcely a pause following the publication of the Atlas, the committee leaped into another project, and, together with the Botany

³³"Minutes of Executive Committee," November 6, 1977. Virginia Tech, Special Collections.

Section led by member Gwynn Ramsey, began working on a brochure to introduce young students to avocations in botany.³⁴

In the midst of all of this activity, the members of the Flora Committee were saddened by the news of the death of Arthur Massey, Emeritus Professor of Biology at Virginia Polytechnic and State University in October, 1981. A native of Virginia, Massey had ventured out of state for his college education before settling at Virginia Polytechnic as an Associate Professor of Biology. Not only was Massey a vital force in getting the Flora Committee “off the ground and running,” but he also served as its chair for almost forty years.³⁵ In many ways, Massey was typical of the early figures who undertook tasks on behalf of the Virginia Academy of Science that required sustained personal effort and commitment over the years. Now that these men and women were coming to the end of their careers and lives, it was important to the VAS to look to the younger members for replacements.

Fellows

With the energetic and far-sighted Vera Remsburg as a Fellow, it is not surprising that the members of the Fellow’s Committee decided to use monies from the Fellow’s Fund to positively affect the course of the Virginia Academy. In a letter to Council in March of 1987, Remsburg laid out the wishes of the Fellows. First, the Trust Committee should administer the Fellow’s Fund in a manner similar to the other endowment funds. Monies spent from this Fund should be from the income and not from the principal, with a goal of

³⁴“Minutes of Council,” May 13, 1980. Virginia Tech, Special Collections.

³⁵Virginia Journal of Science 4(1981), p. 174. Virginia Tech, Special Collections.

“supporting activities of the Virginia Academy not normally covered in the annual budget.”

Rensburg listed four examples of where such funds might be used:

1. Publication of special research papers
2. Financial support for Fellows meeting
3. Special projects by sections (not continuous long-range ones)
4. Supplements for special guest speakers by the Senior Academy

Specifically, “the use of interest from the Trust should reach those special areas within the Virginia Academy of Science’s activities for a more gracious reflection of the Virginia Academy of Science.” By November, Council agreed that a committee of three Fellows, with a rotation scheme of one leaving and one newly elected each year, would administer the Fund. Any proposed projects for this fund would be submitted to the Executive-Secretary who would forward them on to the chair of the Fund for consideration by all the Fellows. In opening their Fund with the hope of establishing a system whereby financial “incentives” might energize especially the younger members of the Academy, the Fellows demonstrated service and dedication to their profession and to their organization. As important--crucial--as the work of the Fellows was to the Virginia Academy, however, it was not sufficient to stem what was beginning to seem to be an alarming outflow of the general membership.

Virginia Journal of Science

Beginning in 1977 with volume 28 and continuing for three years, Kuldip Chopra, of the Department of Physics and Geophysical Science at Old Dominion University, held the position of editor of the Virginia Journal of Science with Auxvill Jackson appointed as business manager by President Allan Powell.³⁶ Energetic and willing to take risks, Chopra

³⁶“Minutes of Council,” May 11, 1977. Virginia Tech, Special Collections.

had already demonstrated his commitment to hard work as a member of the three-person Science Advisory Panel that advised Governor Godwin on the Kepone crisis. In attempting to stabilize the Journal, one of Chopra's first actions was to ask for an Editorial Board. President Powell agreed as did Council, and the following members of the VAS were appointed to a VJS Board: David West, immediate Past-editor of the Journal and professor at Virginia Polytechnic and State University; Walter Ostad, Space Systems Division at NASA-Langley Research Center; Charles O'Neal, Department of Biophysics at the Medical College of Virginia and an ex-Editor of the VJS; Russell Rowlett, Jr., Editor of the Chemical Abstracts Service and from Ohio State University; Paul Siegel, University Distinguished Professor at VPI, Ex-editor of the VJS and Past-president of the VAS; and Joanne Simpson, William Corcoran Professor of Environmental Science, University of Virginia and Associate Editor of Geophysics and Space Physics. All of these new appointees had experience with publications.³⁷ Immediate discussion of the Board centered around the lack of advertising revenue generated by the VJS, although the Board took no immediate steps to correct the deficiency.³⁸

Chopra's tenure as editor can best be summed up as a flurry of almost frantic activity in an attempt to change the Journal from an orientation in which articles focusing on regional science, often related to biology, dominated the periodical. In his May 1977 report to Council--only a few months into the job--Chopra argued for the need to attract "scientifically strong articles representing the diversity of VAS" and promised to come up with a strategy for gathering such publications.³⁹ Six months later, Chopra issued another

³⁷"President's Report," May 11, 1977. Virginia Tech, Special Collections.

³⁸"Minutes of Council," March 12, 1977. Virginia Tech, Special Collections.

³⁹"Minutes of Council," November 6, 1977. Virginia Tech, Special Collections.

“Progress Report” to Council, outlining four goals:

1. Bring the VJS back on schedule.
2. Diversify the disciplinary coverage in the Journal.
3. Increase the volume and quality of the Journal.
4. Enhance the recognition and standing of the Journal.⁴⁰

Chopra detailed the ways in which he sought to accomplish these four goals. For example, relative to the third item, “Increase the volume and quality of the Journal,” not only had he argued for and succeeded in establishing the Editorial Board, but he also sent out twenty-seven papers to ninety-four reviewers, and he solicited papers from persons with respected institutional affiliations and positions.⁴¹ In commenting on the difficulties and frustrations faced by the editor, Chopra explained his perception: “Everyone wishes to see action, but, desires no direct involvement. For a few years, at least in the immediate past, the Journal has been a one-man operation with the editor working in a vacuum. Perhaps, that is what got us in our present jam. . . . The editor has the overall responsibility for the Journal.”⁴²

Council offered both full support for the four items listed by Chopra as necessary for the furtherance of the VJS and demonstrated their commitment to reinvigorating the Journal by asking the Ad Hoc Committee to Study Long Range Planning Committee to investigate the production of the publication. As a result of this charge, in February, 1978, the Long Range Planning Committee made the following eight recommendations:

⁴⁰“Report of the Editor,” November 5, 1977. Virginia Tech, Special Collections.

⁴¹“Report of the Editor,” November 6, 1977. Comparable data from previous years is not available. Virginia Tech, Special Collections.

⁴²“Report of the Editor,” March 4, 1978. Virginia Tech, Special Collections.

1. To continue supporting the VJS while it got back on schedule.
2. To approve and endorse the sale of advertisement in the VJS as a source of revenue and establish the position of Advertising Manager, to be appointed by the President, to handle the sale of advertisement.
3. That the Publications Committee and VJS Committee address lowering costs of the Journal.
4. That Council authorize over the next three years up to \$15000 from the reserve in the General Fund to if needed cover the deficits due to cost of the VJS.
5. That Council support the Membership Committee in a major effort to increase membership in the VAS and thereby provide a broader base for support of the Journal and other Academy programs.
6. That the goal be 1700 members by 1980 (increase of 300 members) and 2000 by 1985. That membership dues be increased effective in 1980.
7. That the Fund Raising Committee be instructed to pursue possible sources for Journal research.
8. That the Publication Committee prepare a questionnaire for mailing with the Call for Papers for the Annual Meeting and for the VJS.⁴³

By the 1978 Annual Meeting of the Virginia Academy of Science, Chopra announced that the Virginia Journal of Science was finally as “much back on schedule as it possibly can be.” Chopra also reported a fair degree of success in diversifying content and institutional coverage in the Journal. He was able to show that the latest volume contained articles and features from thirteen institutions covering a broad range of disciplines. Before stepping down from his taxing role in favor of Stewart Ware, Chopra pointed out the primary difficulty with being an editor: “Everyone expects to see action, but, desires no direct involvement.”⁴⁴

Chopra’s as “much back on schedule as it possibly can be,” however, was not good enough for Council and for the new Editorial Board. Efforts by the next editor, Stewart Ware of the College of William and Mary, were more successful. Interested not in fighting the regional character of the VJS, Ware focused rather on implementing the

⁴³“Report of Ad Hoc Committee to Study Long Range Planning for Virginia Journal of Science,” February 4, 1978. Virginia Tech, Special Collections.

⁴⁴Report of the Editor,” March 4, 1978. Virginia Tech, Special Collections.

initiatives proposed by the Long Range Planning Committee. With the help of Frank Kizer as business manager and former President Ulrich and then-President Remsburg, in 1981 at the annual meeting, Ware was able to report that the Journal was back on schedule and being printed at half of its previous cost.⁴⁵ Several production changes were responsible for the latter good news, including the use of photo reproduction of camera-ready copy in reprinting the Journal, effectively eliminating the cost of most type-setting.⁴⁶ In 1984 after five years of service, Ware resigned. During his tenure, the Journal went from “a large, thick, glossy, typeset publication to a small, thin, matte, photo-reproduced one.” Not one to take compliments easily, Ware pointed out that the change in the Journal format is “hardly something an editor can chalk up as a positive accomplishment.” However, “at least now we can have the continuation of a quarterly Journal.”⁴⁷ One senses behind this modesty an awareness that the Journal had lost some of the trappings of a prestige publication, but at the same time, Ware was nothing if not pragmatic. Clearly, his cost-saving changes had steered the VJS away from a slow demise.

Following Stewart Ware, Jim Martin stepped in as editor of the Journal, a position he still holds in 1996. By 1988, Martin had instituted a radical change: submission of articles on a computer disc. Not only did this new method of submission guarantee a more professional, “typeset” appearance to the Virginia Journal of Science, but it also cut the printing steps in half, making it much easier to keep the VJS on schedule. Of concern to Martin at the close of the decade was the lack of papers submitted outside the community of biology. In consideration of this problem, President Bass reported that he had talked with

⁴⁵“Minutes of Council,” May 13-16, 1980. Virginia Tech, Special Collections.

⁴⁶“Minutes of Council,” May 12-15, 1981. Virginia Tech, Special Collections.

⁴⁷Editorial by Stewart Ware. No date. Virginia Tech, Special Collections.

Maurice Lynch of the Virginia Institute of Marine Science (VIMS) and the VAS Publications Committee, and Lynch had promised to encourage scientists in his institution to submit more papers regarding marine ecology and population genetics--even then, still in the realm of the biological sciences. President Bass suggested that perhaps similar action might be taken by other Academy members who might have connections to other institutions.

Thus, as this period came to its close, the VJS remained afloat. The advent of the computer age, thanks to the aggressive policies of the latest editor, Jim Martin, facilitated publishing in a reasonably timely and cost-effective manner. At the same time, however, the majority of the articles continued to come from the biological sciences; even the move in the direction of VIMS had actually been nothing more than a slightly enlarged disciplinary focus, for most of the activities of the faculty at that institution had their roots in the biological realm. It is thought-provoking that the Virginia Journal of Science, in an increasingly competitive atmosphere where both promotion and tenure were concerned and where publication was vital to nearly every academic's chances of success, could not attract a host of authors from, say, mathematics, physics, computer science, chemistry, or other non-biological fields.

Science Education

Under the leadership of co-chairs Virginia Ellet and Arthur Burke, the major function of the Science Education Committee gradually shifted to assisting Academy member and Superintendent of Science Education Frank Kizer in planning and supporting the State Science Teacher's Workshop held each fall.⁴⁸ Along with Burke and Ellett,

⁴⁸"Minutes of the Academy Conference," May 12, 1977. Virginia Tech, Special Collections. For their very dedicated service, Virginia Ellett and Arthur Burke shared the Distinguished Service Award in 1986.

Elizabeth Waring of the Math and Science Center in Richmond, Frank Akers of Salem High School, Marvin Scott of Department of Natural Sciences, Longwood College, Ertle Thompson at the University of Virginia's New School of Education, and Pat Berkley of Lee-Davis High School offered their services to Kizer during the late seventies. Indeed, such meetings were opportune times to distribute information--such as the Visiting Scientists Program--directly to the teachers. During October of 1979, the committee, in cooperation with the College of William and Mary's Departments of Geology and Education, co-sponsored an intensive graduate course on science and education at the 17th Annual Virginia State Teacher's Conference held at Virginia Beach. Twenty-five teachers participated in the special course, and nineteen participants successfully completed all requirements for the graduate credit offering.⁴⁹ That same year, the Committee on Science Education formulated a response to Wayland Jones of the State Department of Education offering recommendations for material to be considered in the matter of certification regulations for science and mathematics teachers.⁵⁰ While student performance in the public school systems in the areas of mathematics and science continued to decline, at the very least, the Virginia Academy of Science was doing its best to assist the state in trying to address this very difficult issue.

Improving science education often crossed state borders, and in May of 1988 at the Executive Committee Meeting, Dean Decker brought up a proposed cooperative venture between North Carolina, South Carolina, and Virginia teachers to develop a method of evaluating the teaching of biology from kindergarten through the first year of college. Each state needed a sponsoring organization for a grant to fund the venture, and North Carolina

⁴⁹"Minutes of Council," November 12, 1989. Virginia Tech, Special Collections.

⁵⁰"Minutes of Council," May 13-16, 1980. Virginia Tech, Special Collections.

had persuaded its state academy to provide such monies. Decker asked that the VAS co-sponsor this grant for the tri-state Biology Curriculum Committee.⁵¹ Later that same afternoon at a Council meeting, it was moved that the Virginia Academy of Science co-sponsor with the academies of North Carolina and South Carolina a grant to hold a tri-state conference on evaluation of biology teachers, K-through the first year of college.⁵² It is clear that, like Virginia academics, the professoriate from the Carolinas was very interested in helping the states' teachers of education. This action not only bespeaks the importance of science education to the VAS but it also represents another of those, in Ertle Thompson's words, "pro-active" steps that the Academy did make over the years. The Visiting Scientists Program represents another such step.

Visiting Scientists Program

In the Spring of 1977, Gerald Taylor, physics professor at Madison College, was appointed head of the Visiting Scientists Program.⁵³ Cognizant of the need for early summer action in order to have the Visiting Scientists Program in the hands of the teachers at the beginning of the school year, Taylor had already received permission of the State Department of Education to conduct the Visiting Scientists Program in the public schools of Virginia, and an appropriate memo had been mailed from Richmond to all Division Superintendents informing them that the Visiting Scientists Program would be conducted again in 1977-78. In addition, Taylor had written a letter to each college or university

⁵¹Amount of proposed grant is not in archival material and oral interviews with the primary players have not been able to ascertain the exact amount.

⁵²"Minutes of Council," May 25, 1988. Virginia Tech, Special Collections.

⁵³"Minutes of Council," May 11, 1977. Virginia Tech, Special Collections.

president inviting his or her support of the program and giving the presidents the program's recommendations for speakers and topics to be included in the 1977 Speakers' List.⁵⁴

By November, 1977, Taylor reported to Council that there were 612 speakers presenting 976 topics of the Visiting Scientists Program.⁵⁵ The following year, he secured commitments from presidents of colleges and universities in Virginia to pay transportation expenses of faculty members who would be invited to give lectures under the Visiting Scientists Program. As with the previous year, positive responses from academics in higher education to the Visiting Scientists Program came from thirty-five institutions, resulting in a Speaker's List containing over 600 scientists with approximately 1000 lecture topics. The Speaker's List was mailed to 366 public and private schools and 130 science departments in community colleges in August. In an attempt to encourage membership, each mailing also included the Virginia Academy brochure and a membership application form.⁵⁶ Certainly such a list is impressive. Unfortunately, data recording the number of times schools used a "Visiting Scientist" is not available, making it difficult to assess the actual benefits of the program.

In 1981, Harold Bell, of the Chemistry Department at Virginia Tech, succeeded Taylor. In his first brochure to the teachers, Bell explained the mission of the program: "The purpose of the Visiting Scientists Program is to provide assistance in the teaching of biology, chemistry, earth sciences, mathematics, social science, and physics through lecture-demonstrations, illustrated talks, and work with science clubs." According to Bell,

⁵⁴"Minutes of Council," May 11, 1977. Virginia Tech, Special Collections.

⁵⁵"Minutes of Council," November 6, 1977. Virginia Tech, Special Collections.

⁵⁶"Minutes of Council," May 13-16, 1980. Also in Harold Bell Report to Council, November 11, 1979. Virginia Tech, Special Collections.

the largest problem that arose during the 1980s was getting not the teachers, but the scientists to respond positively. Despite reminders that the president of each university or college had agreed to use college/university funds to cover the costs of visits to the schools--reimbursement being limited to schools within one hundred miles of the institutions with no overnight lodgings provided--the difficulty in finding scientists willing to take time to make the visits and presentations remained a major problem.⁵⁷ It seems likely that the academic scientists did not view the effort required to make these presentations to high school students worthwhile. Once again, it is possible that the crux of the matter lay in institutional definitions of what constituted service for the purposes of promotion, tenure, and, now, merit pay. Administrations of institutions of higher learning appear to have been strangely detached from the very real needs of the education community as a whole, and the reward system built into each institution was increasingly tied to performance measures that did not allow credit for service outside the university or that was unrelated to research.⁵⁸ In refreshing contrast to the Visiting Scientists Program remained the Virginia Junior Academy of Science, where the enthusiasm of the young students and the dedication and hard work of the older Virginia Academy members came together.

Virginia Junior Academy of Science

In 1977, John Hess, Chairman of the VJAS, reported to Council at the annual meeting that 380 students had registered for the meeting in comparison with 350 last year. During the academic year, 105 schools were affiliated with the Academy. In addition, noted Hess, 322 papers were submitted, of which 173 were selected for presentation.

⁵⁷Harold Bell to Participants in the 1987-1988 VAS Visiting Scientists Program, September 21, 1987. Virginia Tech, Special Collections.

⁵⁸George Webb to Charlotte Webb. Interview. October 26, 1996. Newport News, Virginia.

Finally, Hess pointed out that a VJAS member had presented at the AAAS annual meeting. Such enthusiastic participation continued. Such enthusiastic participation continued, as illustrated by the following chart depicting the number of papers submitted for oral presentation at the VJAS annual meeting, the number of papers selected by the reading judges for presentation at the meeting, and the overall number of attendees.⁵⁹

<u>Year</u>	<u>Papers Submitted</u>	<u>Papers Selected</u>	<u>Attendance</u>
1976	305	195	350
1977	322	173	380
1981	373	212	400
1982	497	335	450
1983	612	349	658
1984	819	454	1298
1985	1018	535	1395
1986	1218	613	1030
1987	1376	668	1519
1988	1416	620	1219
1989	1356	602	1139

From John Hess's report in 1977 to the beginning of Dean Decker's twelve-year tenure in 1981, the number of papers submitted increased by sixteen percent. In 1985, the annual meeting of the Junior Academy was held at William and Mary and drew approximately 1395 students, teachers, and sponsors--a 249 percent increase over the 1981 attendance. The 535 student papers read favored the life sciences, ranging from agriculture to zoology.

The "News and Notes" section of the summer, 1985, issue of the Journal focused on the phenomenal performance of the Virginia Junior Academy of Science. In reviewing

⁵⁹For those years not listed--1978, '79, and '80--the data is not available.

the accomplishments of the VJAS, the author pointed out that the Junior Academy “serves science in capacities other than its annual meeting paper competition.”⁶⁰ For example, the VJAS administered the Westinghouse Science Talent Search for Virginia. The importance of this Talent Search “cannot be underestimated, as it is a national competition among high school seniors in science. The top winners attend a national meeting in Washington D.C. where cash awards and scholarships are distributed.” In addition, the VJAS provided personnel to select the state winners to attend the West Virginia Science Youth Camp--an all expense paid three-week science camp conducted by the State of West Virginia. Finally, the Virginia Junior Academy of Science Committee members conducted workshops for teachers and students to help new Science Clubs become involved in VJAS activities.⁶¹

Given the rapid growth of the VJAS, it is not surprising that in March, 1986, Director Dean Decker reported to Council that publication of the Proceedings of the annual VJAS meeting had “been quite a job,” to put it mildly. For this reason, the Junior Committee planned to ask for \$7000 over three years from the Gwathmey Memorial Trust to help meet the increasing costs of this publication.⁶² In early November, 1986, Council announced that the officers of the Gwathmey-Jeffress Trust had approved the pending

⁶⁰“News and Notes” in Virginia Journal of Science 3(1985).

⁶¹“News and Notes” in Virginia Journal of Science 3(1985).

⁶²The Thomas F. Jeffres and Kate Miller Jeffress Memorial Trust was established under the will of Robert M. Jeffress, a business executive and philanthropist of Richmond, Virginia. During his life, Robert Jeffress made large contributions to science, namely due to interest inculcated in him by his brother-in-law Allan Talbott Gwathmey, thirty-first president of the Virginia Academy of Science and professor of chemistry at the University of Virginia. Most notably, Mr. Jeffress was the principal benefactor of the Virginia Institute for Scientific Research, which his brother-in-law fought so hard to start. In her will, Elizabeth Gwathmey Jeffress established the Richard Gwathmey and Caroline T. Gwathmey Memorial Trust in memory of her parents. The Grants from the two trusts are administered by First & Merchants National Bank and are awarded on the advice of an allocation committee specified by the Jeffress’ wills. The Committee is composed of five Virginia residents, one of whom is from the Virginia Academy of Science. Grants are awarded for governmental, charitable, scientific, literary, and educational purposes.

grant, and that Dean Decker had received a check for seven thousand dollars.⁶³

Commitment from the Academy members was, as had been the case in the past, joined by support from Academy funds, both clear indications that the Junior Academy remained “close to the hearts” of the leaders of the Senior Academy. The VJAS was also an area where the younger, regular Academy members remained involved.

One such person was Dallas Cocke. A devoted leader of the Virginia Academy of Science, but especially to the Junior Academy, Cocke taught biology at the Collegiate Schools in Richmond to eighth grade students. On Pearl Harbor Day, 1986, the Academy was saddened by Cocke’s untimely death. Only 46 years old when she died, Dallas Cocke (1940-1986) had been the recipient of the Distinguished Service Award in 1985. In 1987, Cocke posthumously received the Distinguished Service Award from the NAAS for promoting science among the youth of the nation. Her heritage was in safe hands with the VAS, however, which continued to fully support the VJAS.

For some time, the Executive Committee had considered creating a seat for the Junior Academy of Science Director and, in 1987, it finally voted to establish the position. In his first report to Council as a member of the Executive Committee, Decker expressed concern on behalf of the VJAS Committee relative to the continued growth--both in the number of attendees and in the number of papers presented--of the organization. “This growth,” he simply stated, “is posing some growing pains.” Furthermore, because of the evaluation process in place, fewer than ten percent of the papers written by students ever make it to the VJAS annual meeting. One can only wonder, commented Decker, what the numbers would be without such a screening process in place. Finally, Decker expressed

⁶³“Minutes of Council,” November 9, 1986. Special Collections, Virginia Tech.

concern with managing the work load that was beginning to overwhelm the Junior Academy of Science Committee volunteers without “dampening down” the forward progress of the young people whose “very enthusiasm had caused these problems to arise in the first place.” Decker listed five possible solutions : regional meetings; use of only those universities that could meet all of the needs of the VJAS and VAS; taking the annual meeting to non-university facilities; extending the number of days of the meeting; and reducing the number of student participants. In closing, Decker summed up the general feeling of the VJAS Committee:

Science is coming to the forefront in education. Teachers and students are responding to the opportunities offered by the VJAS. There is no reason to expect anything except more growth and possibly at a greater rate than in the past. Because the VJAS participants are the future scientists, it is important for the VAS to prepare and meet the coming tide.⁶⁴

In addition to considering Decker’s report, Council also expressed concern with another growing pain: keeping up with the ever-increasing costs of the Junior Academy. The group decided to present a proposal for a biennial state budget item in science education to support the VJAS program. Accordingly, in September, President Banks and C.R. Taylor, chair of the Fund Raising Committee, submitted a request for \$39,769 biennially to fund student research grants, printing costs for the proceedings and handbook, and secretarial help. Wrote Banks:

Since Virginia has made many larger recent investments in the future of technology development in the state and state support of this modest request would help stabilize the VJAS program, we hope the Department of Education will join with our private organization in co-sponsoring this most essential and worthwhile venture and request state support in the Governor’s budget to help underwrite part of our efforts.⁶⁵

⁶⁴Dean Decker, “Virginia Junior Academy of Science Report to Council,” March 7, 1987. Special Collections, Virginia Tech.

⁶⁵William L. Banks to Donald J. Finley, September 15, 1987. Special Collections, Virginia Tech.

Two months later, Academy member C.R. Taylor reported that the General Assembly had turned down the proposal. Regrettably, President Banks informed Council that it was too late for any lobbying efforts to resurrect the proposal in time for the next legislative session.⁶⁶

Concern over the cost of running the Junior Academy and the need for a full examination of the organization and administration of the VJAS with respect to its relationship to the Senior Academy and the increased responsibilities of the VJAS director, influenced President Bank's suggestion to Council in November that the VAS form an Ad Hoc Committee to analyze the future of the VJAS. By that time, the situation had some urgency, for Decker had just indicated that he would like to consider retirement from the VJAS directorship. From Decker's perspective, the amount of work involved in directing the Junior Academy probably meant that Council should consider a paid, full-time position similar to the Executive Secretary-Treasurer job held by Blanton Bruner.⁶⁷ James O'Brien moved that an Ad Hoc Future Planning Committee of the VJAS be appointed by the President to discuss the future of the VJAS.

In March, 1988, Ertle Thompson, chair of the Ad Hoc Future Planning Committee, met with his new committee, consisting of Mary Frances Hobbs, Alan Branigan, Dean Decker, Jim Murray, and Hugo Seibel. The group focused on four questions:

⁶⁶"Minutes of Council," November 8, 1987. Special Collections, Virginia Tech.

⁶⁷At this juncture, it should be noted that Bruner pointed out that if a full-time position of Director was approved, the budget and physical location of the person might lead to a problem, since although the University of Richmond is giving the VAS free space, it is not adequate to house another person and his/her records. "Minutes of Council," November 8, 1987. Special Collections, Virginia Tech.

1. Should the number of VJAS presentations be limited at future meetings?
2. Should there be regional competitions leading up to the annual meeting to identify best work for presentation?
3. Should the leadership of the VJAS remain on a voluntary basis and/or should funding be sought to support the Director's efforts? A staff? etc.
4. Should a joint policy board of the VAS Council and the VJAS Committee be established on a permanent rather than an ad hoc basis?⁶⁸

Concerning the question of paid versus voluntary leadership for the VJAS, the committee noted that a change in the directorship would probably entail either decentralization or payment of the director. With all the data in hand, the group recommended the following:

1. That the present structure of the VJAS remain the same for the future.
2. That the number of sections be limited to 35 or 30 if requested by the host institution.
3. That the Finance and Endowment Committee consider the feasibility of supporting a paid Directorship for the VJAS, as well as alternative arrangements for housing and staffing the business of the Academy
4. That Council and the VJAS retain their present respective roles in the formation of policy for the VJAS.⁶⁹

Three weeks later, Thompson and his group met again to discuss the question of a paid versus a volunteer director. Dean Decker presented the alternatives. First, Decker suggested a volunteer director, in which case the activities of the VJAS would be curtailed and the process decentralized, with selection delegated to regional organizations. Second, he introduced the concept of a semi-professional director--a person who would function as the Executive-Secretary currently functioned. And third, Decker detailed the position of a professional director, in which the VAS would pay a director a salary for full-time work. The latter position could combine running the Junior Academy with the position of Executive Secretary. The cost of this position might run between forty-two and fifty

⁶⁸"Report to Council from Ad Hoc Committee on VJAS Future Planning," March 12, 1988. Special Collections, Virginia Tech.

⁶⁹"Report to Council from Ad Hoc Committee on VJAS Future Planning," March 12, 1988. Special Collections, Virginia Tech.

thousand dollars, breaking down into a twenty to twenty-five thousand dollar salary, five thousand dollars in benefits, a part-time secretary costing approximately ten thousand dollars, and seven thousand dollars designated to office costs and operations.⁷⁰ The committee submitted these three options to Council.

After evaluating the four recommendations and three options, at the Council meeting in November, 1988, members submitted alternative plans. With the news that Decker had agreed to stay through 1991, time was not as much of the essence in finalizing a plan as it had at first appeared. First, regional meetings throughout the state at community colleges using local volunteers could be used as part of the evaluation process. While regionalization would certainly encourage more involvement from state institutions--and, importantly, the community college system--there would be fewer students at the annual meetings, perhaps detracting from the true sense of scholarly competition. Second, the overwhelming feeling was that a paid director--combined executive secretary and chair of the Junior Academy--would solve all problems, although the Academy's ability to secure sufficient funds to support the position was, in some minds, in doubt. In response, the Committee on Fund Raising, consisting of Dean Decker, Fishback, Don Cottingham and Michael Bass, reported that they had only raised nine hundred dollars since the Spring. Furthermore, they had determined that an endowment of approximately one million dollars would be necessary to pay a director. The group agreed to look into the high-level fund raising effort that would have to occur before the paid directorship could be brought into existence.⁷¹

⁷⁰"Ad Hoc Committee on VJAS Future Planning," April 20, 1988. Special Collections, Virginia Tech.

⁷¹"Minutes of Executive Committee," November 6, 1988. Special Collections, Virginia Tech.

Regionalization, however, and not high-level fund raising, remained first on the agenda. In November, 1989, President Michael Bass reported that in July at the VJAS's annual planning meeting at Grace Mountain Lodge, he had asked Dean Decker to appoint a sub-committee of the Junior Academy Standing Committee to study regionalization.⁷²

Decker gave the sub-committee's report at the November meeting of Council, beginning by stating: "We approved two things: first, that we reaffirm the objective of the VJAS which is to encourage science among the secondary school students, and the second thing that we did was essentially to approve the idea of regionalization."⁷³ Decker promised that the next meeting of sub-committee would make a determination

as to probably what is the best way to break up the state. . . The idea that has the strong support right now is congressional districts, because it does it by population. Realizing that school districts do not always follow the boundaries of congressional districts, we would not break up a school district. Our plan is to have a workable solution by the time the Junior academy meets in January, get that approved by the Junior Academy Committee and bring it to the Council in March. We want to tie in the Community Colleges and four year colleges in with this regionalization.⁷⁴

It is both ironic and an indication of the trend of this period that at the same time the Senior Academy was trying to deal with a drastic and potentially vitiating decline in its membership, the VJAS was going through such enormous growth. The contrast could not be more marked. As this professional society was apparently losing significance for scientists, both those within academe as well as industry and business, young people were thronging to the annual meetings in such large numbers as to threaten to make the meetings unmanageable, leading the VAS to consider a paid directorship.

⁷²"Minutes of Council," November 12, 1989. Special Collections, Virginia Tech.

⁷³"Minutes of Council," November 12, 1989. Special Collections, Virginia Tech.

⁷⁴"Minutes of Council," November 12, 1989. Special Collections, Virginia Tech.

In some ways, it is puzzling why the VAS, at this stage, did not move at full speed towards regionalization. Regionalization would have had several advantages: it would have spread across the state the burden of managing the young presenters, pulling the high-school teachers into a greater degree of involvement in their region; it would have allowed the fullest possible participation for those students who had performed work for which they wished recognition; and it would have put off the need to spend money the VAS did not have on a paid director for the VJAS. The difficulty of funding the director's slot might have seemed a stretch during this period, but in the years just ahead, with the combination of the state-wide recession and the ascension of fund-cutting Republicans to both the Governor's mansion and the Legislature, extra money for the VJAS would simply not be available.

On balance, though, the performance of the Virginia Junior Academy of Science meant that the "selling of science," handled through the school teachers of science, was a success. At the same time, of course, the Commonwealth, along with its sister states, was trying to deal with a decline in the quality of science and math education in the schools. One wonders exactly what this juxtaposition of high interest and mediocre performance in the school systems as a whole might have meant--indeed, what it might continue to mean. Were the youngsters who wanted to present papers resulting from their research an elite whose accomplishments were the equal of past generations? Were the scores of the total school population showing a snapshot with such a large focus as to overlook the talented VJAS-bound students? Or was the intellectual rigor of the papers and the quality of the research of the students dropping over the years, regardless of their interest in the world of science? These are questions where there are no yardsticks available with which to measure the answers.

Science Museum of Virginia

The Virginia Academy of Science continued its steadfast support of the Science Museum of Virginia, and the Museum continued to rely on the Academy as an expert consultant, both through the counsel of Board of Trustee members Rae Carpenter and E.L. Wisman and through the volunteer efforts of individual VAS members. For example, in early 1977, Museum Director Paul Knappenberger contacted Academy President Allan Powell, asking him whether or not the VAS might be receptive to reviewing the prospectus for the proposed crystallographic exhibit. Powell immediately appointed an Advisory Committee consisting of Kenneth Lawless, Billy Sloope, Sam Gillispie, Russell Rowlett, Henry Leidheiser, and John Mitchell to report directly to the director.⁷⁵ Several months later, A.B. Niemeyer, chair of the Ad Hoc Committee on Science Museum of Virginia, wrote to Carpenter that he had spoken with the Science Museum staff concerning the idea of a Speaker's Bureau--similar to the Visiting Scientists Program--to deliver programs under the auspices of the Science Museum. Niemeyer enthusiastically explained that several members of the Board of Trustees were particularly interested in "bringing the name of the Science Museum of Virginia to the local citizens and considered this to be a method of achieving this goal."⁷⁶ At a later meeting of the Board of Trustees, a memo was sent to Niemeyer asking him to "hold onto this idea until there is an auditorium or meeting room that can accommodate the audience."⁷⁷ Clearly, the Board of the Museum was well-aware that the VAS might be able to offer resources to them, at the very least in the form of expertise, and perhaps of equal importance, in support for Museum programs and exhibits. At the same time, it seems likely that the Virginia Academy, in addition to having a strong

⁷⁵"Minutes of Council," May 11, 1977. Special Collections, Virginia Tech.

⁷⁶A.B. Niemeyer to D. Rae Carpenter, June 23, 1977. Special Collections, Virginia Tech.

⁷⁷Board of Trustees to A.B. Niemeyer. Special Collections, Virginia Tech.

sense of proprietorship where the Museum was concerned, was also conscious that the Academy could advance what it regarded as its own mission, and in the process, bring luster to its own name, through working with the Museum. These were reasonable positions for both groups to assume, and in the early years, both parties would take steps to try to assure that their relationship remained a close.

In February of 1979, Paul Knappenberger, Director of the Science Museum, wrote to Virginia Academy Member and Museum Board of Trustee Rae Carpenter, in a sense laying out his view of the future role of the Virginia Academy in the life of the Museum.

I feel it is very important that the Science Museum and the Virginia Academy of Science keep an open communications link that will benefit both of us. In this regard, there might well be a committee of the Academy whose task is to serve as a direct working liaison with the Science Museum. Such a committee might provide advice to the Museum on various programs and exhibits that are being developed. They might provide information to the Academy Council and members on development and needs at the Science Museum, and in general, serve to facilitate a working relationship between the two groups.⁷⁸

Carpenter forwarded the letter on to incoming Virginia Academy President Vera Remsburg, writing in the margin:

I pass this along for your information as you consider Ad Hoc committees for the coming year. The Museum is moving into a new stage where it needs the Academy less as a "legislative influence" group--although we still need to keep legislators aware of the VAS interest in funding for the Museum. It now seems the stage is being set for the Academy to interact in a scientific way with the Museum to provide exhibits, speakers, advice, etc.⁷⁹

Remsburg's commitment to the Science Museum resulted several years later in her 1986 appointment by the Governor to the Museum's Board of Trustees for a five-year

⁷⁸Paul H. Knappenberger, Jr. to D. Rae Carpenter, February 15, 1979. Special Collections, Virginia Tech.

⁷⁹D. Rae Carpenter to Vera Remsburg on letter from Paul H. Knappenberger, Jr. to D. Rae Carpenter, February 15, 1979. Special Collections, Virginia Tech.

term.⁸⁰ Despite her support and that of other Academy members to the Museum, it is useful to consider the extent to which the relationship between the Science Museum and the Virginia Academy of Science followed the vision relayed by Knappenberger and further commented on by Carpenter for, despite the best intentions of these people, the Science Museum has not taken advantage of the scientific expertise that would be available to it free of charge by members of the Academy. Discussions with Science Museum staff members often reveal the surprising fact that some of the Museum staff are not fully cognizant of the vital role played by the VAS in the founding of the Museum.⁸¹ One might conclude that the VAS did not market itself as it should have, but the Virginia Academy may be pardoned for not comprehending that a parent group should have to market itself to its offspring. Another way to look at this interesting case of nonrecognition is to say that the Virginia Academy of Science was depending upon traditional ways of interaction, both the functioning of the “old boy” (and in this case, “old girl”) network and habits of enrolling, or enlisting support, that depend upon a mutuality that no longer exists. This situation, as the next chapter will offer, only worsened with the passage of the few years between the late 1980s and the mid 1990s. But the Science Museum was not the only locus, during this period, of VAS interest where the organization found itself no longer fully included.

⁸⁰“Minutes of Council,” November 9, 1986. Special Collections, Virginia Tech. In 1989, Arthur Burke made a motion seconded by Roy Taylor that the member of the Virginia Academy of Science who is proposed by the Virginia Academy of Science and who is appointed by the Governor to be a Trustee of the Science Museum of Virginia be a member of Council. The motion passed. “Minutes of Council,” November 12, 1989. Special Collections, Virginia Tech.

⁸¹Information gathered from several visits to the Science Museum through work as a consultant in the summer of 1995.

Science Advisory Committee

Well-versed in the politics of science advisory systems throughout the nation, in May, 1977, chair of the Ad Hoc Committee for Science Advisory Panel, Ertle Thompson, submitted a detailed report to Council in which he analyzed the position of the VAS relative to other state academies and associations of science and their relationships to their respective state governments. As Thompson explained:

During the past several years committees from a number of states have struggled increasingly with the problems of establishing a Science Advisory System in the Governor's Office of their respective States. Presently, complete agreement among the committees exists on two major points: first, there is a need for such Advisory Systems and second, there is inadequate funding for Science Advisory Offices in State government.⁸²

Moreover, Thompson pointed out, environmental problems of the recent past had provided numerous opportunities for state and local governments and the federal government "to establish effectively, reciprocal relationships for the application of scientific and technical advice in seeking solutions to national, state, and local problems." Over the past year, Thompson said, his Ad Hoc Committee had been involved at the request of the Governor's office with issues surrounding toxic substances legislation, water quality standards, and water resource management. In addition, the requests for input from the National Governor's Council on Science and Technology had risen. It was vital to recognize, Thompson went on, that the potential for impact upon the new advisory system in the federal government had been enhanced significantly; thus, the Virginia Academy of Science could play a primary role in helping to solve both general and specific problems facing the people of the Commonwealth and America through an Advisory System

⁸²"Report to Council," May, 1977. Special Collections, Virginia Tech.

established to fulfill the following objectives:

1. To provide scientific and technical advice to the Executive and Legislative branches of State government, other state agencies, and local governments.
2. To act as a liaison among scientists and other key individuals from State and local governments, industry, colleges, and universities, and the lay citizenry to perform effectively an advisory role regarding social, political, economic, educational, and scientific and technical problems in Virginia.
3. To identify broad future problems in all fields to which scientific-technical knowledge should be applied in seeking solutions.
4. To define problem areas of immediate concern for short-range solutions.
5. To improve scientific-technical education at all levels.
6. To define more clearly scientific research goals for the Commonwealth of Virginia.
7. To clarify the responsibilities for research activities and the application of scientific and technical knowledge among State and Local governments, educational institutions and industries in Virginia.⁸³

Arthur Burke moved that the Ad Hoc Committee's seven-point conception of a State Advisory System be considered in principle for the time being. In other words, the Ad Hoc Committee currently in place would remain status quo. There should be no State Advisory Committee put in place at the time.

In November, 1977, the Virginia Academy of Science learned that the Commonwealth had received a solicited grant of \$25,000--titled the State Science, Engineering, and Technology Study (SSET)--from the National Science Foundation, the purpose of which was to organize an effective science advisory system in the state. Accordingly, the Governor named scientist Donald Shull--a Virginia scientist, although not a member of the Virginia Academy of Science--as the Science and Technology Legislative Coordinator, giving him full-reign to fulfill the terms of the grant, including decisions

⁸³"Report of the Ad Hoc Committee to Plan Science Advisory System," May 12, 1977. Special Collections, Virginia Tech. At this point, Hunter D. Hamlett; Howard Massey, Jr.; James Midyette, Jr.; Maurice B. Rowe; Avery Catlin; Lewis W. Webb, Jr.; and Arthur W. Burke, Jr. sat on the Ad Hoc Committee to Plan Science Advisory System.

regarding the structure and the participants in the new science advisory system.⁸⁴ For the time being, Shull stated only that the advisory system would consist of the expertise of many scientific and technical groups. To aid Shull in the administration of the grant, the Governor asked Charles Christopherson of the Department of Intergovernmental Affairs to lend guidance.

During the Council meeting five days later, Virginia Academy officers sought to precisely define where their organization stood relative to a permanent, state-run, science advisory system prior to any requests of assistance from Shull and the state. Representing the views of many, Ed Turner was quick to note that Council already had voted in principle approval of the concept of a permanent science advisory system. Additionally, Turner pointed out that many problems encompassed by this charge--that of a permanent, state-run, system--were broader than the purview of the VAS. Finally, Turner expressed reservation over the use of the name of the Virginia Academy of Science. He thought that the name should be invoked only with full understanding of who was being represented in any given issue. In response to Turner, Arthur Burke reminded the group that the role of the VAS was to serve as a conduit to identify qualified personnel and not as a Committee or group of persons purporting to represent or present the views of Virginia Academy. Thompson reaffirmed that a number of scientific and technical groups would be participating in the advisory and review process, and not merely the Virginia Academy of Science.⁸⁵ This discussion embodies some disagreement over the proper role of the VAS and an attitude of real caution that stands in marked contrast to the bold response that had in the past characterized the VAS's response to scientific and technological advisory

⁸⁴"Minutes of Council," November 6, 1977. Special Collections, Virginia Tech.

⁸⁵"Minutes of Council, November 6, 1977. Special Collections, Virginia Tech.

opportunities. One wonders exactly what lay behind the nervousness about forming an advisory group. Were there strains inside Council, perhaps within the VAS itself, relative to, say, environmental issues? Or was there perhaps some personal agenda or concern? Or, perhaps, had the VAS become so diffuse in its mission that it no longer presumed to speak for the state's scientific community? At any rate, the VAS was, in appearance at least, backing away from taking an active role with its own state government.

In February, 1978, Charles Christopherson wrote to Ertle Thompson, stating:

As you are aware, the Department of Intergovernmental Affairs is actively involved in the State Science, Engineering, and Technology Study under a grant from the National Science Foundation. We appreciate your assistance on the program and look forward to your continued involvement. Since the success of the SSET program depends upon the advice and guidance of the scientific community, we would like to request that the Ad Hoc Committee of the Virginia Academy of Science serve as an advisory body to the program. The participation of the Ad Hoc Committee should provide much needed guidance on matters which only the scientific community can appropriately address.⁸⁶

Primarily, Christopherson requested two services: first, for assistance in analyzing previous efforts in Virginia and other states toward integrating science, engineering, and technology into the decision-making process of the governor of Virginia, his staff and cabinet; and second, for help in examining the science, engineering, and technological resources available for decision making of the Governor, his Staff and Cabinet, including resources found in state agencies, private institutions, private enterprise, the federal government, interstate organizations, and any other sources.⁸⁷

⁸⁶Charles A. Christopherson to Ertle Thompson, February 22, 1978. Special Collections, Virginia Tech.

⁸⁷Charles A. Christopherson to Ertle Thompson, February 22, 1978. Special Collections, Virginia Tech.

Despite the initial overture of Christopherson, it was not until the beginning of June, 1978, that the Science Coordinator Donald Shull telephoned Rae Carpenter about a visit to discuss the nuances of the NSF grant. Two weeks later, he sent a letter to Carpenter, reviewing their conversation and laying out the topics to be discussed during their upcoming meeting. Ironically, given the Virginia Academy's expertise and professed willingness to help in the SSET project, Shull's priority was discussing the possibility of state government/university linkages, not Academy/state cooperative ventures. Specifically, wrote Shull, the SSET Project seeks to

foster ways to integrate sound technical advice/information into the State governmental process. From my point of view, this means to introduce the advice/information into the legislative process whereas there is a corresponding project underway in Virginia's executive branch to make incorporation into the legislative process. . . . One of the necessary inputs into any information network is the identification of resources and provision for flow through any institutional interfaces. The task of providing scientific and technical information into governmental processes, of course, must look to the most qualified and well-defined resources--the universities within the government's political jurisdiction. My primary objectives for this visit are to establish a point of contact within the research community and to obtain suggestions for establishing a linkage mechanism. . . These topics do reveal at least the fundamental data that I seek for the initial planing efforts to develop ways to tap the expertise available from Virginia Military Institute.⁸⁸

Given the interdisciplinary, inter-institutional nature of the Virginia Academy of Science, one wonders why Shull did not look to the Virginia Academy first as the primary "most qualified and well-defined resource." Was Shull, as a government scientist, simply underinformed concerning the asset that the Academy represented? Whatever the reason, the VAS did continue to struggle with its own ambiguity over the role of a science advisory group operating under its name.

⁸⁸Don L. Shull, Ph.D. to D. Rae Carpenter, June 12, 1978. Special Collections, Virginia Tech.

By October , 1978, the Ad Hoc Committee to Plan Science Advisory System reached a decision as to the nature of its constitution. As Ertle Thompson announced to his "Fellow Academy Members:"

In compliance with the charge of the Academy Council and the Academy Conference May 1977, the Ad Hoc Committee to Plan a Science Advisory System is to plan a standing Science Advisory Committee to provide, upon request, scientific advice to the Executive, Legislative, and other Governmental bodies and Agencies of the Commonwealth of Virginia. The Science Advisory Committee is to serve as liaison for the collection and transfer of such solicited scientific and technical information and/or advice. The effort is currently enhanced by the involvement of the Ad Hoc Committee with the State Science, Engineering, and Technology Study of the Department of Intergovernmental Affairs with the support from the National Science Foundation...The Council of the VAS has further charged the Ad Hoc Committee to prepare a file of brief statements of the professional expertise of members of the Academy who are willing to serve in an advisory role to fulfill the objectives of a Science Advisory Committee.

Thompson closed the letter by inviting responses from the membership to the Committee by the middle of November.⁸⁹ And at the November Council meeting, the group--despite the earlier internal conflicts--approved the establishment of the Science Advisory Committee as a standing committee. It was a committee that the Commonwealth should have been able to make good use of over the coming years.

For over two years, the standing committee provided Shull with names of scientific experts as the government scientist attempted to put a science advisory system in place. By the early 1980s, Shull's efforts had resulted in the establishment of a Science and Technology Advisor and a Science and Technology Advisory Committee, both to report directly to the Governor. Unfortunately, once the Science Advisory System was in place, the Commonwealth of Virginia no longer sought the services of the Virginia Academy of

⁸⁹Ertle Thompson to Fellow Academy Members, October 26, 1978. Special Collections, Virginia Tech.

Science. By 1986, Past-president Gerald Bass stated that he had sent a letter to the Governor, once again offering the services of the VAS and that the Governor had failed to respond to his overture.⁹⁰ Consequently, in March, 1987, Arthur Burke moved that the President appoint an Ad Hoc Science, Technology, and Legislative Issues Committee. This Committee, with a slightly different focus that was, Burke felt, perhaps more “in tune” with the times, would study avenues of developing better relations with the government in non-party partisan politics in addressing science and society issues. The motion was seconded and passed unanimously. But the overtures of the VAS were to no avail and, in fact, it seemed as though the organization was merely repeating earlier actions. In reflecting upon this particular failure of the Virginia Academy of Science, it seems as if the time had come in which the Academy’s influence within Richmond had so weakened, that governor’s office simply remained oblivious to the organization.

Part III: Concluding Remarks

This period was not one characterized by a major effort in the direction of a project or a study, in contrast to previous decades. The most successful of the VAS’s efforts over the span of its history, the VJAS, continued to flourish and to call for active participation from the Academy’s members. The Science Museum was off and running, for the most part on its own, and the Academy continued to support in a variety of ways public education in the sciences and mathematics. Some of the attention and the creative energy of the members was, however, directed towards the Academy’s problems: the near-collapse and subsequent rescue of the VJS, the drop in membership, the difficulties in making connections with Virginia’s political leaders, and problems in securing funding. Both the

⁹⁰“Minutes of Council,” November 9, 1986. Special Collections, Virginia Tech.

successes of the VAS and the problem areas were such that there was probably little available energy left in the leadership to dream of new enterprises and to begin the long, often arduous task of bringing such dreams to fruition. In addition, the older generation of the Virginia Academy of Science--those members who epitomized boosterism and civic-mindedness--was slowly becoming less active, and their replacements did not seem to have either the time or commitment to initiating new activities on behalf of their organization.

As with other southern state academies of science, during the 1980s, the Virginia Academy of Science struggled to re-define itself--keeping true to its original mission, competing with and complementing the national associations, and retaining its memberships. In the 1990s, a critical question for the Academy to address was in what manner the organization might remain a vital participant on the scientific, academic, and political scene in the Commonwealth of Virginia.

CHAPTER SIX

Moving Allegiances: Shifting Boundaries in Virginia, 1989-1995

By the early nineties, the Virginia Academy of Science began the difficult task of assessing its current role within the transformed scientific community of the state. Aware of the vast changes to the scientific and political landscape of Virginia over the previous twenty-five years, the VAS sought to alter publicly its focus without compromising its original mission: to encourage and promote scientific vitality within the Commonwealth. Through shifting direction to best serve its membership, the Academy hoped to position itself to mobilize both personal and institutional resources to support both its work within the larger political and economic competition for resources and standing.

Part I. Setting the Stage: 1990-1995

In 1989 when Virginians elected Democrat Lawrence Douglas Wilder as the first African-American Governor of the Commonwealth, there were few indications of the fiscal crisis that would characterize his four years in office. As is the practice in Virginia with its biennial budget process, Wilder went into office with a budget laid out by his predecessor, Gerald Baliles. And, given the fiscal responsibility of Governor Baliles, it is understandable that Wilder might have thought that his gubernatorial tenure would be a relatively easy one regarding budgetary issues. Such was not the case, however, as Virginia suffered an economic crisis of a magnitude not seen since the period of the Great Depression. The downsizing of the federal government in the area of defense resulted in an

entirely unforeseen decline in state revenues.¹ Newport News Shipbuilding and Drydock, Virginia's largest private employer and a company whose livelihood depended in large part on defense contracts, found itself with its back against the wall as Washington canceled, cut, and delayed contracts for large, war-time vessels. The economic climate was little better in the rest of the business community, as the ripple effect caused by the federal action spread, with particular impact on the communities around Hampton Roads and Northern Virginia.

Not surprisingly, the unforeseen economic crisis caused sharp shortfalls in the Virginia budget. Since the General Assembly is required constitutionally to balance the state budget, Wilder's first budget required cuts in every quarter. At the same time, the governor created what he termed a "rainy day fund," to which he dedicated money out of the normal budget that many citizens felt would be better so allocated on a sunny day.² Unfortunately for colleges and universities, Wilder chose higher education as one area where budget cuts were particularly draconian. As a consequence, the 1991 State Council for Higher Education (SCHEV) "Virginia Report" lamented that the first year of the 1990s was:

unlike any other in Virginia higher education since World War II. The public colleges and universities have experienced budget reductions that can only be called extraordinary and debilitating. They first received a 2 percent reduction in their 1989-1990 general fund support. This has been followed by an 11 percent general fund reduction for 1990-91, and a 17 percent reduction for 1991-92. Further, the Governor has been given the authority to implement additional general fund reductions that could extend the 17 percent loss to 22 percent. These reductions have occurred over a period

¹See, for example, Jaqueline L. Salmon and Sandra Sugawara, "Will Wilder, Business, Get Along?" in Washington Post (January 12, 1990), p. B1. Also, Mark Vogel, Debra Price, and Marilyn Thompson, "Boom or Bust" in Washington Post Magazine (November 11, 1991), p. W21.

²"Virginia Facing Shortfall of \$1.4 Billion in Revenue" in Washington Post (August 2, 1990), p. A1.

when enrollment has grown by 8 percent, and inflation has lessened the value of the dollars that remain.³

Money problems alone, however, were not the end of the Wilder's difficulties. Indeed, his term was marred further by scandals that might have been overlooked in other times, but given the fiscal shortfalls, were grist to the Republican mill.

It is not surprising, given this environment, that when the Democratic nominee Mary Sue Terry, the two-term Attorney General, ran against George Allen--a strongly right-wing candidate--she found herself in an uphill battle. Although political scientists originally pegged her as the favorite in this race, she lost ground rapidly during the campaign, many--although not all--of her problems resulting from the timing of her candidacy. George Allen, son of the former coach of the Redskins football team, followed Douglas Wilder into the Governor's office.

The only non-Virginian to be elected to the office of Governor in the history of the Commonwealth, Allen's sterling performance as a football player for the University of Virginia evidently was thought by the electorate to have provided him with the seemingly necessary defensive and offensive skills to play the game of politics. It is apparent, however, that even without the unfortunate legacy of the Wilder years, Virginians were moving more to the right. Increasingly:

[O]n the great national political issues . . . there was a clearly identifiable Virginian position, as reflected in the ballots cast in federal election contests

³SCHEV Report, "Colleges and Universities for the 21st Century: A Report and Proposals for Continued Improvement in Virginia Higher Education," July 10, 1991. This report was signed by the presidents of baccalaureate degree granting institutions and the director of SCHEV. The report also stated that "If higher education's loss in general appropriation increases to 22 percent, Virginia would rank 43rd among the 50 states."

and the votes of the state's delegation in Congress. Virginians in the second half of the twentieth century [had] resolutely resisted calls for retreat and unilateral disarmament in the face of communist expansion. They championed free-market economic policies and conservative fiscal approaches conducive to economic growth and opportunity. And they labored to stem the erosion of state and local prerogatives through the accretion of power by the federal bureaucracy and courts."⁴

For all of these reasons, then, George Allen was a more attractive candidate than any Democrat, and given Virginians' negative experience during the term of the first African-American Governor, the election of a woman Democrat was simply not in the cards.

Like Wilder, George Allen appeared determined to carve out a reputation for himself that would transcend state boundaries. A roll-back of environmental regulations that interfered with business and cutbacks in spending including not only social programs but also staffing of state agencies were immediate steps on his agenda. Additionally, George Allen proved to be no better a friend to higher education than Wilder. Cutbacks in spending to universities and colleges, the institution of new controls over elementary and secondary education, a refusal to take federal dollars through Goals 2000 that were meant only to bring new technologies into school houses--all of these steps toward downsizing were balanced by a vigorous attempt to lure businesses into the Old Dominion to buttress the economy. "Virginia is open for business" became the governor's slogan. It was predictable that Governor Allen's new program would not sit well with all Virginians, and that, in turn, impacted the relationship between the General Assembly and the Commonwealth's highest office.

⁴Frank B. Atkinson, The Dynamic Dominion: Realignment and the Rise of Virginia's Republican Party Since 1945 (Fairfax, Virginia: George Mason University Press, 1992), p. 486.

Battles with the General Assembly were conducted with, for Virginia, an unprecedented level of incivility. While the House of Delegates had remained in the control of the Democrats, the Senate was evenly divided, with the only safeguard the Democrats had for some of their most cherished programs the presence of the Democratic Lieutenant Governor Don Beyer, who was empowered to cast tie-breaking votes within the Senate. At the same time, a group of largely Republican businessmen led by (John) "Till" Hazel of Northern Virginia, an attorney and a developer, had taken up the cause of higher education. By the time Governor Allen was able to introduce his own budget in the Long Session of 1996, a variety of alliances kept some of the cuts Allen had proposed within more reasonable limits. Alliances notwithstanding, higher education in the first half of the 1990s reeled from Allen's program; in particular one decree--that no more than two individuals from any given institution could have state support to attend the same meeting without formal approval--having had a direct effect on the Virginia Academy of Science.

Part II. Sections, Committees, and Related Events

Membership

As was the case in the previous decade, of great concern to Council was a decline in overall membership numbers. Consider the chart on the following page:

YEAR-->		1980	1985	1990	1995
M					
E	Regular	1165	914	734	713
M	Contributing	95	63	58	55
B	Sustaining	58	30	28	26
E	Student	138	171	264	307
R	Life	19	24	29	35
S	Business	19	13	13	17
	Totals	1494	1217	1126	1053

From 1985 to 1990, the overall membership numbers had decreased by eighty-one people or approximately seven percent--seemingly not of great statistical significance. Indeed, most membership numbers of southern academies of science fluctuate by about ten percent from one year to the next.⁵ And, given the nineteen percent plunge from 1980 to 1985, the Academy appeared to be fighting back. Council's concern, however, focused primarily on the losses within one category: of one hundred and seventy *Regular* members. As Elsa Falls of Randolph-Macon College remarked: "The problem here is a problem with the core membership--of maintaining a critical mass. In order to be a viable organization, we need to have representatives from a broad variety of institutions, as well as keep a core group of committed regular members."⁶ To address this problem, in November, 1990, President Richard Brandt appointed Hugo Siebel of the Anatomy Department of Virginia Commonwealth University and the Medical College of Virginia as the new chair of the Membership Committee.

⁵See Nancy Smith Midgett, To Foster the Spirit of Professionalism (Tuscaloosa: University of Alabama Press, 1991).

⁶Elsa Falls to Charlotte Webb. Phone conversation. March 27, 1997.

Once in his new position, Siebel adopted a three-pronged strategy to attract new members. First, he sent out letters to all pre-med advisors at Virginia Commonwealth University, encouraging them to promote the Virginia Academy of Science within their student population. Next, Siebel issued an informational letter outlining the mission of the VAS to every chair of a science department in Virginia's colleges and universities. Finally, he mailed a circular to the 1100 Academy members, lobbying for each person to "intensely" recruit new members. Given his enormous attention to detail and his positive attitude exemplified in the "Minutes," Siebel obviously felt his plan would be sufficient to shore-up the membership numbers.⁷

Yet by March, 1991, Siebel had not received responses from any pre-med advisors or department heads, prompting a lengthy further discussion within Council over the state of VAS membership. Quite pragmatically, Carolyn Conway commented that in her opinion, the Virginia Academy of Science was not viewed as very important by some deans and departmental members. Following that line of logic, Michael Bass pointed out that in the serious economic downturn, travel funds had become more limited than ever. Since persons who attended or presented papers at the annual meeting of the Academy were not always rewarded by their superiors, it would stand to reason that few chairs would choose to spend scarce travel dollars on sending faculty members to VAS meetings.⁸ Most disheartening, at the spring meeting of the Executive Committee two months later, President Gerald Taylor informed the Academy's leadership that letters sent to approximately 1100 VAS members asking them to recruit new members had resulted in less than a three-percent response.⁹ As he had proposed over the past several years,

⁷"Minutes of Council," November 4, 1990. Special Collections, Virginia Tech.

⁸"Minutes of Council," March 2, 1991. Special Collections, Virginia Tech.

⁹"Minutes of Executive Committee," May 22, 1991. Special Collections, Virginia Tech.

Carvel Blair of Old Dominion University suggested sending information to various state agencies.

Acting on Blair's suggestion, Siebel forwarded an informational letter to all state agencies, hoping to identify persons interested in joining the Virginia Academy. As with the letters to the pre-med advisors and department heads, six months later Siebel reported a complete lack of response. Responding to this unfortunate news, the Executive Committee asked every Council member to commit her/himself to personally recruit one new member. In addition, Council discussed the possibility of giving students membership in the Academy as a gift.¹⁰

It is difficult to estimate the efficacy of the Membership Committee in the first half of the 1990s, although from 1990 to 1995 regular membership only declined by three percent, certainly a considerable improvement over the twenty percent drop from 1985 to 1990. At the present time, it does not appear that in the near future there will be a rapid escalation in regular membership numbers. For, as Elsa Falls remarked:

In my personal opinion, the VAS is suffering from a loss of prestige. It is not getting support from major research universities, especially the university of Virginia, though they are still getting support from Tech. . . . In all honesty, many members are more mature members who are getting ready to retire. Younger members [of colleges and universities] are not as interested in a state association, the reason being that the people who decide who gets tenure often feel that they [younger scientists] are wasting their time with a state organization. With email, and the web, and the sort of community that there is today, a state organization is of less importance.¹¹

¹⁰"Minutes of Council," November 17, 1991. Special Collections, Virginia Tech.

¹¹Elsa Falls to Charlotte Webb. Phone conversation. March 27, 1997.

Yet, as Falls continued, the VAS increasingly is filling a very important professional need--that of faculty at the smaller private colleges, liberal arts schools, and community colleges as well as graduate students. Thus, as it had periodically throughout its long history, the VAS had shifted its aim--consciously or not--to serve another population of science practitioners and educators. As Gerald Taylor of James Madison University remarked: "I really think the mission [of the VAS] is the same, but perhaps the audience has changed."¹² When one examines the student membership numbers from, for example, 1985 to 1995, the service the VAS is providing students is especially apparent. For example, in 1980, 138 students participated in the Academy sections; ten years later, the number had doubled.

Sections

As Council discussed the waning regular membership, sections, too, focused on their own viability. At the November, 1990, meeting of Council, Stewart Ware pointed out that the Agricultural Science Section had not met for two years, and, in fact, its chair had indicated in 1988 that the section would soon dissolve. Why, then, was the Agricultural Section still a recognized group of the VAS? Indeed, according to the Academy's constitutional procedure, any section not meeting for two years in a row necessarily forfeits its standing as a recognized entity of the Virginia Academy of Science. In response, chair of Local Arrangements Golde Holtzman indicated that he would like to give the Agricultural Science a chance to organize for the 1991 annual meeting at Virginia Tech--especially since a large percentage of agricultural scientists in Virginia worked in Blacksburg and could, perhaps, be persuaded to participate in the annual meeting. As a means of negotiating between these two views, Council asked Secretary Blanton Bruner to write a letter to the

¹²Gerald Taylor to Charlotte Webb. Phone conversation. March 27, 1997.

last Agricultural Section officers--those who had held office from 1987 to 1988--asking them to advise Council whether the group should be dissolved.¹³ Council accepted the officer's advice: the Agriculture Section would meet in 1991, but only to hold a business meeting. And, as Holtzman commented: "The business meeting allowed us to keep the section live. The next year someone worked on getting a meeting together and it worked!"¹⁴

Not all of the November, 1990 meeting of Council, however, was filled with talk of section decline; in fact, much of the deliberation of Council focused on section expansion. In September 1990, James O'Brien, Psychology Professor at Tidewater Community College and Chair of the News and Information Committee had written to Mark Wittkofski, a representative of Virginia Archaeologists asking him about the possibility of starting an Archeology Section. Wrote O'Brien:

I'd really like to see an Archeology Section in the Academy. By combining resources, I think we would all be able to contribute more substantively to Virginia and to the integrity of our professions. Virginia archaeology could certainly reach a large and receptive audience too. . . I'd also like to see more archaeological education in junior and senior high schools in Virginia. By establishing an Academy Section, archaeologists could take advantage of our Junior Academy programs. . . .¹⁵

Wittkofski and his fellow archeologists responded positively, and were introduced to Council at the November meeting. For Wittkofski and his fellow archaeologists, the Virginia Academy of Science offered the opportunity to mingle in a professional, yet friendly, interdisciplinary environment. Stated Wittkofski: "The Virginia Academy of

¹³"Minutes of Executive Committee," November 4, 1990. Special Collections, Virginia Tech.

¹⁴Golde Holtzman to Charlotte Webb. Email. March 27, 1997.

¹⁵James O'Brien to Mark Wittkofski, September 5, 1990. Special Collections, Virginia Tech.

Science seemed to be an opportunity to link archeology, which is interdisciplinary in nature, with outside disciplines--to work with scholars in other fields yet doing related scientific studies--and maybe to do some outreach projects.”¹⁶ Wittkofski offered to serve as program chair for the proposed section until a business meeting could be held to elect officers. By the 1995 annual meeting, thirty-five to forty people participated in the Archaeology Section, the majority of whom represented William and Mary, Radford College, Mary Washington College, and the Virginia Forest Service. Approximately one-third of the attendees were graduate and undergraduate students. According to Wittkofski, rather than being “discriminatory,” the section “welcomes student’s participation” viewing their group as a “good stepping stone” or a “good way for students to get their feet wet, especially in a localized setting where the feedback is friendly and positive.”¹⁷

Joining the archaeologists at the annual meeting in 1991 were the computer scientists. Like the archaeologists, the computer scientists were seeking an interdisciplinary, non-threatening environment in which to exchange research with their peers throughout the state.¹⁸ After several years of lobbying for a section, Computer Science finally garnered a sufficient number of participants to organize and hold its first meeting. President-elect Gerald Taylor of James Madison agreed to serve as organizer for the computer science group.¹⁹

¹⁶Mark Wittkofski to Charlotte Webb. Phone conversation. March 24, 1997.

¹⁷Mark Wittkofski to Charlotte Webb. Phone conversation. March 24, 1997.

¹⁸Ironically, the Engineering Section, initiated by engineers at that institution, did not meet at the annual meeting in 1991 held at Virginia Tech, Blacksburg, Virginia.

¹⁹“Minutes of Council,” November 4, 1990. Special Collections, Virginia Tech

The following year, President Taylor informed Council of several inquiries into the possibility of establishing a Geography Section--a discipline not discussed as a possible section since the early seventies. As with the Archaeology Section, O'Brien was responsible for the initial overtures. Writing to Don Zeigler of the Political Science and Geography Department of Old Dominion University, O'Brien stated:

The VAS publishes the Virginia Journal of Science (which also goes to about 55 overseas subscribers), supports research through grants and holds an annual meeting which is a great training ground for undergraduate and graduate students as well as a professional forum. . . I'd really like to see a Geography Section in the Academy.²⁰

Enthusiastically, Council invited the geographers to organize at the University of Richmond during the 1992 annual meeting. Given this high level of section activity, it is entirely possible that the "section-decline" phenomenon resulted from a shifting of disciplinary focus within Academy membership rather than a large loss in overall membership.

News and Information Committee

In May, 1990, President Brandt brought before Council a concern of long-time member and a Past-President of the VAS, Vera Rensburg. Specifically, Rensburg felt that members of the Academy were losing contact with one another. Accordingly, believed Rensburg, the VAS needed to develop a system by which communication among members would be enhanced. Perhaps a newsletter might be helpful, she suggested, sent periodically to all members in which Virginia Academy activities would be highlighted. Council's response to Rensburg's idea was positive.

²⁰James O'Brien to Don Zeigler, September 5, 1990. Special Collections, Virginia Tech.

Shortly thereafter, Academy President Richard Brandt announced that James O'Brien would head the News and Information Committee, with the job of editing a new newsletter, titled Virginia Scientists, as a primary responsibility. According to O'Brien: "The primary goals of the Virginia Scientist are to tie in closer the annual meeting and the four issues of the Virginia Journal of Science; to sustain the existing membership; to publicize the Academy; to attract new members; and to attract those in power or at least have them pay attention to the activities of the Virginia Academy."²¹ Two issues per year would be strictly Academy news, sent to each member regardless of section affiliation and to the department heads of every science and technology department within Virginia's colleges, universities, and relevant corporations. Other issues would be sent solely to Virginia Academy members at critical points during the year as a means by which, for example, calls for papers would be reinforced or election ballots would be distributed.²²

Diligent and hard-working, O'Brien proved to be an excellent choice to head the News and Publicity Committee, and hence to initiate the Virginia Scientists. Five months after President Brandt appointed O'Brien, the new leader distributed a written report to Council in which he suggested actions which, if followed, might lead to the improvement of the newsletter. Among other points, O'Brien requested that the committee itself--along with any member of Council--write articles for the newsletter regarding issues ranging, for example, from Academy activities to higher education. In addition, O'Brien made it a point that he was preparing to use the Virginia Scientists "not only to strengthen current membership but also to encourage annual meeting exhibitors and prospective members."²³

²¹James O'Brien to Charlotte Webb. Phone conversation. April 9, 1997.

²²"Minutes of Council," May 25, 1990. Special Collections, Virginia Tech.

²³Jim O'Brien to Hugo Siebel and Golde Holtzman, October 12, 1990. Special Collections, Virginia Tech.

Cognizant of the need to expand the network of the Virginia Academy of Science, O'Brien asked for suggestions as to who should receive complementary copies of Virginia Scientists.²⁴ In response to O'Brien's growing load as chair, beginning in 1991, Academy member Greg Cook, also a member of the Tidewater Community College Faculty, co-chaired the committee with O'Brien, taking over a substantial amount of the editing of Virginia Scientists.

On November 17, 1991, O'Brien announced that the newsletter seemed to be providing excellent publicity for the Virginia Academy of Science. Currently, O'Brien informed Council, the newsletter is sent to fifteen to twenty state departments and the governor's office, to members of the VJAS Committee, and to the presidents of all public and private colleges and universities in the state. After considering the list of recipients, Arthur Burke moved that the Virginia Scientists be sent to all state legislators. Michael Bass seconded the motion.²⁵ When the Virginia Academy elected O'Brien as President-Elect for the 1992-93 year--no doubt a decision influenced by O'Brien's commitment to increasing the visibility of the Academy--Greg Cook assumed primary responsibility for issuing the Virginia Scientists. When in November 5, 1995, Cook's tenure had run its course, he announced to Council: "You've all noticed I have had trouble getting an issue out lately, but there is one in the works that should be in your hands soon. My term expires in 1996. Please be thinking about a replacement."²⁶

²⁴"Minutes of Council," November 4, 1990. Special Collections, Virginia Tech.

²⁵"Minutes of Council," November 17, 1991. Special Collections, Virginia Tech. There is no evidence to suggest that these "special recipients" did or did not read the newsletter.

²⁶"Minutes of Council," November 5, 1995. Virginia Journal of Science 47, 1(1996), p. 59. The newsletter was not failing. Cook's remarks stemmed from the fact that the editorship was too time-consuming.

As Rae Carpenter stated recently: “The concept behind the Virginia Scientists was and remains an excellent idea.”²⁷ And, as O’Brien has been quick to point out, given the right coverage and focus that would appeal to younger scientists in the state, the newsletter might prove to be an important marketing tool, slowly informing a generation that seemingly does not have a stake in the existence of the Virginia Academy of Science of the benefits of participating in a statewide, non-disciplinary, scientific association.²⁸ Additionally, the Virginia Scientists--with its “expandable” audience--provides useful venue through which to commence initiatives. When asked about feedback from people outside of the VAS--for instance, presidents of colleges and members of the General Assembly--to whom the Academy sends the newsletter, O’Brien answered that there never was any feedback per se. However, the newsletter did “give the Academy another medium in which to put themselves.” O’Brien also pointed out that when he was editor, he looked for opportunities to run pictures of the university and college presidents or outstanding delegates in the Virginia Scientists, for while it is “really hard to say what the impact of that might be, it can’t hurt.”²⁹ Greg Cook’s experience revealed--as is the case in so many volunteer efforts--that the editorial job is a time-consuming and formidable one, a situation, as James O’Brien commented, in which ultimately institutional support, at the very least in the form of release time, is always necessary.

²⁷Rae Carpenter to Charlotte Webb. Conversation. Lexington, Virginia. May 11, 1997.

²⁸James O’Brien to Charlotte Webb. Phone conversation. April 9, 1997.

²⁹James O’Brien to Charlotte Webb. Phone conversation. April 9, 1997.

Ad Hoc Committee on the Environment

Despite a long history of support for and interest in environmental questions, from the late 1970s on, the Virginia Academy of Science focused less on environmental issues than in the past. Finally, in November, 1990, Virginia Tech's Golde Holtzman suggested the formation of an Ad Hoc Committee on the Environment, the function of which would be "proactive." According to Michael Bass of Mary Washington and a member of the new committee, by "proactive" the committee intended to "go forward and propose things . . . not wait around."³⁰ President Brandt appointed the committee, with Carvel Blair of Old Dominion University as chair along with J.J. Murray of the University of Virginia, Robert Rose of Old Dominion University, Michael Bass, and Golde Holtzman.³¹

Five months later, Blair informed Council of the committee's first project: reviewing the report of a field test by the scientific business WISTAR of a rabies glycoprotein recombinant vaccine on wild raccoons on Parramore Island in the Nature Conservancy's Eastern Shore Reserve. To loosely reconstruct the facts, upon learning that the state did not have a third-party agency overseeing the field test, Blair volunteered the services of the Ad Hoc Committee on the Environment.³² As Blair outlined, the committee was impressed by the "careful and thorough nature of the field test." All the same, they concluded that three recommendations should be sent to the Commissioner of Health, C.M.G. Buttery, the Virginia Conservancy, and the Virginia Department of Game and Inland Fisheries. First, that the Commonwealth should require a more complete final report from WISTAR--one that would provide the exact protocol by which the experiments

³⁰Michael Bass to Charlotte Webb. Phone conversation. April 10, 1997.

³¹"Minutes of Executive Committee," November 4, 1990. Special Collections, Virginia Tech.

³²Michael Bass to Charlotte Webb. Phone conversation. April 10, 1997. Also, James O'Brien to Charlotte Webb. Phone conversation. April 9, 1997. The committee became a standing committee in 1993.

had taken place. Second, that WISTAR or a state-appointed board should conduct a long-term study to determine any continuing effects of the field trial. And third, that decisions to adopt the vaccine for primary rabies control should be deferred unless a further study could demonstrate that the benefits exceed costs.³³ Despite the efforts of the VAS, archival research and interviews do not reveal any public acknowledgment by the state agencies of the Academy's three recommendations.

Virginia Journal of Science

Under the able editorship of James Martin, the Virginia Journal of Science remained on steady ground. Not only did Martin continue to use the latest computer technology (see Chapter 5) to ensure the professional quality of the Journal, but he also gave consideration to increasing the readership of the VJS by academics who otherwise might not have read the publication. For example, in 1990, the Journal published the "Proceedings from the Old Dominion University-Israel Science Conference," March 5-7, 1990.³⁴ That same year, the winter issue of the VJS contained the full "Proceedings of the Symposia on the Biota of the Virginia Barrier Islands." The papers thus printed represented the most comprehensive introduction available to the biota of the Virginia barrier islands.³⁵ Given his steadfast service to the Virginia Academy, it is not surprising that at the annual meeting in 1990, James H. Martin was elected Fellow of the Academy.³⁶

³³"Minutes of Council," November 15, 1992. Special Collections, Virginia Tech.

³⁴Virginia Journal of Science 3(1990), pp. 157-228. It does not appear that publication of the Conference in any way affected the subscription rate of the VJS.

³⁵Virginia Journal of Science 4A(1990), pp. 257-461.

³⁶Virginia Journal of Science 2(1990), p. 126.

Stewart Ware, editor of the Journal immediately prior to James Martin, continued his quest to raise the level of acceptance of regional journals by colleges and universities in his article printed in the spring 1990 issue of the Journal. In “Prestige and Impact vs. Usefulness in Biological Journals or Am I Just a Regional Kind of Guy?,” Ware began by stating:

The impact factor and citation half-life for scientific journals, as calculated by Science Citation Index, is used by some college administrators and department chairs to indicate prestige of a journal, and thus the ‘significance’ of articles published in these journals by faculty members. Regional journals, published by associations or societies interested in the botany or natural history of specific geographical areas, are likely to have lower impact factors and thus lower prestige than journals with national or international geographical coverage.³⁷

Certainly Ware was “telling it like it is,” with the hope that readers would respond by noticing that, prestige or not, a regional journal’s coverage was of more actual interest than the material contained in the national and international journals. When asked whether or not he thought scientists were “listening” to the point of his article, Ware responded that he could not give a precise answer; however, he felt that certainly his article had “gotten scientists to start thinking in that direction,” which is “all a person can ask for.”³⁸

Science Education

Entering the nineties, the Virginia Academy of Science did not sway in its firm commitment to improving the quality of science education in the Old Dominion. According

³⁷Stewart Ware, “Prestige and Impact vs. Usefulness in Biological Journals or Am I Just a Regional Kind of Guy,” Virginia Journal of Science 1(1990), pp. 31-40. Also found in 1990, ASB Bulletin 37(1), pp. 22-28.

³⁸Stewart Ware to Charlotte Webb. Interview. Williamsburg, Virginia.

to James O'Brien, the "growing concern [in the 1990s] over science education has turned the Academy leadership toward a more activist role."³⁹ As it had for so many years, the Science Education Committee continued its collective support and sponsorship of the Virginia State Department of Education Science Teachers' meeting, which, by the 1990s, drew approximately 700 to 800 teachers from all areas of the Commonwealth. In addition, the VAS began to branch out into different areas of sponsorship. In 1991, President Brandt announced that he had received from Elskie Smith, Dean of Humanities and Science at Virginia Commonwealth University, a request that the Virginia Academy of Science participate as a co-sponsor in a state-wide symposium in the fall with undergraduate students and others presenting their research, as part of the Annual Virginia Alliance for Minority Participation in Science and Engineering. Brandt also read his response agreeing to co-sponsorship--which would entail use of the Academy's name and their volunteer support--explaining the necessity for response on short notice without prior Council approval. Unanimously, Council affirmed the president's action.⁴⁰

As it had for over a decade, the Virginia Academy of Science sponsored the Visiting Scientist Program, designed to bring the ideas of science through demonstration and lecture to high-school students. The program continued under the direction of chemist Harold Bell of Virginia Tech. According to Bell, throughout his tenure as director, the program had "basically gone along at the same rate. Some of the teachers in the state are very diligent about using the Program and some teachers do not want anyone in their class. It is like they are terrified to have someone looking at what they are doing." Bell acknowledged the difficulty in judging the actual use of the program by the teachers, stating "schools are

³⁹James O'Brien to Don Zeigler, September 5, 1990. Special Collections, Virginia Tech.

⁴⁰"Minutes of Council," March 2, 1991. Special Collections, Virginia Tech. Also, Richard Brandt to Elske D. Smith, January 21, 1991. Special Collections, Virginia Tech.

notoriously bad in responding. We even include a “Report of Visit Form” for them in the Visiting Scientist “Brochure” we send out. Any type of number someone gave you would just be a wild guess.”⁴¹

Following Bell’s resignation in 1992, the Academy recognized his dedication to their association by honoring him with the Distinguished Service Award.⁴² To replace Bell, President Golde Holtzman selected Jack Cranford, also of Virginia Tech. Cranford worked diligently to expand the program to other groups beside secondary schools, such as 4-H clubs and civic groups.⁴³ Cranford expressed the same concern as Bell: the lack of response from schools at which a scientist had visited. Cranford, however, went one step further, remarking that in some sense, the program was a “terrible success.” In 1993, for example, he sent out two thousand booklets to schools in Virginia and inserted tear-out cards for teachers to send in after a visiting scientist came to their classroom. Only twenty-five schools responded. Furthermore, commented Cranford:

many teachers say that it is difficult to have a scientist come in because they are so constrained. If the scientist cannot come and talk to all five of their classes then they don’t want him because it will mess up their schedule. . . . Their expectations versus what we could give are entirely different. It is my opinion that unless we get more feedback from users, we are not getting very far.⁴⁴

⁴¹Harold Bell to Charlotte Webb. Phone conversation. April 16, 1997.

⁴²A chemist at VPI, Bell was Director of the Visiting Scientist Program from 1979-1982 and from 1985 to 1992. *Virginia Journal of Science* 3(1993),p. 309.

⁴³“Minutes of Council,” November 15, 1992. Special Collections, Virginia Tech.

⁴⁴Jack Cranford to Charlotte Webb. Phone conversation. April 10, 1997.

While Cranford never doubted the efficacy of the program when scientists actually visited a classroom, he strongly advocated that the VAS reassess the program.⁴⁵

In late May of 1995, support for science education attracted new attention within the scientific community, as Richmond, in yet another attempt to save monies by reducing the amount earmarked for education, debated the idea of decreasing the amount of time students must spend in a laboratory, particularly in the general education science courses. In addition, Richmond advocated replacing actual time spent in a laboratory time with merely viewing a video of a laboratory experiment. With the support of Academy President Elsa Falls, biologist Marion Lobstein of Northern Virginia Community College introduced a resolution on the "Importance of Laboratory in Science Education" for the VAS to send to the General Assembly. In her resolution, Lobstein denounced the current trend in the Commonwealth to "do away" with the laboratory experience before outlining the vital importance of the laboratory experience in science education. Specifically, she wrote:

Science is a study of natural phenomena and requires laboratory component which permits and encourages discovery and creativity. Science faculty welcome electronic technology as a potentially effective tool to expand and enhance instruction. However, it can neither duplicate nor replace learning experiences afforded to students through hands-on lab and field activities. . . . In summary, the knowledge gained from science courses with a strong laboratory component enables students to understand in more practical and concrete ways their own physical makeup, the functioning of the natural world around them, environmental issues, etc. It is only by hands-on lab experiences that the brightest and most promising potential science majors will be stimulated and not turned off by lecture only approaches to science . . .

Not surprisingly, Council readily endorsed the resolution.

⁴⁵Jack Cranford to Charlotte Webb. Phone conversation. April 10, 1997.

The VAS did much to publicize Lobstein's resolution, printing it in its entirety both in the Virginia Journal of Science and the Virginia Scientist, forwarding it to all institutions of higher education in Virginia, as well as to the appropriate government officials, and ensuring its positive review by Beverly Orndorff in the Richmond Times-Dispatch.⁴⁶ President Falls revealed that she had sent out over one hundred letters containing the resolution. Most discouragingly, of the over one hundred letters sent out, she received just one response and that was from Gordon Davies, Director of the State Council for Higher Education (SCHEV). Falls commented that he had thanked her, writing, "We agree with you, and urge that students have laboratory experiences in science courses."⁴⁷ Polite though it was, there was no commitment in the Davies' letter to the classic pedagogic model supported by the Virginia Academy: that each semester of each science course should include a regular laboratory section. Upon hearing Davies' response, Academy member Joe Rudmin groused, "That is not very supportive." "At least he responded," countered Falls, "No one else even did that."⁴⁸ Unfortunately, however, pressured by the need to control costs in higher education, SCHEV decided that the general education science requirement for a laboratory session with each science course no longer was necessary.

Why, one must ask, were there so few responses? And why did so few people pay attention to a VAS spokesperson? According to Jim O'Brien, it was "simply politics and economics and not surprising, given that current administration and their cuts to education. We [the Academy] did not agree with what they were doing. Why would they pay

⁴⁶Minutes of Academy Conference, May 25, 1995. Virginia Journal of Science 3(1995), p. 215. Beverly Orndorff, "College labs: Experiments without labs," Richmond Times-Dispatch, Section E (June 8, 1995).

⁴⁷"Minutes of Council," November 5, 1995. Virginia Journal of Science 1(1996), p. 53.

⁴⁸"Minutes of Executive Committee," November 5, 1995. Virginia Journal of Science 1(1996), p. 46.

attention?”⁴⁹ Lab sections are labor-intensive and costly; many universities do not award the same units of lecture hour equivalents (LHEs) to the time spent by professors or by Teaching Assistants (TAs) in labs as in lectures. A single TA or professor usually teaches only approximately twenty-four lower-level undergraduates in a general education lab; the same TA or professor might teach as many students as a classroom can hold in less time, for less money, and for more credit. Clearly, stated O’Brien, labs are important. “If you want a person to be a scientific leader, you do not have them pipetting for the first time in graduate school. This was pure politics--a hard ball game . . . take money from labs and put somewhere else in the budget. . . . The Virginia Academy has a political stance that is quite different from the Allen Administration in terms of matters focusing on science education.”⁵⁰

Virginia Junior Academy of Science

In March 1990, Dean Decker, Director of the Virginia Junior Academy of Science reported that the students had submitted approximately 1441 papers from which 635 were selected for oral presentation at the annual meeting of the VJAS.⁵¹ While the number of submissions--two hundred more than the previous year--was a cause for celebration, it also created logistical problems, exacerbated by the membership decline facing the Senior Academy. Addressing these concerns after the May, 1990, annual meeting, Decker stated:

The number of juniors is getting harder to accommodate. The administrators will say they would love us to come to their campus and we will have their support, but too often the support is in words and not

⁴⁹James O’Brien to Charlotte Webb, Phone conversation. April 9, 1997.

⁵⁰James O’Brien to Charlotte Webb, Phone conversation. April 9, 1997.

⁵¹“Minutes of Executive Committee,” March 3, 1990. Special Collections, Virginia Tech.

actions. We had an awful time getting sufficient judges. As a result, we had a number of sections running with two judges, we have a number of cancellations and we have ten no shows today. We normally fill in with Academy members and people from other institutions. We have very few from either. In many schools, publishing seems to be the main goal, not state meetings. And, if a university has adopted a philosophy that everybody better be doing research and not these activities, then we can't get faculty support. That's what administrators are saying. As a result, we have a problem.⁵²

Reacting to Decker's statement, President Bass suggested that "one of the things we are seeing is the state budget crunch, because money is allocated per faculty or per department to go to meetings, with emphasis on research and presentations at national and regional meetings."⁵³ In addition, Council pointed out that the size of the VJAS--which, as evident from the following chart documenting the participation in the Junior Academy beginning in 1981, was not trivial--did pose legitimate problems for many colleges and universities.

<u>Year</u>	<u>Papers Submitted</u>	<u>Papers Presented</u>	<u>Attendance</u>
1985	1018	538	1395
1986	1218	613	1030
1987	1376	668	1519
1988	1416	620	1219
1989	1356	602	1139
1990	1441	635	847
1991	1440	672	920
1992	1447	705	1020
1993	1694	710	1100
1994		687	
1995	1820	720	1183 ⁵⁴

⁵²"Minutes of Executive Committee," May 23, 1990. Special Collections, Virginia Tech.

⁵³"Minutes of Executive Committee," May 23, 1990. Special Collections, Virginia Tech.

⁵⁴For those slots where the numbers are not available, they have either not been recorded, or have been recorded with substantial discrepancies with other accounts.

It is not surprising--given the escalating problems in negotiating the VJAS's annual meeting--that the concept of regionalization remained a central item on Council's agenda. In fact, two months prior to his frustrated report in May, Decker had reintroduced the question of regionalization in the future of the Junior Academy before the Executive Committee. As Decker explained, regionalization certainly was feasible. The subcommittee appointed by President Brandt in 1989 to review regionalization had concluded that loosely following Virginia's seven superintendent's districts would provide a starting point. As Decker informed the VAS leadership:

We have divided three of those districts. The Richmond area and south, which is a very large district, has been subdivided into A and B. The Tidewater district has been divided into A and B. B involves James City County, Williamsburg, all of Newport News (everything between York and James Rivers and leaves Southampton county, Isle of Wight, Chesapeake, Norfolk, Portsmouth and the Peninsula in Part A. Superintendents district four is divided by putting Fairfax County, Fairfax City, Arlington, Alexandria, and Falls Church into one district because they are so concentrated. So we end up with ten Junior Academy districts. This is favored by the Committee.⁵⁵

While there would be a regional director in each of the districts, Decker allowed that there would still be a central, overseeing body of the VJAS, led by a paid director, to run four basic operations: the state meeting; the training and supervising of volunteers; the relationship with the national organization; and overseeing finances, including securing grants and other types of financial support.⁵⁶ If this proposal were accepted and funding were available, asserted Decker, the new director would take over after the Blacksburg meeting in 1991 and the regionalization would go into effect.⁵⁷

⁵⁵"Minutes of Council," March 3, 1990. Special Collections, Virginia Tech.

⁵⁶This has somewhat changed from the regionalization discussed in Chapter Five.

⁵⁷"Minutes of Executive Committee," March 3, 1990. Special Collections, Virginia Tech.

Decker was careful to point out two major issues: fitting magnet schools in with the regions and raising enough money to fund the position of paid director. He reminded the group that in May of 1989, the VJAS had retained a fund-raising consultant, Mary Ellen Stumpf, formally of the Science Museum of Virginia. Decker appeared confident that she had things “under control” and within a few months, at least, the VAS should “know where this campaign is leading.”⁵⁸ Relative to the former issue, Decker reminded the committee that in Virginia, those gifted and interested in science and mathematics are invited to attend magnet schools with accelerated programs in those subjects. The VJAS subcommittee, Decker explained, had expressed concern over the fairness of having a magnet school compete either in a district against non-magnet schools or else as a separate district. President Michael Bass asked Ertle Thompson, a specialist in science education, for his opinion. Stated Thompson:

Well, it presents problems either way you go. Many people in the chemistry section complained the last two years. A few people were so adamant that they said: “We are not going to compete anymore with students from Thomas Jefferson [a magnet school]. On the other hand, since basketball tournament time is approaching, it is like taking your top ten teams and saying that you are going to play a round robin tournament. Then select the winner of the round robin from that group to play the rest of the fifty-four teams that are in the NCAA tournament. If you have the best students from these magnet schools and eliminate all but one to four of these students by internal competition then you are really excluding qualified students. It is discrimination in the opposite direction. . . .⁵⁹

While Thompson’s response certainly provoked discussion, Council could not reach a firm decision on the place of magnet schools in the structure of regionalization. Secretary Gerald Taylor moved and Elsa Falls, Treasurer, seconded, however, that the proposed

⁵⁸Minutes of Executive Committee,” March 3, 1990. Special Collections, Virginia Tech.

⁵⁹“Minutes of Council,” March 3, 1990. Special Collections, Virginia Tech.

redistricting be approved in principle.⁶⁰ Until the VAS could locate a VJAS director, however, Council agreed to put the concept of regionalization “on the back burner.” Accordingly, they appointed a Search Committee for a VJAS director, and Ertle Thompson agreed to be its chair. In addition to Thompson’s new committee, Council asked the VAS-Futures Committee, chaired by Rae Carpenter, to work on the search process. The involvement of Carpenter and his committee would prove to change the context of the search.

Several months later, at the end of June, Carpenter wrote to the Director of the Science Museum of Virginia, Paul Knappenberger. After explaining that the VAS was anticipating the retirement of its Executive-Secretary Treasurer, Blanton Bruner, Carpenter reminded Knappenberger that in the early seventies Bruner had elected to have his office at the University of Richmond rather than at the proposed Science Museum. Continuing, Carpenter explained that with the appointment of Bruner’s replacement, the Academy was again interested in space at the SMV. Furthermore, the duties of the replacement would either be expanded or another person might be employed to assist the Junior Academy. Finally, Carpenter stated:

By this letter I am exercising the privilege of a Chairman emeritus to urge the Board [of the Science Museum] to consider positively any request from the VAS to reinstate its office privileges at the Museum. Most current Board members are perhaps unaware that the legislature, in establishing the study commission for the Museum in 1969, failed to provide funding for the two-year study. Dr. Hughes personally recruited donors and then requested the Academy receive and disburse those donated funds for such purposes as the commission might approve. Because the Museum is, in large measure, a child of the Academy, it seems quite appropriate that the VAS offices be located there.⁶¹

⁶⁰“Minutes of Council,” March 3, 1990. Special Collections, Virginia Tech.

⁶¹D. Rae Carpenter, Jr. to Paul H. Knappenberger, Jr., June 30, 1990. Special Collections, Virginia Tech.

Shortly thereafter, Knappenberger responded, as did Anthony Troy, Chairman of the Board of Trustees of the Science Museum in a similar fashion, that pending approval of the Attorney General's Office--which they both felt would not pose a problem--and once suitable space is located, the VAS would be welcome in the Science Museum.⁶²

Not only did was the Science Museum willing to share its space with the Academy, but also a paid position. In November, 1990, President Gerald Taylor summarized for Council both the activities of the VAS-Futures Committee and VJAS Director Search Committee. At a special meeting on July 20, 1990, at Grace Mountain Lodge, the Executive Committee of the VAS had approved in concept a verbal proposal to the Virginia Academy of Science from Paul Knappenberger to establish a Junior Academy Director/Science Education Liaison Position with offices and staff working out of the Science Museum of Virginia.⁶³ In other words, the Science Museum would sponsor a part-time director for the VJAS. According to the proposal, the Science Museum of Virginia would fund the position through state monies marked for the Science Museum of Virginia.⁶⁴

Following Taylor's summary, Carpenter outlined the tentative plans for the VJAS Director/Science Liaison position, including the eventual relocation of Virginia Academy offices to the SMV. Obviously, he pointed out, definitive information on the position would not be available until January 1992, when the governor's budget would be

⁶²Anthony F. Troy to Rae Carpenter, July 6, 1990. Special Collections, Virginia Tech. Also, Paul H. Knappenberger, Jr., July 11, 1990. Special Collections, Virginia Tech.

⁶³ "Minutes of Council," November 4, 1990. Special Collections, Virginia Tech. Conversations with Betty Blatt of the Science Museum of Virginia have revealed the fact that the Science Museum did not think of the position as so narrowly defined. Betty Blatt to Charlotte Webb. Phone conversation. April 18, 1997.

⁶⁴"Minutes of Council," November 17, 1991. Special Collections, Virginia Tech.

announced. If the General Assembly allocated money for the position, then the Virginia Academy of Science would proceed with plans as proposed, relocating to the Science Museum and sharing the position with that public institution. If the Legislature did not fund the position, the VAS would still hire a VJAS director, but the position would be volunteer until the Fund Raising Committee had secured a sufficient endowment to support a salaried director.

Following Carpenter's remarks, Ertle Thompson handed out copies of his Search Committee's report. Like Carpenter, Thompson's suggestions concerned the proposal from the Science Museum of Virginia for the joint position. Thompson especially wanted Council to consider a discrepancy between Science Museum of Virginia documents and Virginia Academy of Science documents relative to the wording of the proposed position. In the Search Committee Report, the position is referred to as the SMV/VAS "Scientist in Residence" and VJAS Director, whereas in communications from the SMV, the position is referred to as the Science Outreach Coordinator.⁶⁵ Finally, Thompson said that if the position were to be funded, the expectations of the staff of the Science Museum were that the position would be filled by a Ph.D. scientist or mathematician. Thompson recommended on behalf of the Search Committee that Council approve in concept the joint position of SMV/VAS "Scientist in Residence" half-time and Director of VJAS half-time at the Science Museum of Virginia.⁶⁶ Council followed Thompson's suggestions, after

⁶⁵According to Carpenter, the term "Scientist in Residence" was never used by the SMV and, as chair of the Futures Committee, he never used it either. In addition, Carpenter stated that the term "Science Outreach" had negative connotations to some and he specifically requested such use be discontinued. Rae Carpenter to Charlotte Webb. Interview. Lexington, Virginia. May 11, 1997.

⁶⁶"Minutes of Council," November 17, 1991. Special Collections, Virginia Tech. Again, conversations with Betty Blatt of the Science Museum support this discrepancy in documents. The Science Museum did not and does not to this day consider the title "Scientist in Residence" as part of the job title. Betty Blatt to Charlotte Webb. Phone conversation. April 18, 1997/

which Council named Dean Decker VJAS Interim Liaison to attend Council meetings for 1992 and 1993 with privileges of the floor.⁶⁷

Paul Knappenberger resigned as Director of the Science Museum July 1, 1991, at the end of the fiscal period. Over the following year, Gerald Taylor and members of the VAS-Futures Committee negotiated with the Interim Director, Betty Blatt. Early in March of 1992, President Taylor reported that members of the VAS-Future's Committee had met with representatives of the State Legislature at the Science Museum in January. Delegate Earl Dickinson formally agreed to introduce a budget amendment to fund the VJAS Director/Scientist in Residence position.⁶⁸ As it turned out, according to Taylor, the Science Museum had authorized three doctoral positions in its overall structure--one for the Museum director, one for the director of education, and one which was unspecified. Accordingly, the unfilled position was billed as the VJAS Director/Scientist in Residence.

Based on data gathered at the meeting, the Futures Committee offered three recommendations to Council. First, while at any time VAS offices could be moved to the old Broad Street Station in Richmond that housed the SMV, the committee felt it best to delay the move until the VJAS Director position was clarified. However, the committee did recognize the necessity of constantly reaffirming the Academy's intent to centralize operations at the Science Museum. Second, the VAS's Executive Secretary-Treasurer and a new position of Assistant Executive-Secretary Treasurer would be housed at the SMV. With respect to the latter position, Carpenter indicated that the committee had identified an appropriate individual, long-time member Arthur Burke, who had agreed to serve as a

⁶⁷"Minutes of Council," November 17, 1991. Special Collections, Virginia Tech.

⁶⁸"Minutes of Council," March 7, 1992. Special Collection, Virginia Tech.

volunteer “learning apprentice” for one year, following which he would serve for three more years as an “emergency stand-in” if needed. The committee further suggested that the Executive Secretary-Treasurer position remain part-time. Third, the committee recommended that there be a definition or re-evaluation of the position of Secretary-Treasurer, but that redefinition be tabled until the VJAS director position was worked through completely.⁶⁹ Slowly, the Academy was beginning the initial steps of overhauling its administration.

At the same meeting, Thompson, again speaking on behalf of the VJAS Search Committee, announced that in anticipation of the fact that the status of the paid joint VJAS Director/Science Liaison position at the Science Museum of Virginia would not be clarified for at least several additional months and possibly longer, the committee had worked to identify a volunteer to serve as an interim director. Stringent financial conditions, unfortunately, had not provided a good environment in which to conduct a search, and Thompson revealed that none of the state colleges and universities contacted through potential candidates for the position was willing to make a commitment of release time or space. Accordingly, the committee recommended that Donald Cottingham, a retired chemistry teacher from the Tidewater area who had worked extensively with the Junior Academy and a person amenable to the position, be appointed the new volunteer, interim Director.⁷⁰ In the midst of these intense discussions concerning its future, the VJAS celebrated its fiftieth anniversary. An important highlight of the festivities was the presentation of the Ivey F. Lewis Award to Robert Dean Decker. Since 1981 the VJAS

⁶⁹“Minutes of Council,” March 7, 1992. Special Collection, Virginia Tech.

⁷⁰“Minutes of Council,” March 7, 1992. Special Collection, Virginia Tech.

director, Decker had dedicated much of his time to establishing the Virginia Junior Academy of Science as one of the top junior academies in the nation.⁷¹

Midway through 1992, the Board of Trustees of the Science Museum of Virginia named Walter Witschey as its new Director, while Betty Blatt assumed the post of Director of Science Education. When the budget came through in 1993, the legislature did not allocate money for the joint position. Blatt however, advocated proceeding with the position, recognizing that the slot would be funded as full-time Museum position, and the Museum initiated a search. In the summer of 1993, a woman scientist was hired with Carpenter and Fred Dietel, a VAS member and SMV Board member participating in the interview process. Internal problems, however, forced the Museum to initiate a second search to fill the position in February, 1994, without VAS representatives at interviews. Accordingly, the SMV hired Gene Maurakis, an ichthyologist from the University of Richmond, to the position of Science Museum of Virginia Staff Scientist and Associate Director of the Virginia Junior Academy of Science, with his duties beginning August 16, 1994. Accordingly, the VAS relocated to the SMV, hiring Lisa Martin with VAS monies to maintain the office of the Academy and assisting Maurakis when necessary.

From the beginning, the joint position was fraught with difficulties, by and large stemming from miscommunication between the Science Museum and the Virginia Academy as to the exact nature of the job. While the description of the position specifically called for a fifty-fifty split between the two organizations, in reality, both seemed to demand one hundred-percent of Maurakis' time. In addition, simultaneously working for a state agency with paid staff and an almost solely volunteer association posed problems in terms of what

⁷¹Virginia Journal of Science 2(1991), p. 268.

Maurakis could expect or “require” those working with him to do. Finally, Maurakis entered the role of Associate Director of the VJAS without having ever fully observed or participated in the events leading up to an annual meeting of the VJAS, much less the meeting itself. The joint position lasted until July 1, 1995, whereupon Maurakis’s duties shifted to a full-time “Scientist in Residence.”⁷²

In November of 1995, President Tom Sitz outlined for Council the events that led to Maurakis’s departure as Associate Director of the Virginia Junior Academy of Science. During the early summer, members of the Ad Hoc Committee to Review the Position of the VJAS Associate Director--a committee established immediately after the annual meeting and chaired by Rae Carpenter--had convened at the Science Museum to review both the position of associate director--which both sides understood to be less than desirable--and the current relationship between the Museum and the Academy.⁷³ As Sitz stated: “[T]he meeting was taken over by Walter Witschey, and he presented us with an ultimatum that the operation of the Junior Academy would be taken over by the Science Museum, or we would lose the half-time position of Gene Maurakis.”⁷⁴

Following Sitz’ brief remarks, Rae Carpenter, Chair of the Ad Hoc Committee to Review the Position of the VJAS Associate Director, explained the course of events referred to by Sitz. Carpenter said that some time between June 13 and June 26, 1995, President Tom Sitz had received a fax from Witschey in which he suggested that the Academy VJAS Committee serve as a policy board and that Maurakis and his staff from the

⁷²Eugene Maurakis to Charlotte Webb. Phone conversation. December 11, 1996.

⁷³The Ad Hoc Committee to Review the Position of the VJAS Associate Director consisted of Chair Rae Carpenter, Don Cottingham, Elsa Falls, Vera Remsburg, Tom Sitz, and Gerald Taylor.

⁷⁴“Minutes of Council,” November 5, 1995. In Virginia Journal of Science 1(1996), p. 50.

Science Museum be fully empowered to run program operations. In support of this, he said that “slippage we experienced, including Lisa’s [Lisa Martin, the part-time Office Secretary] lack of availability at the VJAS office, prevented us from achieving our best.” Witschey contended that either the director should be fully empowered, or else the SMV should be fully empowered, to accomplish the program goals. If this were the case, the Science Museum of Virginia would assign appropriate resources to see that tasks are accomplished, instead of “support sometimes supplied to a faculty VJAS director.” He also remarked that Virginia Academy of Science could then focus on setting policy, and not have to be concerned about whether the Secretary were in by 8:30 in the morning to answer the phone.⁷⁵

On June 26, the Committee met and drafted a letter to Witschey--responding to his ultimatum levied at the meeting and to his subsequent fax--in which, they pointed out, that while Maurakis had performed quite well in organizing the VJAS judges for the annual meeting, non-VJAS duties during April and May had resulted in his being overloaded and unable to deal efficiently with Junior Academy demands as the annual meeting drew near. Such non-VJAS duties, especially during April and May, perplexed the Virginia Academy, as it was its understanding that fifty-percent of Maurakis’s position was to be devoted to the VJAS; the timing of the meeting was certainly no secret, and in Maurakis’s yearly calendar, the SMV administration should have foreseen the springtime VJAS demands would be quite high. In addition, the committee did not agree that it was in the best interest of the Virginia Junior Academy of Science to empower the Science Museum to run its programs, even if it meant that Maurakis could no longer be available for any VJAS activities. The current direction of the VJAS was moving towards regionalization, pointed

⁷⁵In “Minutes of Council,” November 5, 1995 in Virginia Journal of Science 1(1996), pp. 50-51.

out the Ad Hoc Committee, with initial discussions over a pilot program in Danville at the beginning stage. Witschey did not back away from his ultimatum; hence, on July 1, the position ceased to be half-time associate director of the VJAS.

Despite certain anger and frustration with the turn of events, the VAS recognized that the VAS and SMV might still participate in a mutually beneficial relationship. Hence, the VAS-Futures Committee proposed that the current part-time position of Office Secretary, currently held by Lisa Martin, be upgraded to full-time, and that this person hold office hours at the SMV from ten until three, maintain an up-to-date file of judges, and help in procuring judges. For their records, the committee also requested a copy of Maurakis's report of his VAS activities and a copy of all the VAS-related activities on his computer. Finally, the committee noted that the SMV Board of Trustees had approved an agreement that the VAS may rent space for a nominal fee, that having the VAS offices in the SMV would benefit the SMV for a variety of reasons, and requested 2000 square feet, including 1000 square feet by the end of the summer.⁷⁶

On July 12, not long after receiving the Committee's letter, Witschey wrote to Carpenter:

Rae, I'll go to work on your space needs. Your request for 2000 square feet seems stunningly large for files, computer, program, storage, student papers, etc. Is this really what's required? At any rate, we are happy to have you continue here with us in the Broad Street Station. We too are delighted to celebrate the thirtieth anniversary of our cooperative efforts to further science education in the Commonwealth.⁷⁷

⁷⁶In "Minutes of Council," November 5, 1995 in Virginia Journal of Science 1(1996), pp. 50-51. The letter to Walter Witschey dated June 26, 1995, is not in the Archives.

⁷⁷In "Minutes of Council," November 5, 1995 in Virginia Journal of Science 1(1996), pp. 50-51.

The intent of the meeting with Witschey, his fax, and letter seemed somewhat confusing and insulting to Council. In frustration and anger, the issue of the Maurakis departure resurfaced and discussion focused on both the lost position and the problems with space. As Michael Bass queried, was not Gene Maurakis hired with the clear understanding that he had a half-time position for the Junior Academy? While it was obvious that Council as a group did hold that understanding, Gerald Taylor and Dean Decker both said that this half-time commitment “probably couldn’t be proven, but that we could hope to successfully pursue previous assurances that available floor space would be provided as renovations continue.” Although the requirements of Maurakis’s position might not have been fully clear, Carpenter and Cottingham said that the need for the space of 2000 square feet had been documented for at least the previous eighteen months.⁷⁸

Not all of the November 5 meeting of Council focused on the rather disappointing and frustrating exchange that had taken place between the VAS and the SMV. For one, Council approved the creation of the “VJAS Research Endowment Fund,” moving that “\$3000 be [transferred from the General Fund held by the trust committee] to establish a new Academy fund--the VJAS Research Endowment Fund. Proceeds of this fund, upon recommendations of the Trust Committee and with the approval of Council, will be allocated annually to the VJAS Research Grants Program and to the increase of this fund’s corpus.”⁷⁹ Don Cottingham announced officially that he would retire in 1997, but not before he stated that the regionalization of the Virginia Junior Academy of Science in the southwestern part of the state was progressing. Cottingham also pointed out that a regional director was needed. Indeed, all the groundwork for regionalization had taken place, the

⁷⁸“Minutes of Council,” November 5, 1995. Virginia Journal of Science 1(1996), p. 51.

⁷⁹“Minutes of Council,” November 5, 1995. Virginia Journal of Science 1(1996), p. 54.

community colleges were in favor of the concept, but the lack of a director had halted the process. Cottingham remarked that he had met personally with each community college president as well as with their aides, and had reached the conclusion that overworked community college faculty would not be able to adequately fill the VJAS's needs on a regional basis.⁸⁰ However, Cottingham reiterated his belief that once a director were located, regionalization would take place.

The issue of the VJAS and the question of its placement within the SMV or its splitting-up throughout the regions of the State were obviously difficult to resolve. One problem probably was that the Virginia Academy and the Science Museum were in an essential conflict because of their different needs. On the one hand, the VAS's major claim to vitality and perhaps even to its future existence was the continuing success of the VJAS. The Academy had created and nurtured the Junior Academy, had committed time, money, energy, and emotion to bringing the young people into the world of science. Why should the Academy relinquish all ownership over the VJAS to the SMV--an institution that owed its very existence to the VAS itself? Obviously, the VAS did not view Witschey's plan for the VJAS Committee to serve as a policy board as a viable alternative. As Elsa Falls remarked--and many in the VAS were in complete agreement with her statement:

The way we [VAS members] see it, the VAS is an autonomous organization who can do what Council sees fit. There would be a real fear that since the Science Museum is holding the purse strings, both the VAS and the VJAS would be auxiliaries of the Museum. Walter Witschey would call the shots, and there would probably be a power struggle on both sides. . . The VAS is just not ready to give up its baby for adoption.⁸¹

⁸⁰"Minutes of Council," November 5, 1995. *Virginia Journal of Science* 1(1996), pp. 55-56.

⁸¹Elsa Falls to Charlotte Webb. Phone conversation. March 27, 1997.

Further, the “slippage” over the commitment of time that Maurakis was supposed to have made to the VJAS--a slippage exacerbated by the fact that the VAS had inadequate documentation for its expectations--certainly aroused negative feelings within Council regarding its relationship with the SMV. And probably the final negative reinforcement was Witschey’s comment concerning the “stunningly large” amount of square footage the VAS expected to be provided.

That the Science Museum would want to be involved in or, as members of the VAS charged, “take over” the Junior Academy is understandable. What better way could there be to reach the youth of the Commonwealth than to sponsor the annual meeting of the VJAS? There at hand was a ready audience, whose presence on Museum premises would continue to justify the monies that the state had invested in the agency. Further, the SMV obviously understood that the Academy had a series of problems which turning the Juniors over to the SMV would solve. For example, there was the issue of space, the central location of Richmond itself, and the on-going presence of a staff that could turn its full attention to the VJAS. Furthermore, the Science Museum could assume that the VAS membership would continue to be able to give the SMV support in helping to run the program of the annual meeting. Yet in the end, two very different interpretations exist. According to the VAS, the question of the final positioning of the Junior Academy boiled down to one of ownership: each group, the VAS and the SMV, wanted control over the organization. For the Science Museum, the question centered around compromise: each organization would contribute to the VJAS in the manner in which they were best qualified. Such conflicts are very difficult to bring to an equitable and satisfactory resolution. While the part-time position has not been returned to the VAS, at the present time, the relationship between the two organizations is on better ground.

Part III. Concluding Remarks

In sum, 1990-1995 marked the gradual close of a period of transition for the Virginia Academy of Science and the beginning of a new phase of its institutional history. Following a rough period of membership decline and changing membership composition, the leadership of the Virginia Academy of Science realized that while its mission may not have changed, its audience had. Younger scientists, scientists from small liberal arts colleges, private schools, and community colleges, and graduate students comprised the bulk of the Academy, and programs and expectations needed to be adjusted accordingly by the leadership of the VAS.

CONCLUSION

Reflecting, Reinventing, and Reconnecting:

Networking and Professionalizing in the Virginia Academy of Science

As the century in which multidisciplinary state academies of science have "come of age" draws to its close, it is appropriate to evaluate the position of the Virginia Academy of Science. In the late twentieth century, the Virginia Academy is a vastly different institution from the organization established in 1923 by Ivey Lewis and his small coterie of science educators. And, as we have seen, such a transformation is not surprising. For a history of an academy of science is a history of people--a reflection of their personal motives and of the intellectual, social, and political context in which they work and live. As society and its attendant scientific enterprise have changed over the years, so, too, has the Virginia Academy evolved, gradually altering its activities, membership, and structure in attempts to best serve the perceived needs of the men and women from whom interest and support seemed most likely to come. Indeed, it is the Academy's attempts to capitalize upon its strengths and accept the changes relative to shifting cultural and scientific norms that has characterized its nearly three-quarters of a century-long life.

Originally, the founders of the Virginia Academy of Science envisioned an association capable of offering camaraderie, encouraging research, and, perhaps, facilitating and eventually providing a publication outlet. And as Virginia scientists--much like their counterparts in the rest of the south--began the slow process of carving out a professional niche for themselves, they increasingly viewed the Virginia Academy as a necessary vehicle to professional status. During its early years, the Virginia Academy of

Science was a reasonably effective, if not always forceful, advocate not only for Virginia scientists but also science education. For example, within its first two decades, the VAS had affiliated with the American Association for the Advancement of Science, secured a seat on the policy-making State Education Commission, initiated the Virginia Junior Academy of Science, lobbied on behalf of environmental conservation, provided a forum for presentation of scholarly papers, created a research fund, and established a small publication venue. One need only look at the steady increase in VAS membership from 1923 until World War II--from 135 members to 912--as evidence of an interest in and perceived need for a statewide, multidisciplinary, scientific organization in the Commonwealth.

With the advent of World War II and the departure of so many male citizens for military duty, membership numbers dipped, hovering around 640. By sponsoring broad, long-term projects focusing less on the individual scientist and more on the larger task of developing science within the state, the Virginia Academy of Science--despite loss of membership--managed to maintain a high level of productivity throughout the war years. Participating in the Southern Institute for Science and Industry, promoting the concept behind the Virginia Institute for Scientific Research, and setting the wheels in motion for publication of The James River Basin--Past, Present, and Future were all important endeavors the VAS initiated during wartime.

World War II and its aftermath revitalized the economy of Virginia, giving new life to her institutions of higher education--in particular to the area of science. During the late 1940s and early 1950s, hiring more scientists, establishing modern research facilities, and creating rigorous graduate programs became par for the course, especially within the Commonwealth's larger universities. Additionally, both private and public sector

industries provided opportunities for scientists to expand their professional activities and horizons. Not surprisingly--given these new levels of economic and social support--Virginia scientists steadily moved into the national professional scene. Within this national context, many Virginia scientists no longer saw the Virginia Academy of Science as one of the primary avenues for their professional advancement.

Though this shift in perception of the organization might at first blush have seemed detrimental to the integrity of the Virginia Academy of Science, the changing attitudes did not act as a roadblock to the Academy's forward movement. Much as it had fifteen years earlier, during the late 1950s the VAS assessed its new situation, redirecting its energy into areas in which it seemingly might best serve its constituents. As the Academy moved into the future, the most vital areas of service came to be providing a forum by continuing the annual meetings, publishing the Virginia Journal of Science, serving as an advocate for the environment, and supporting science education in the public school systems. The leadership of the VAS appeared to be very comfortable with such objectives. Again, in keeping with its earlier patterns of response to social and cultural change, a likely prediction of the years to come is that the Academy probably will continue to try to meet the professional needs of a group of scientists in a similar manner, with the organization showing a flexible response to changes that will take place inside the Commonwealth's community of scientists.

Membership numbers illustrate a part of the ever-changing scene within which the Virginia Academy of Science has operated. Consider the following averages: during the 1950s, the Academy's overall membership fluctuated between 973 and 1022; the following decade, between 1114 and 1402; in the 1970s, from 1360 to 1563; during the 1980s, 1121 to 1494; and in the first half of the 1990s, membership remained between 1200 and 1300,

with the trend appearing to take a slight upward turn as the decade advanced. Such overall fluctuation is common in academies of science. Members are dropped from the roll for nonpayment of dues, many join the Academy for one year only in order to present a paper, and graduate students and younger scientists often move on to institutions out of the state, shifting their memberships as they go. Given the exponential growth in the number of scientists practicing in Virginia since the 1950s, however, one might have expected the Academy's membership numbers to have reflected a concomitant rise.

Individual memberships are not, of course, the only category within the Virginia Academy. A breakdown of the overall membership shows that business memberships have declined since the early 1970s, from twenty-four in 1970, to nineteen in 1980 to thirteen in 1990. Such a decline is of concern to the Academy. However, in 1995, four new businesses joined, and there currently is interest and support within the leadership for recruitment of additional business members. Student memberships, in contrast to the fluctuation within individual senior members and businesses, has shown a steady increase. Over the past twenty-five years, the number of student memberships consistently has risen. There were sixty-three students in 1973 who held membership in the Academy. One decade later, the number had more than doubled, to 138, and in 1990, the figure had risen to 264. In 1995, the number has gone up to 307, and the projection for future growth is positive. Such a trend is in keeping with the present objective of the Virginia Academy of Science to encourage and support young scholars.

Business memberships and students have not, however, been the core constituency of the Academy. Much as it has since the 1960s, the VAS continues to draw members primarily from the academic community. In this respect, the VAS is similar to other southern state academies of science. In Virginia, as elsewhere, scientists from industry and

government and high-school teachers comprise less than ten percent of the overall membership of the Academy. In commenting on the composition of current membership, Elsa Falls of Randolph-Macon College and President of the VAS from 1994 to 1995, pointed out:

If we look back at recent years and consider where the people instrumental to the operation of the Academy are from, we see that more and more younger people are coming from community colleges and small liberal arts institutions, while only the more senior members come from research universities.¹

Falls continued, remarking that, for the most part, the Academy was not getting the level of support it would like from the major research institutions. Not surprisingly, she said, given the membership statistics, graduate students increasingly are giving the papers in the sections. A cursory look at abstracts from 1985 to 1995, for example, reveals that two authors often are listed. In many cases, one is a graduate student and the other a professor. And the VAS encourages graduate student participation, even offering a "Best Student Paper Award." It appears, then, that over time Virginia scientists have come to regard the Academy's annual meeting as a friendly environment where, for example, younger scientists and graduate students might deliver scholarly papers, more established scientists might present a paper to gain priority for work they will soon deliver elsewhere or to offer results of research that is regional in nature, or where research ideas might be exchanged in an interdisciplinary environment.

Over the years, annual meetings have remained a vital activity of the VAS. On the basis of an analysis of abstracts of presentations from each year's annual meeting published

¹Elsa Falls to Charlotte Webb. Phone interview. March 27, 1997. Ashland, Virginia.

in the Virginia Journal of Science, on average, Academy members have delivered 230 papers per meeting since the 1960s. The number of sections has risen--from twelve in 1960 to sixteen in 1976 to nineteen in 1995. Thus, while the level of overall presentations has remained relatively consistent over thirty-five years, participation in individual sections has declined or allegiance to a section has shifted--for example, from Astronomy, Mathematics, and Physics to Computer Science. While one might assume that the greater number of scientific positions in the state academic institutions would result in greater participation within the discipline-based sections, that obviously has not occurred. This fact is probably a reflection of the inclination of senior scientists to present papers in other forums that have the advantage either of being refereed or are of greater prestige.

The presentation of papers alone has not been the single focus of intellectual activity within meetings of the VAS, for in addition to the regular paper presentations in individual sections, the Virginia Academy of Science has consistently sponsored symposiums on a wide variety of topics ranging from "Planning for Technical and Scientific Post High School Education in Virginia" (1965) to a "Symposium on a Museum of Science in Virginia" (1969) to "Biota of the Virginia Barrier Islands" (1990). It is worthy of note that these symposia reflect the special interests of the Commonwealth, in contrast to individual papers, where the research focus of the individual scientist and his or her students is on display. The symposia therefore represent a tie between the needs of the state and the services of the Academy.

This same linkage appears in the Virginia Journal of Science, another visible indication of the staying power of the Virginia Academy of Science in changing times. In addition to issuing an annual directory and publishing the proceedings of the annual meeting, the Journal publishes articles which are generally regional in nature. As Golde

Holtzman stated in March, 1997: "The Virginia Journal of Science is a worthy publication, especially for biologists and naturalists describing local flora and fauna."² The Journal also publishes articles treating aspects of the nature of science and of science education. Articles of this type have ranged from Michael Bentley's "On the Teaching of Origins" (1981) to Alvin Pettus's "Perceptions of Science: Changes Needed" (1992) to Ertle Thompson's "Federalism and Its Impact on NSF Grants and the Training of Teachers" (1983).

In recent years, the publication of the Journal--while still requiring an enormous amount of work--has been smooth, causing little concern among the leadership of the Virginia Academy of Science. In part, this can be attributed to three factors. First, Virginia scientists have recognized the value of supporting a regional publication that does not attempt to compete with national journals. A second factor is the ten year (and continuing) editorship of James Martin--a major accomplishment in continuity, considering that Martin was appointed as the tenth editor in twenty-five years. And third, advances in desktop publishing have removed the need for numerous steps in the printing process, making it easier to keep the VJS on schedule and lowering publication costs.

While the purpose of the annual meeting and the Journal is to serve directly the members of the Academy, the Virginia Academy of Science works directly with the people of Virginia through its service orientation. A primary objective of the VAS throughout its history, and especially after World War II, has been environmental advocacy. In many respects, the Academy has been successful in this task, from, for example, drawing attention to the plight of Seashore State Park at Virginia Beach in the late 1950s and early 1960s, to the lobbying for a variety of different "eco-causes" during the 1970s. The

²Golde Holtzman to Charlotte Webb. Email interview, March 27, 1997.

1970s as well brought the Academy to public notice when it served as the Advisory Committee to Governor Godwin throughout the Kepone crisis, while in the 1990s the VAS served as watchdog in the WISTAR rabies vaccine trials.

Not all of the Academy's efforts in the service of the Old Dominion have had the impact the Academy desired, usually because of implementation difficulties within the Academy itself. The Great Dismal Swamp project was initiated in 1952 with two goals in mind: first, to introduce the citizens to the natural wonders of the state and, second, to educate the public as to the vital importance of the swamp to the region's ecosystem. More than twenty years later, the Virginia Academy of Science shelved the project--the unfortunate victim of often unforeseeable administrative problems within the Academy. Such cases remind us that the VAS is a volunteer organization and its successes are often the result of the vigor and staying power of individual members.

It is in the area of science education, however, that the Virginia Academy of Science arguably has made and continues to make its most important contribution to the Commonwealth. Given the analyses of the woeful condition of public school science education in the latter decades of the twentieth century, the VAS has made efforts in an important area where there has been and continues to be a real need. For over twenty-five years, the Academy has offered a Visiting Scientists Program through which, free of charge, secondary school teachers may request scientists to come to their classroom and discuss a wide range of issues. Through the Science Education Committee, the VAS faithfully has fought for the highest of pedagogical standards among the region's high-school science teachers. In addition, the committee has lobbied for a rigorous, up-to-date science curriculum, and from time-to-time has been involved in battles over textbooks, over what should be taught and how, funding for new educational technologies, and support for

hands-on experiences to accompany book-based learning in the middle and elementary schools. At its annual meeting, the Academy has long supported a Science Education Section in which pedagogical techniques might be discussed as well as other ways of stimulating an interest in science. Beginning with its first symposium in 1965--"Planning for Technical and Scientific Post High-School Education in Virginia"--the VAS has sponsored numerous symposiums designed to address issues of quality in science education. And, in 1975, the Virginia Academy of Science co-sponsored its first Annual State Science Teacher's Conference, an activity which continues in the 1990s. As important as these efforts have been, however, they are overshadowed by the Virginia Junior Academy of Science.

For the past fifty-four years, the VAS has sponsored the Virginia Junior Academy of Science. Instituted to stimulate scientific awareness among Virginia's junior-high and high-school students, the VJAS has grown into an extraordinary volunteer endeavor. In 1991, long-time VJAS Director Dean Decker estimated that the Junior Academy required on average 15,000 volunteer hours per year--including all judges, committee members, teachers, and readers. In addition, the director of the VJAS donates about 1000 hours per year. This commitment of time and energy has been greeted with tremendous enthusiasm among young Virginians, who throng to the annual Junior Academy meeting in ever-increasing numbers and whose excitement over the research they do and the results they present is obvious to the most casual observer.

Given this level of support on the part of the members of the Academy, it is not surprising that from the early 1980s on, the VJAS grew remarkably. This growth is amply testified to by the numbers of papers submitted and presented and by the number of overall attendees. Consider the following chart:

<u>Year</u>	<u>Papers Submitted</u>	<u>Papers Selected</u>	<u>Attendance</u>
1981	373	212	400
1982	497	335	450
1983	612	349	658
1984	819	454	1298
1985	1018	538	1395
1986	1218	613	1030
1987	1376	668	1519
1988	1416	620	1219
1989	1356	602	1139
1990	1441	635	847
1991			
1992	1447	705	1020
1993	1694	710	1100
1994	687		
1995	1820	720	1183 ³

On average, the Junior Academy has selected about forty-five percent of papers submitted for presentation at the Annual Meeting. In 1987, Ertle Thompson of the Science Education Committee conducted an informal, written survey at the Virginia Junior Academy of Science's sponsors' meeting in which he asked the local sponsors, among other things, to estimate the percentage of student papers that they turned down prior to selecting the papers to be submitted to the VJAS for consideration. The average was eighty-five percent. From this data, Dean Decker estimated that during the late 1980s, over 18,000 students were involved in some level of the Junior Academy process.

Given this large number of students, there is a sense in which these statistics are misleading. For despite the seemingly high-level of participation, only about seventeen

³ James Martin to Charlotte Webb. Interview. March 25, 1997. Richmond, Virginia; and Dean Decker to Charlotte Webb. Phone interview. March 26, 1997. Numbers missing in this chart were either not available, as was the case for 1991, or there was considerable discrepancy.

percent of the schools in the Commonwealth currently are affiliated with the Virginia Junior Academy of Science--more or less the same as the twenty-percent affiliation in the 1950s. Participation from the southwest corner and southside region of the state is lacking notably--a phenomena attributable to various factors, from geographic isolation to smaller class size to the educational level of many adults of these regions. Whatever the causes for this lack of participation, the VAS has been concerned for some time and has considered various ways in which it might reach these students.

For the past seven years, the Virginia Academy of Science has discussed the concept of regionalization as a way of increasing the accessibility of the Junior Academy to all geographic areas of the Commonwealth, particularly those areas where low participation is typical. If regionalization were to occur, Dean Decker said in March, 1995, about 200,000 more students would be involved in the VJAS. Given the effort that would go into regionalizing the VJAS--primarily doubling the already not-inconsiderable volunteer force and enrolling community colleges and smaller colleges to donate their space and time--it is not likely that the concept of regionalization will become reality any time soon.

The VJAS meets immediately prior to the Senior Academy's annual meeting. In 1995, the Junior Academy offered thirty-seven topic sections, up from twelve in 1981. The winner of each topic section presents his or her paper in the corresponding section of the Senior Academy. This presentation is of great value to the students, as it offers them contact with the professional scientists who make up their audiences. Additionally, awards recognizing outstanding research in a wide variety of areas are given annually. In 1995, nineteen awards ranging from first, second, and third place, and all with monetary value, were presented. For example, the Frances and Sydney Lewis Award bestows \$13,000 over four years for the best effort by a student in grades nine through twelve in the field of

environmental science. Another award provides two students and two alternates with the opportunity to present their papers at the American Junior Academy of Science that is held annually at the national AAAS meeting. Yet another gift comes from a company; in honor of its past chair, W.W. Berry, Virginia Power presents ten shares of common stock to the winner of the best engineering paper.

While one does not want to minimize the impact of the awards themselves to the young student winners, the most important aspect of the VJAS is its potential influence on the future lives of the participants. For the majority of students, the Junior Academy of Science broadens and strengthens their understanding of and commitment to science. Others, however, go into careers that are tied to the early experiences they enjoyed through the Virginia Junior Academy of Science. Indeed, Dean Decker estimates that one in every five Junior Academy member enters a scientific profession. All told, the VJAS contributes to a citizenry carrying a public understanding of science and an interest in the natural and physical worlds--not an unimportant legacy as America moves toward a twenty-first century in which science and technology are likely to drive the economic and probably the socio-political machinery of state. In many respects, then, the Virginia Junior Academy of Science has become the most important outreach arm of the Virginia Academy of Science and, many feel, its primary focus. The Junior Academy's importance and success is such that it is not uncommon to hear an Academy member refer to the relationship between the VAS and the VJAS as a classic case of the tail wagging the dog. In this situation, however, given the solid professional footing on which Virginia scientists appear to find themselves and the state's chronic weaknesses in science education, the Academy's highly effective support of young people is both necessary and desirable.

In yet another example of outreach, the Science Museum of Virginia is a highly visible accomplishment of the Virginia Academy of Science. Its creation traces back to action from as early as 1933, and the final push that established the Museum was the result of the efforts of number of players, particularly Academy members Rae Carpenter and Roscoe Hughes. Indeed, the assertive and determined leadership of these two men was essential to the birth of the Museum. Of particular mention is their skill in marshaling the members of the VAS to provide the necessary political support for the project. To this day, the Science Museum names as its founder Roscoe Hughes. In 1995 alone, 350,000 people of all ages visited the Museum, while approximately eight outreach programs served 150,000 more people. And teacher-training programs sponsored by the Museum have raised the quality of science education among countless students.

A final area where an analysis of the VAS at the midpoint of the 1990s is appropriate lies in the area of finance. Although the Virginia Academy of Science works within strict financial parameters, as do all state academies of science, it is in excellent fiscal shape. Currently, the Academy boasts assets in the neighborhood of three times its annual liability. The combined assets of all funds--General, Research, VJAS Endowment, and the Legacy 75--totaled \$388,136 in 1995, representing a three-year growth of nearly \$90,000. Except in the case of an occasional external grant, the Academy is completely self-sufficient, maintaining operations without subsidy from any other institution or from the state. While this financial stability exceeds that of other southern state academies of science, the financial holdings of the Academy are still modest in comparison to other state pedagogic and scientific agencies or institutions. Consequently, with the exception of initiatives involving the Junior Academy of Science, the VAS does not show any signs of expanding its current programs and operations. This caution in regard to fiscal matters is, indeed, typical of the Virginia approach to expenditure, which manifests itself in, for

example, the Commonwealth's constitutional mandate to present and to remain within balanced budgets.

The remaining question to be addressed, then, is not whether the Virginia Academy of Science will continue to try to meet the professional needs of Virginia scientists, to promote scientific inquiry within the state, and to help form the expectations that citizens should hold for science in the region. Indeed, if the organization's almost seventy-five year history is any indicator, the Academy will continue to pursue these goals. Rather, the question is whether the association's past methods for achieving its institutional goals will continue to be effective in the changing environment of the late twentieth century. Throughout its history, the VAS has undertaken its initiatives via what long-time member Rae Carpenter refers to as the "Old Boys' Network" or the "extended family of the Academy." In a recent interview, Carpenter reminisces:

We were very much a family. Our ties ran deep and strong. Not only were real families represented through the generations--such as mine, the Gilmores, the Murrays, and the Robesons, but also academic families. The Old Boy Network was very much alive in Virginia. Many high-school teachers and devoted Academy members such as Vera Remsburg were taught by George Jeffers at Farmville and were known throughout the state as Jeff's girls while those studying biology for their doctoral degrees under Horton Hobbs at UVA were known as Hobbs' boys. When we got our degrees, our major professors would call around to their cronies at other departments, or visit at the VAS annual meetings and say: "Hey I've got a biologist or a physicist who needs a job. Who needs a biologist? Who needs a physicist?" And that was the family job search.⁴

Until recently, Carpenter continued, the presence of the "Old Boy Network" was pervasive. Politicians and devoted Academy members Senator Lloyd Bird and Secretary of Commerce Maurice Rowe created many linkages between the Academy and the state government. Ed Harlow, Rudolph Gladding, Arthur Burke, Blanton Bruner, and Rupert

⁴Rae Carpenter to Charlotte Webb. Personal interview III. May 8, 1997. Lexington, Virginia.

Hamner, to name a few--all long-time members of the Academy--were at the highest levels of corporate management in Virginia and brought the monetary and administrative support of their respective businesses to the VAS. Frank Kizer, State Science Supervisor for many years, was the mentor of Joe Exline, his successor; both were members of the VAS and fully supportive of the Academy's long-standing commitment to raising the standards of science education. In this "family" or "Old Boy" system, then, well-placed members and friends of the Academy mobilized both personal and institutional resources to support the work of the organization and its position within the larger political and economic competition for resources and standing.

While references to "Old Boy" systems carry with them a pejorative flavor in today's politically-correct environment, there is another way to look at this set of relationships. Viewed from this other perspective, the Virginia Academy of Science may be seen as the center of a large web of negotiations. From the interaction between two members of its executive committee to the lobbying of the General Assembly for a state museum of science to the response to a controversial decision by the Governor to cut funding for research or science education, the concerted influence of the negotiators was brought to bear for the Academy's purposes--purposes that supported the interests not only of academic and professional scientists but also of science itself within the public arena. Additionally, all such negotiations contributed to the continued healthy existence of the Virginia Academy of Science as well as to its level of apparent power--or lack thereof--within the Commonwealth. At its foundation, then, the Virginia Academy is, to use the terminology of science studies scholars Bruno Latour and Michel Callon, a "network of people and things"--resources--held together by their interaction. Latour suggests that the effectiveness of such networks is predicated both on the political or social power of the

individual participants and on the freedom of these players to act on behalf of the group when mobilized.

Regardless of what model we employ to understand the workings of associations--the traditional "Old Boy" or the Latourian network of people and things--for the Virginia Academy of Science to function effectively, three components must be present. First, a portion of members must hold consequential positions and possess both the discretion and the willingness to make decisions critical to the status of the Academy. Second, the members within the network must have access to sought-after resources. And third, the Academy as a network must have the ability to affect the larger community's decisions at both the local and at the state level concerning questions critical to the operation of the Academy.

Until recently, the Virginia Academy of Science through personal negotiations was able to position itself at the center of a solid web of influence. Members of the VAS enjoyed sufficient stature either within academia or within the social structure of the greater Commonwealth to assure the effectiveness of each component of the network. However, current trends within the Commonwealth, and even more importantly, trends within the larger world of academia and science, do not suggest that the Academy membership will be able to continue to meet these requirements. First and foremost, senior members of the VAS must have solid, professional standing within the world of their academic peers. That is, as a group, they must be respected as scientists if they are to exert influence within the Commonwealth's colleges and universities or to have any impact on the body politic in those matters affecting science, science education, or environmental concerns on which the VAS has chosen to focus.

If the weakening of the web were simply a question of loss of clout on the part of individual members, then the Academy could continue conceivably to operate as it has in the past, working to recruit regular members with high prestige. Because of the shared scientific enterprise and the common environment, these people could be expected to cooperate with one another in maintaining the network set in place by their forebears in the VAS. This is not the situation, however. Personal ties of the sort described by Carpenter are no longer sufficient to "win the day." Science, academia--the Commonwealth itself--have become sites of fierce competition, and in this competitive environment, impersonal rules have taken over the prerogatives of individuals. For example, the department chair, who once might have taken into the junior faculty a candidate on the recommendation of a colleague, is no longer in a position to be so "arbitrary." There are at least two reasons for this. One is the dominance of the rules. Theoretically, no position within the Commonwealth's academic institutions can be filled without going through a set of elaborate procedures designed to shake the institutions loose from the very methods of selecting people that supported the extended family--or the Latourian network--of the VAS. Second, each institution--each department--is driven to produce research and students. If it does not, a department will lose funding or worse, its very existence. As a consequence, department chairs must take the most productive individual available on the market, and various departments have differing models of productivity that causes them to see junior faculty through very narrow lenses indeed. These two forces, the dominance of the rules and the definition of productivity, establish a situation where the people who once made up the human part of the network lose cohesive force.

Resource allocation presents a very similar scenario. Once again, impersonal rules govern the distribution of resources throughout the Old Dominion, particularly among universities and colleges, where formulae produced by the State Council on Higher

Education in Virginia can come down like the wolf on the fold when a department regarded by its institution as important is judged by the formula to be of questionable value.

Resources--from equipment to salaries--are determined by these rules. In this scenario there is, of course, always present the ability of the historically powerful state institutions to jump over these formulae. The University of Virginia, for example, is often able to affect its own funding, but the fact remains that the resources accessible to the network through which the VAS has worked are controlled by institutional forces that are generally beyond the ability of the present Academy to affect. To a very large extent, the fiscal resources that once funded the scientific enterprise of the Commonwealth are hard for any Virginian to influence, since they flow largely from federal dollars. Consequently, while Virginia's scientists may be uncertain of their status, so too are the power brokers in academic institutions and supporting organizations such as state academies of science across the nation. Status is everywhere in doubt.

The status of the Virginia Academy of Science itself has been a function both of the aggregate prestige and influence of its individual members and the ways in which the Academy's organizational leadership has chosen to deploy that clout. Here too, the future of the Academy does not seem bright. It is not simply a question of the absence of first-rank senior scientists within the power structure of the Academy--although, of course, that represents a potential problem. But the fact is that for many societal and economic reasons, regional organizations cannot hold a position of exclusive authority or access within the state. For example, very active within Virginia have been both the Chesapeake Bay Foundation (CBF), based in Maryland, the Environmental Defense Fund (EDF), and People for Ethical Treatment of Animals (PETA). A question concerning the natural environment or of animal rights can hardly be raised before these non-regional groups have come forward with positions and courses of action. Not only is a state-based group like

the VAS of reduced influence in this new interconnected world, but the slow-moving response that is a necessary condition for academic scientists whose main interest lies in their professional lives makes little impact, at least in the public eye.

This is not only the age of "downsizing," to which academic institutions in Virginia have already been subject, but also of "global information exchange" as well. The watchword for the day is "market forces," and the conservative, political machine that now operates so smoothly in Virginia is committed to abiding by the market's rule. If the Commonwealth could buy expertise in environmental design more cheaply from Japan, or if it could import Distance Learning from California or Massachusetts for less money than paying home-grown professors, for example, it would violate the laws of the market and incense the electorate if it failed to do so. Those who live by the sword die by the sword.

The somewhat old-fashioned networking methods of the Virginia Academy of Science do not comport well with these more raw and impersonal conditions. Not only is there a problem with the road-blocks thrown-up by rule making, but also, oddly enough, the Academy has failed to take advantage of some of the technological resources that are most widely used within the general profession of science for modern networking. For example, as of 1995, the Academy had neither a homepage nor a listserv. And, a significant percentage of the membership has stated they do not see the need for such tools.

Networking and organization-building are also among the bag of tricks that public relations experts can supply. Yet here, too, with the exception of a minor campaign in the early 1990s to raise money for the directorship of the Virginia Junior Academy of Science, public relations efforts on behalf of the Academy have been almost non-existent. In chapters Five and Six, I presented the Virginia Academy's idea of building membership as

one in which everyone in Council was asked "to bring one friend to the next annual meeting. . . or to publicize the Virginia Scientists. " It is clear from discussions with the senior members that they do not feel comfortable with more aggressive methods of attracting members. I take no position here regarding the ethical character of the current recruiting practices of the Academy. It is, however, my opinion that if the Virginia Academy of Science is to enter the twenty-first century as more than a comfortable club for aging faculty and science practitioners, it must develop a more realistic assessment of the conditions in which it now finds itself, and it must develop new approaches to help it survive and grow in these conditions. Surely the threatening atmosphere of the nineties will eventually ameliorate; surely the reliance on institutional rules and formulae as substitutes for personalized decision-making will shift. But for the VAS to be there when the times become more promising, the organization must make it through the current atmosphere with a strong membership base and a claim on resources with which it can build a new network.

A starting place for the reassessment that I regard as imperative might be to set up a team consisting of science studies analysts, public relations professionals, and experienced electronic network providers. All of these people could actually come from universities: from science studies programs, from schools of business, from departments of computer engineering or electrical engineering. This team might take the analysis I offer herein as a starting point, and, using their own analyses and talents, construct a strategy that would allow the Virginia Academy to move into the next century in a position of surety, if not power.

For seventy-five years, the leadership of the Virginia Academy of Science has worked hard in support of education, of the environment, of the Commonwealth and its

multiple communities. I believe that there is a place for a state academy of science, and there is a role, and there is a need for a neutral, informed and informing body of scientists who support education, the need of the body politic for analysis and advice, and human beings for support and nurture in their professional lives. The Virginia Academy of Science can and should fill those needs. But to do so, it must change. There could be no better time for a group with the internal cohesion and the record of perseverance than the VAS to take stock, to take up the challenge, and to meet with new plans the new day.

WORKS CITED

Published Sources

- Andrews, M. Carl. No Higher Honor: The Story of Mills Godwin, Jr. Richmond: 1970.
- Astell, Louis. "How State Academies of Science May Encourage Scientific Endeavors Among High-School Teachers." Science LXX, May, 1930.
- Atkinson, Frank B. The Dynamic Dominion: Realignment and the Rise of Virginia's Republican Party Since 1945. Fairfax, Virginia: George Mason University Press, 1992.
- Baatz, Simon. Science in the Metropolis. New York Academy of Sciences. New York: 1990.
- Baker, Claude. History of the Academy Conference, 1926-1952. Washington, D.C.: AAAS, 1952.
- Barker, Peter and Roger, Ariew, Eds., Revolution and Continuity. Washington, D.C.: The Catholic University of America Press, 1991.
- Bates, Ralph A. Scientific Societies in the United States. Cambridge: MIT Press, 1965, 3rd edition.
- Bayley, W.S. "The Place of State Academies of Science among Scientific Organizations." Science (June 1, 1923), pp. 623-29.
- Beagle, Ben and Ozzie Osborne. J. Lindsay Almond: Virginia's Reluctant Rebel. Roanoke: 1984.
- Beale Howard K. A History of Freedom of Teaching in American Schools. New York: Octagon Books, 1974. (copyright 1941, Charles Scribner's Sons, renewal, 1969 by Georgia Robinson Beale, reprinted in 1974 by Octagon Books).
- Beer, John J. and W. David Lewis. "Aspects of the Professionalization of Science." Daedalus 92(1963), pp. 754-84.
- Ben-David, Joseph. "Science as a Profession and Scientific Professionalism." In Explorations in General Theory of Social Science: Essays in Honor of Talcott Parsons. New York: The Free Press, 1976, pp. 874-888.
- Ben-David, Joseph. Scientist's Role in Society. New Jersey: Prentice Hall, Inc., 1971.
- Beneviste, Guy. The Policy of Expertise. Berkeley: Glendessary Press, 1972.

- Bennett, Harry J. "The First Half-Century of the Louisiana Academy of Science, 1927-1977." Proceedings of the Louisiana Academy of Science 45(December, 1982), pp. 8-88.
- Bentley, Michael. "On the Teaching of Origins." Virginia Journal of Science 32(1981), p. 2.
- Berger, Carl. Honour and the Search for Influence: A History of the Royal Society of Canada. Toronto: University of Toronto Press, 1996.
- Biggs, Thomas H., ed. Geographic and Cultural Names in Virginia. Charlottesville: The University of Virginia Press, 1974.
- Bledstein, Burton J. The Culture of Professionalism: The Middle Class and the Development of Higher Education in America. New York: W.W. Norton & Company, 1976.
- Boston Society of Natural History. The Boston Society of Natural History, 1830-1930. Boston: The Boston Society of Natural History, 1930.
- Boyd, Paul. "The Future of the State Academy of Science." Science (June 11, 1920), pp. 575-580.
- Brown, Alexander Crosby. Juniper Waterway: A History of the Albemarle and Chesapeake Canal. Charlottesville: University of Virginia Press, 1980.
- Bruce, Robert V. The Launching of Modern American Science, 1846-1876. New York: Cornell Press, 1987.
- Buni, Andrew. The Negro in Virginia Politics, 1902-1965. Charlottesville: University of Virginia Press, 1967.
- Callon, Michel, John Law, and Arie Rip, Eds. Mapping the Dynamics of Science and Technology. London: MacMillan, 1986.
- Callon, Michel. "Some elements of a sociology of translation: domestication of the scallops and fishermen of St. Brieuc Bay." In John Law, ed. Mapping the Dynamics of Science and Technology. London: MacMillan, 1986.
- Carson, Rachel. Silent Spring. Boston: Houghton Mifflin Company, 1962.
- Cash, Wilbur. The Mind of the Old South. New York: Vintage Books, 1941.
- Clowse, Barbara Barksdale. Brainpower for the Cold War: The Sputnik Crisis and the National Defense Education Act of 1958. Westport, Connecticut: Greenwood, 1981.
- Cobb, James C. The Selling of the South: The Southern Crusade for Industrial Development, 1936-1980. Baton Rouge: Louisiana State University Press, 1982.
- Commonwealth of Virginia Inaugural Address and Addresses Delivered to the General Assembly of Virginia. Richmond: Commonwealth of Virginia, 1966.

Crawley, William Bryan, Jr. Bill Tuck: A Political Life in Harry Byrd's Virginia. Charlottesville: University of Virginia Press, 1978.

Dabney, Virginius. The New Dominion. New York: Doubleday and Company, Inc., 1971.

Daniels, George S. "The Process of Professionalization in American Science: The Emergent Period, 1829-1860." Isis 58(1967), pp. 151-166.

Dupree, A. Hunter. "The Great Insaturation of 1940: The Organization of Scientific Research for War." In Gerald Holton, ed., The Twentieth Century Sciences: Studies in the Biography of Ideas. New York: Norton, 1972.

Dupree, A. Hunter. Science in the Age of the Federal Government. Massachusetts: Harvard University Press, 1957.

Edds, Margaret. Claiming the Dream: The Victorious Campaign of Douglas Wilder of Virginia. Chapel Hill: Algonquin Books, 1990.

Eisenberg, Ralph. "Virginia: The Emergence of Two-Party Politics." In William C. Harvard, ed. The Changing Politics of the South. Baton Rouge: 1972.

Elliott, Clark A. "Models of the American Scientist: A Look at Collective Biography." Isis 73 (1982), pp. 77-102.

Ellis, William E. "Evolution, Fundamentalism and the Historians: An Historiographical Review." The Historian 44(1981), pp. 15-35.

Ely, James. The Crisis of Conservative Virginia: The Byrd Organization and the Politics of Massive Resistance. Knoxville: University of Tennessee Press, 1976.

England, J. Merton. The Patron of Pure Science: The National Science Foundation's Formative Years. Washington, D.C.: GPO, 1983.

Foster, Dean. "Colonel Robert Patrick Carroll: A Retrospective." VMI Alumni Review. Lexington, Virginia: Spring, 1994.

Friddell, Guy. Colgate Darden: Conversations with Guy Friddell. Charlottesville: The University of Virginia Press, 1978.

Fulton, John F. "Science in the American University, 1636-1946." Bulletin of the History of Medicine 20 (1946).

Gardner, Wright A. "The Organization of the Alabama Academy of Science." Journal of the Alabama Academy of Science 3(1932), pp. 7-9.

Gates, Robin L. The Making of Massive Resistance: Virginia's Politics of Public Desegregation, 1954-1956. Chapel Hill: University of North Carolina Press, 1964.

Gatewood, William B., ed. Controversy in the Twenties: Fundamentalism, Modernism, and Evolution. Nashville: Vanderbilt University Press, 1969.

- Geiger, Roger L. To Advance Knowledge: The Growth of American Research Universities, 1900-1940. New York: Oxford University Press, 1986.
- Giddens, Anthony. The Class Structure of Advanced Societies. London: Hutchinson, 1973.
- Gilkey, Langdon. Creationism on Trial: Evolution and God at Little Rock. Minneapolis, Minnesota: Winston Press, 1985.
- Gillispie, Charles. "Recent Trends in the Historiography of Science." Bulletin of the History of Chemistry (1994), pp. 19-26.
- Goldman, Eric. The Crucial Decade and After. New York: 1960.
- Goode, William J. "Community within a Community: the Professions." American Sociological Review 22(1957), pp. 194-200.
- Gouldner, Alvin. The Future of the Intellectual and the Rise of the New Class. New York: Seabury Press, 1979.
- Grabner, Judith V. and Peter D. Miller. "Effects of the Scopes Trial." Science 185(1974), pp. 832-837.
- Greene, John C. American Science in the Age of Jefferson. Ames: Iowa State University Press, 1984.
- Gross, Paul R. and Norman Levitt. Higher Superstition: The Academic Left and Its Quarrels with Science. Baltimore: The Johns Hopkins University Press, 1994.
- Hahn, Roger. The Anatomy of a Scientific Institution. Berkeley: University of California Press, 1971.
- Haller, Mark L. Eugenics: Hereditarian Attitudes in American Thought. New Brunswick, New Jersey: Rutgers University Press, 1963.
- Ham, L.B. "Early History: The Arkansas Academy of Science." Proceedings of the Arkansas Academy of Science 1(1941), pp. 3-6.
- Hargis, William Jennings. "Research, Education, and 'Proper Extension Work:' The First Fifty Years of the Virginia Institute of Marine Science." Williamsburg: William and Mary, 1990.
- Haskell, Thomas L. The Authority of Experts: Studies in History and Theory. Bloomington: Indiana University Press, 1984.
- Haskell, Thomas. The Emergence of Professional Social Science: The American Social Science Association and the Nineteenth-Century Crisis of Authority. Urbana: University of Illinois Press, 1977.
- Hatch, Alden. The Byrds of Virginia. New York: Holt, Rinehart, and Winston, 1969.

- Heinmann, Ronald. "Virginia in the Twentieth Century: Recent Interpretations." Virginia Magazine of History and Biography 94(1986), pp. 131-160.
- Heinmann, Ronald. Depression and the New Deal in Virginia: The Enduring Dominion. Charlottesville: The University of Virginia Press, 1983.
- Hewlett, Richard G. and Oscar E. Anderson, Jr., The New World, 1939-1946. University Park: Pennsylvania State University Press, 1962.
- Hindle, Brooke. The Pursuit of Science in Revolutionary America, 1735-1789. Chapel Hill: University of North Carolina Press, 1956.
- Hofstadter, Richard and Walter P. Metzger. The Development of Academic Freedom in the United States. New York: Columbia University Press, 1955.
- Horsely, J. Shelton. "The Virginia Academy of Science: Our Fifth Estate." Proceedings of the Virginia Academy of Science, 1926-27, pp. 21-28.
- How, W.E. "History of the South Carolina Academy of Science." Bulletin of the South Carolina Academy of Science 1(1935), pp. 2-3.
- Jeffers, George. "A State Academy Charts Its Course." Scientific Monthly (1943).
- Jeffers, George. "Science Clubs in the Schools." Virginia Journal of Education (January 11, 1940).
- Kevles, Daniel J. The Physicists: A History of a Scientific Community in Modern America. New York: Knopf, 1978.
- Kirby, Jack Temple. "Virginia's Environmental History: A Prospectus." Virginia Magazine of History and Biography 99(1991), pp. 449-488.
- Kluger, Richard. Simple Justice, The History of Brown vs. Board of Education and Black America's Struggle for Equality. New York: Knopf, 1976.
- Knorr-Cetina, Karin and Michael Mulkay, Eds. Science Observed: Perspectives on the Social Studies of Science. London: Sage Publications, 1983.
- Knorr-Cetina, Karin and Michael Mulkay. "Introduction: Emerging Principles in Social Studies of Science." In Karin Knorr-Cetina and Michael Mulkay, eds., Science Observed: Perspectives on the Social Studies of Science. London: Sage Publications, 1983.
- Kohlstedt, Sally Gregory and Margaret W. Rossiter. Historical Writing on American Science: Perspectives and Prospects. Baltimore: The Johns Hopkins University Press, 1984.
- Kohlstedt, Sally Gregory. "Institutional History." In Sally Gregory Kohlstedt and Margaret W. Rossiter, Historical Writing on American Science: Perspectives and Prospects. Baltimore: The Johns Hopkins University Press, 1984.

Kohlstedt, Sally Gregory. "Savants and Professionals: The AAAS 1848-1860". In Alexandra and Brown, Sanborn C., eds., The Pursuit of Knowledge in the Early American Republic: American Scientific and Learned Societies from Colonial Times to the Civil War. Baltimore: The Johns Hopkins University Press, 1976.

Kohlstedt, Sally. The Formation of the American Scientific Community: The American Association for the Advancement of Science, 1848-1860. Urbana: University of Illinois Press.

Kragh, Helge. An Introduction to the Historiography of Science. Cambridge: Cambridge University Press, 1987.

Latour, Bruno and Steve Woolgar. Laboratory Life: The Social Construction of Scientific Facts. London: Sage Publications, 1979.

Latour, Bruno. "Give Me A Laboratory and I Will Raise the World." In Karin Knorr-Cetina and Michael Mulkay, eds., Science Observed: Perspectives on the Social Studies of Science. London: Sage Publications, 1983.

Latour, Bruno. Science in Action. Cambridge: Harvard University Press, 1987.

Latour, Bruno. The Pasturization of French Society. Translated by Alan Sheridan. Cambridge, Mass.: Harvard University Press, 1986.

Law, John. Mapping the Dynamics of Science and Technology. London: MacMillan, 1986.

Lomask, Milton. A Minor Miracle: An Informal History of the National Science Foundation. (NSF 76-18) Washington, D.C.: NSF, 1976.

Lux, David. "Societies, Circles, and Academies." In Peter Barker and Roger Ariew, eds., Revolution and Continuity. Washington, D.C.: The Catholic University of America Press, 1991.

MacDonald, William. Science (March 26, 1926), p. 320.

McGill, J.T. "The Tennessee Academy of Science." Journal of the Tennessee Academy of Science 8(1933), pp. 22-33.

Midgette, Nancy Smith. "In Search of Professional Identity: Southern Scientists, 1883-1940." The Journal of Southern History XLIV, 4(Nov. 1988).

Midgette, Nancy Smith. To Foster the Spirit of Professionalism: Southern Scientists and State Academies of Science. Tuscaloosa: University of Alabama Press, 1991.

Montgomery, Scott L. Minds for the Making: The Role of Science in American Education 1750-1990. New York: Guilford Press, 1994.

Morison, Samuel Eliot. The Oxford History of the American People. New York: Oxford University Press, 1965.

Muse, Benjamin. Virginia's Massive Resistance. Bloomington: University of Indiana Press, 1961.

Nelkin, Dorothy. Science Textbook Controversies and the Politics of Equal Time. Cambridge: MIT Press, 1977.

Nelkin, Dorothy. The Creation Controversy: Science or Scripture in the Schools. New York: Norton, 1982.

Numbers, Ronald L. "The Creationists." In David Lindberg and Ronald L. Numbers, eds., God and Nature: Historical Essays on the Encounter between Christianity and Science. Berkeley: University of California Press, 1986.

Numbers, Ronald L. and Janet S. Numbers. "Science in the Old South: A Reappraisal." Journal of Southern History 48(1982), pp. 163-184.

Oleson, Alexandra and Sanborne C. Brown, eds. The Pursuit of Knowledge in the Early American Republic: American Scientific and Learned Societies from Colonial Times to the Civil War. The Johns Hopkins University Press: Baltimore, 1976.

Ornstein, Martha. The Role of Scientific Societies in the Seventeenth Century. Chicago: The University of Chicago Press, 1928 [1913].

Petulla, Joseph M. American Environmental History. San Francisco: Boyd and Fraser, 1977.

Reingold, Nathan, ed. The Sciences in the American Context: New Perspectives. Washington, D.C.: Smithsonian Institution Press, 1979.

Reingold, Nathan. "Definitions and Speculations: The Professionalization of Science in the Nineteenth Century." In Alexandra Oleson and Sanborne Brown, eds., The Pursuit of Knowledge in the Early American Republic: American Scientific and Learned Societies from Colonial Times to the Civil War. The Johns Hopkins University Press: Baltimore, 1976.

Reingold, Nathan. Science in Nineteenth-Century America. London. MacMillan, 1966.

Robinson, J. M. "The Alabama Academy of Science in the Postwar Era." Journal of the Alabama Academy of Science 18(December, 1946), pp. 83-85.

Rosenberg, Charles E. "Science and Social Values in Nineteenth-Century America: A Case Study in the Growth of Scientific Institutions." In Arnold Thackrey and Everett Mendelsohn, eds. Science and Values: Patterns of Tradition and Change. New York: Humanities Press, 1974.

Rosenberg, Charles. "Science in American Society: A Generation of Historical Debate." Isis 74(1983), pp. 356-367.

Rubin, Louis. Virginia: A History. New York: W.W. Norton & Company, 1977.

Rudolph, Frederick. Curriculum: A History of the American Undergraduate Course of Study Since 1636. San Francisco: Jossey-Bass Publishers, 1977.

Sale, J. Kirkpatrick. The Green Revolution: The American Environmental Movement, 1962-1992. New York: Hill and Wang, 1993.

Salmon, Emily J. and Edward D.C. Cambell, Jr. The Hornbook of Virginia History. Richmond: The Library of Virginia, 1994.

Salmon, Jaqueline L. and Sandra Sugawara. "Will Wilder, Business, Get Along?" The Washington Post. November 11, 1991, p. W21.

Sinclair, Bruce. Philadelphia's Philosopher Mechanics: A History of the Franklin Institute, 1924-1865. Baltimore: The Johns Hopkins University Press, 1974.

Sinclair, Bruce. "Science, Technology, and the Franklin Institute." In Oleson, Alexandra and Brown, Sanborn C., eds., The Pursuit of Knowledge in the Early American Republic: American Scientific and Learned Societies from Colonial Times to the Civil War. Baltimore: The Johns Hopkins University Press, 1976.

State Council for Higher Education in Virginia. "Colleges and Universities for the 21st Century: A Report and Proposals for Continued Improvement in Virginia Higher Education." July 10, 1991.

Stearns, Raymond. Science in the British Colonies of America. Urbanna: University of Illinois Press, 1970.

Stehr, Nico. Knowledge Societies. London: Sage Publications, 1994.

Thompson, Ertle. "Federalism and Its Impact on NSF Grants and the Training of Teachers." Virginia Journal of Science 4(1983), pp. 273.

Venable, Francis Preston. "Historical Sketch of the Elisha Mitchell Scientific Society." Journal of the Elisha Mitchell Scientific Society XXXIX(April, 1924).

Vogel, Mark, Debra Price, and Marilyn Thompson. "Boom or Bust." Washington Post Magazine (November 11, 1991), p. W21.

Ware, Stewart. "Prestige and Impact Vs. Usefulness in Biological Journals or Am I Just a Regional Kind of Guy." Virginia Journal of Science 41(1990), pp. 31-40.

Webb, Jane and George Webb. "Kepone: The Poisening of the James River." Smithfield Times, 1978-1979.

Wilcox, Harold E. "State Science Academies." Journal of Southern Research 3(November-December, 1951), pp. 24-25.

Wilhoit, Frances. The Politics of Massive Resistance. New York: George Braziller, 1973.

Wilkinson, J. Harvie, III. Harry Byrd and the Changing Face of Virginia Politics, 1945-1966. Charlottesville: University of Virginia Press, 1968.

Wilson, John T. Academic Science, Higher Education, and the Federal Government, 1950-1983. Chicago: University of Chicago Press, 1983.

Wolters, Raymond. The Burden of Brown: Thirty Years of Desegregation. Charlottesville: University of Virginia Press, 1984.

Worster, Daniel, ed. The Ends of the Earth: Perspectives on Modern Environmental History. Cambridge: Cambridge University Press, 1986.

Younger, Edward and Jane Tice Moore, Eds. The Governors of Virginia, 1860-1978. Charlottesville: The University of Virginia Press, 1982.

_____. "Fate of 'Old Sorrel' May Stir Battle in Confederate Circles." Richmond Times-Dispatch. December 30, 1948.

_____. "Little Sorrell." Bristol Herald-Courier. April 10, 1949.

_____. "Review of Burton J. Bledstein's The Culture of Professionalism: The Middle Class and the Development of Higher Education in America." Social Science Quarterly 58(March 1987), p. 737.

_____. "Virginia Facing Shortfall of \$1.4 Billion in Revenue." The Washington Post (August 2, 1990), p. A1.

_____. The Boston Society of Natural History, 1830-1930. Boston Society of Natural History: Boston, 1930.

_____. The James River Basin: Past, Present, and Future. Virginia: The Virginia Academy of Science, 1952.

Publications of Academies of Science

Virginia Academy of Science. Proceedings, in Proceedings of the Virginia Academy of Science, 1923-24 to 1949-50; Virginia Journal of Science, 1940-42 and 1950-1995.

North Carolina Academy of Science. Proceedings, in Journal of the Elisha Mitchell Scientific Society, 1904-1982.

Journal of Southeastern Research I (October 1949) through 7(December 1956). Interviews, editorials, and reports.

Manuscript Sources

Virginia Academy of Science. Records. Special Collections, Virginia Polytechnic Institute and State University, Blacksburg.

Other Sources

“Committee Amendment in the Nature of a Substitute for House Bill No. 524.”

“Museum of Science Advisory Commission: Report of the Commission to the Governor and the General Assembly of Virginia.” Senate Document No. 3. December 1, 1943.

“Proceedings of the Hearing on a State Science Museum.” January 8, 1969.

“Report of the Virginia Museum of Science Study Commission.” 1969.

“Science in the South.” Barnard and Millington Symposium. University of Mississippi. October, 1981.

“State and White House Conference on Science Education.” Washington, D.C., July 22, 1955.

“Symposium on a Museum of Science in Virginia.” Mary Washington College, May 8, 1969.

Abrams, Jay Harrison, “Professionalism in Public Organizations: The Case of the Research Scientist.” Unpublished Ph.D. dissertation. New York: State University of New York, 1975.

Charles, Allan D. “A History of the Georgia Academy of Science.” Unpublished thesis. Emory College, 1968.

Harshbarger, Boyd. “The History of the Virginia Journal of Science.” Unpublished manuscript. 1960.

Heatwole, Thelma. “History of the Virginia Junior Academy of Science.” Unpublished manuscript. No date. Special Collections, Virginia Tech.

Jeffers, George. “History of the Virginia Academy of Science.” Unpublished manuscript. Special Collections, Virginia Tech.

Johnson, Steven Daniel. “Charles Robb and the Reserved Governorship.” Unpublished dissertation, University of Virginia. January, 1990.

Palmer, George D. Brochure entitled "Scientific Research, the Hope of the South." March 20, 1940.

Rensburg, Vera. "VJAS--Its Beginning and Development from 1941-1973." Presentation delivered at the 50th Anniversary of the VJAS, May 2, 1973.

Robertson, Forbes E. Pamphlet entitled "Methods of Financing the Publications of State Academies of Science." 1942.

Serchuk, Adam. "Federal Giants and Wind Energy Entrepreneurs: Utility-Scale Windpower in America, 1970-1990." Unpublished dissertation, Virginia Polytechnic and State Institute. January 27, 1995.

Stone, Bruce Winchester, "The Role of Learned Societies in the Growth of Scientific Boston, 1780-1848." Unpublished dissertation. Boston University, 1974.

Virginia Military Institute Visitor's Center. Virginia Military Institute. Lexington, Virginia.

Wolfe, Jonathan. "Virginia in World War II." Unpublished dissertation. University of Virginia, 1971.

Interviews

Elsa Falls. Phone interview, March 27, 1997.

Gerald Taylor. Phone interview, March 27, 1997.

Golde Holtzman. Email interview, March 27, 1997.

Mark Wittkofski. Phone interview, March 24, 1997.

James O'Brien. Phone interview, April 9, 1997.

Michael Bass. Phone interview, April 10, 1997.

Harold Bell. Phone interview, April 16, 1997.

Jack Cranford. Phone interview, April 10, 1997.

Betty Blatt. Phone interview, April 18, 1997.

Eugene Maurakis. Phone interview, December 11, 1996.

Jane Carter Webb. Personal interview, October 27, 1996. Newport News, Virginia.

George Randolph Webb. Personal interview, October 26, 1996, Newport News, Virginia.

Alan Powell. Personal interview, March 23, 1995. Richmond, Virginia.

Arthur Burke. Personal interview, April 11, 1995. Richmond, Virginia.

Carolyn Conway. Email interview, April 6, 1997. Richmond, Virginia.

Charles O'Neal. Personal interview, July 12, 1995. Richmond, Virginia.

D. Rae Carpenter. Personal interview, I, March 5, 1994. Lexington, Virginia.

D. Rae Carpenter. Personal interview, II, June 13, 1995. Newport News, Virginia.

D. Rae Carpnetter. Personal interview, III, May 8, 1997. Lexington, Virginia.

Dale Ulrich. Personal interview. April 12, 1995. Harrisonburg, Virginia.

Dean Decker. Personal interview, March 27, 1995. Richmond, Virginia.

Dean Decker. Phone interview, March 26, 1997. Richmond, Virginia.

Dorothy Bliss. Personal interview, April 3, 1995. Lynchburg, Virginia.

E. L. Wisman. Personal interview, March 20, 1995. Blacksburg, Virginia.

Elsa Falls. Phone interview, March 27, 1997. Ashland, Virginia.

Eugene Maurakis. Phone interview, December 16, 1997. Richmond, Virginia.

Frank Kizer. Personal interview, April 18, 1995. Lancaster, Virginia.

Gaylen Bradley. Personal interview, March 17, 1995. Richmond, Virginia.

I.J. Good. Personal interview, April 26, 1995. Blacksburg, Virginia.

J. J. Murray. Personal interview, March 31, 1995. Charlottesville, Virginia.

James Martin. Personal interview, April 13, 1995. Richmond, Virginia.

James Martin. Phone interview, March 25, 1997. Richmond, Virginia.

James Midyette. Personal interview, February 27, 1995. Ashland, Virginia.

Lynn Abbott. Personal interview, March 14, 1995. Richmond, Virginia.

Maurice Rowe. Personal interview, April 4, 1995. Richmond, Virginia.

Paul Siegel. Personal interview, March 30, 1995. Blacksburg, Virginia.

Perry Holt. Personal interview, June 17, 1996. Blacksburg, Virginia.

Peter Mazzeo. Personal interview, February 28, 1995. Washington, D.C.

Richard Brandt. Personal interview, March 14, 1995. Richmond, Virginia.

S.S. Obenshain. Personal interview, June 19, 1996. Blackburg, Virginia.

Stewart Ware. Personal interview. April 4, 1995. Williamsburg, Virginia.

Vera Remsburg. Personal interview, February 21, 1995. Abingdon, Virginia.

Vera Remsburg. Phone interview, January 13, 1995.

Virginia Ellet. Personal interview, April 4, 1995. Richmond, Virginia.

Virginia Rice Webb. Personal interview, March 2, 1996. Norfolk, Virginia.

Walter Flory. Personal interview, July 19, 1995. Winston-Salem, North Carolina.

Warwick West. Personal interview, March 22, 1995. Richmond, Virginia.

William Ham. Personal interview, March 24, 1995. Richmond, Virginia.

CURRICULUM VITAE

CHARLOTTE WEBB
12 Briar Patch Place
Newport News, VA 23606
(757) 595-6420
<charwebb@aol.com>

EDUCATION

Ph.D., Science and Technology Studies, defense date: September 1997
Virginia Polytechnic and State University (Virginia Tech), Blacksburg, Virginia
Dissertation: "Networks and Professionalization: A History of the Virginia Academy of Science, 1923-1995"
Advisor: Albert Moyer

M.S., Science and Technology Studies, defense date: April 1993
Virginia Polytechnic and State University, Blacksburg, Virginia
Thesis: "Science Goes South: John Millington, Frederick Barnard, and the University of Mississippi, 1848-1861"
Advisor: Albert Moyer

B.A., Art History, May 1989
College of William and Mary, Williamsburg, Virginia
Advisor: James D. Kornwolf

HONORS/AWARDS

- Recipient: Grant from Virginia Academy of Science to support writing of the history of the Virginia Academy of Science, Fall 1993-Spring 1995.
- Virginia Tech: Assistantship and tuition waiver, 1991-1995.
- Recipient: "Dean's List," William and Mary, for scholarship, 1986-1987.

RESEARCH INTERESTS

- Nineteenth-Century American Science
- Science in the American South
- Institutionalization and Professionalization of Science
- Relationship between Art and Science
- Science Policy on Local and Regional Levels

TEACHING INTERESTS

- American History, especially Nineteenth-Century and Southern
- History of Science and Technology
- Western Art and the History of Science
- Science Policy

PUBLICATIONS

- Webb, Charlotte, Jane C. and George R. Webb. "Technical Expertise and Public Decisions" in Proceedings of the 1996 International Symposium on Technology and Society, pp. 537-543. Princeton University, Princeton, New Jersey.
- "John Millington" in New Dictionary of National Biography, ed. Colin Matthew. Oxford University Press (Forthcoming).

TEACHING EXPERIENCE

Adjunct Faculty, History Department, De Paul University, Chicago, IL

- World History, 219. Course Title: "World History from 1500 through WW I." Fall 1997.

Adjunct, Instructor, History Department, Concordia University, River Forest, IL

- American History, 101. Course Title: "History of the American People from the American Revolution to the Present." Summer, 1997.

Instructor, History Department, Virginia Tech, Blacksburg, VA

- American History, 1115. Course Title: History of the United States to 1877." Fall 1995.

Graduate Teaching Assistant, Center for Programs in the Humanities, Virginia Tech, Blacksburg, VA

- "Introduction to Humanities, Science, and Technology." Fall/Spring 1991-1992.
- "Introduction to Humanities, Science, and Technology." Fall/Spring 1992-1993.
- "Introduction to Humanities, Science, and Technology." Fall/Spring 1993-1994.

PAPERS/PRESENTATIONS

- Invited Speaker. "Reflections on the Virginia Academy of Science." Seventy-fifth Anniversary Lecture for the Virginia Academy of Science, Virginia Tech, Blacksburg, VA, May 1997.
- Invited Speaker. "Understanding 'Science as a Process' through the History of Art." Funstein Lecture Series, Science Museum of Virginia, Richmond, VA, February 1996.
- Invited Panel Member. National Consortium for Graduate Degrees for Minorities in Engineering and Science, Inc. sponsored teleconference entitled "Graduate School: Paying the Bill," Washington, D.C., October 1992.
- "Networks and Professionalization: The Virginia Academy of Science." Seminar Series, Center for the Study of Science in Society, Virginia Tech, Blacksburg, VA, September 1997.

- Webb, Charlotte and Jane Webb. "Democratic Decisions or Expert Advice? The Case of the Chesapeake Bay Blue Crab." International Society for Technology and Science, Princeton University, Princeton, New Jersey, June 1996.
- Webb, Charlotte, George Webb, and Jane Webb. "The World's Fair at the Turn of the Twentieth Century: A Model for Liberal Arts Students of Science." Virginia Academy of Science, Harrisonburg, VA, May 1994.
- Webb, Charlotte, George Webb, and Jane Webb. "Scientific Discourse About Public Policy: A Case Study of the Japanese Oyster." Virginia Academy of Science, Blacksburg, VA, May 1992.
- Webb, Charlotte, George Webb, and Jane Webb. "The Masks of Science: A Case Study in Scientific Discourse and Public Policy." National Association for Science and Technology, Washington, D.C., November 1992.
- Blechschmidt, Lara and Charlotte Webb. "The Transmission of Scientific Information to the Public and the Resulting Perception of Risk." Society for the Social Studies of Science, Cambridge, MA, November 1991.

PROFESSIONAL ACTIVITIES

Consultant, Science Museum of Virginia, Richmond, VA, Summer 1995

- Developed a conceptual and an historical framework for the "Journey into Science" exhibits

Research Assistant, Smithsonian Institution, Professor Albert Moyer, Summer 1994 and Summer 1995

- Researched at the Smithsonian Institution, for the Joseph Henry Biography Project, funded by the NEH and the NSF.
- Primary responsibilities included researching Joseph Henry's professional and personal correspondence.

PROFESSIONAL SOCIETIES AND ORGANIZATIONS

- American Historical Association
- History of Science Society
- Society for the Social Studies of Science
- Virginia Academy of Science

LANGUAGE SKILLS

- French: average written and spoken
- Latin: average written

Charlotte Webb
D.O.B. 10/12/67