

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, in 1923 Virginia scientists and science educators 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 on 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 “machine,” religion, politics, and economics — those external factors that determine a region’s social context — inevitably became part of the Academy’s history.

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In 1962, scientist George Jeffers wrote in his unpublished history of the Virginia Academy of Science: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

A History of the Virginia Academy of Science

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. 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, 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. It is against this backdrop of economic and political ten-

sions — 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* region² — home of Hampton Roads with its complex of military installations and 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* 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 Institute 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.

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."³

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 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.”⁴ 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.⁵

In sum, Virginians or, to be more accurate, white Virginians, viewed Byrd as a highly successful governor. The Commonwealth business community regarded his achievements as exemplary in matters of economics. His emphasis on states’ 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

One: Weaving a Network

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 the 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.

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.⁶ All over the nation, the cities were the sites of the greatest suffering, since country people 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.⁷

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 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.⁸ Other programs of the New Deal met with greater success in Virginia. The Works Projects Administration, 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."⁹ Certainly this philosophy was a reflection of what Byrd and Pollard both believed.

George Peery of rural Tazewell 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.¹⁰

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. Women could attend the state normal col-

leges in the first few decades of the twentieth century, but the other state institutions of higher education were not open to them.¹¹ 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.¹² 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 Union University, or St. Paul's; or they could attend special programs established by the Norfolk Division of the College of William and Mary, now known as Old Dominion University.¹³

It was not only in education for females and African Americans that Virginia exhibited very little leadership. Missing from the state during this period were the community college system and 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.

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 govern-

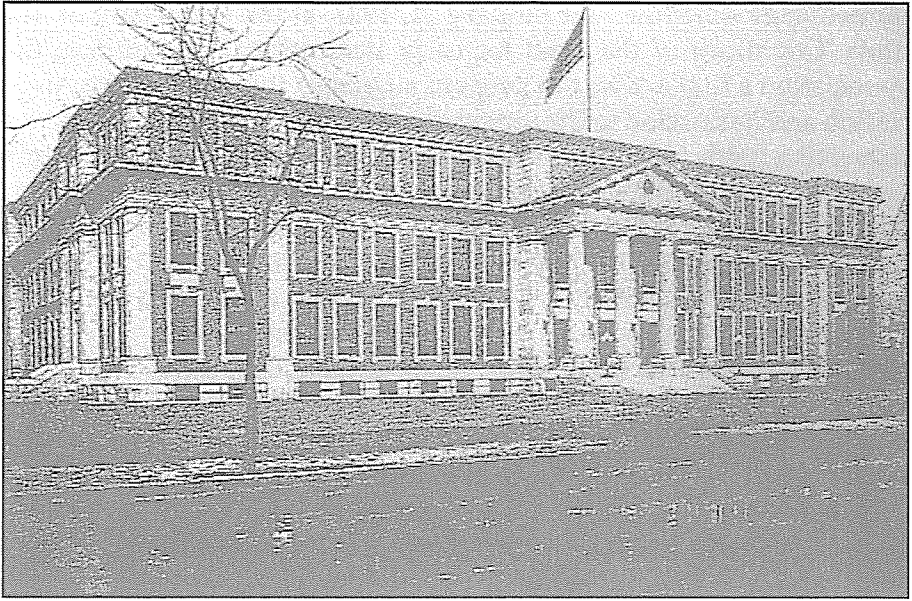
ment and, to a lesser extent, Virginia industries. Attending national meetings, securing funding for research, and locating adequate publication outlets — all necessary for a first-rate scientific career — were not easy tasks for most scientists in the south, and Virginia scientists found themselves 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.¹⁴

Participating in the North Carolina Academy of Science (NCAS), the young biologist Ivey Lewis witnessed the first-hand benefits of a statewide, scientific organization.¹⁵ 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 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.¹⁶

One: Weaving a Network



On November 24, 1920, biologists representing various institutions of higher education in Virginia met at the John Marshall High School in Richmond, Virginia.

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.¹⁷ 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.¹⁸

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."¹⁹

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. 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 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. . . ."²⁰ 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 important, the AVB made it clear that the committees were to "bring their



*Horace E. Hayden,
professor of biology
at the College of William
and Mary, and a charter
member of the Virginia
Academy of Science.*

science to the layperson,” thereby laying the groundwork for a future mission of the Virginia Academy of Science: promoting science within the general public.²¹ 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.

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 . . .”²² 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.²³ 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."²⁴

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.

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

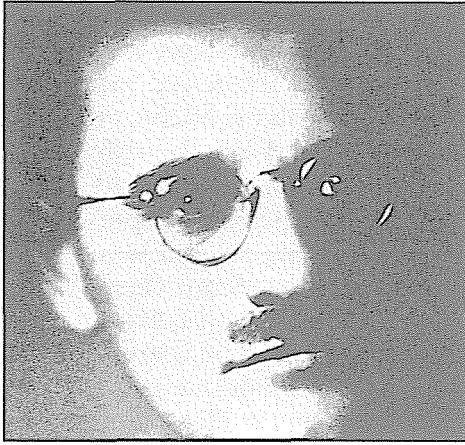
Second, it brings about a healthful spirit of cooperation among its members and brings together in a most helpful way the more or less isolated followers of science.

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:



Ivey F. Lewis, a biologist at the University of Virginia, was a founding father of the Virginia Academy of Science and served as the first president. In 1966 the Academy's Meritorious Service Award was renamed the Ivey F. Lewis Distinguished Service Award.

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 ²⁵

Signing the letter were not only biologists but also seven members of a variety of other scientific disciplines from a wide range of institutions.²⁶ Hardly could these scientists have 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:

A History of the Virginia Academy of Science

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.²⁷

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 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.

*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.²⁸ Hoping to inspire both the 135 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.²⁹ 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 legitimacy as well as pride. Following the lead of other academies of science, most notably North Carolina's and Tennessee's, 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; 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.³⁰

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 terms would vary from three to five years — had full responsibility for directing the Academy. Lewis's 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."³¹

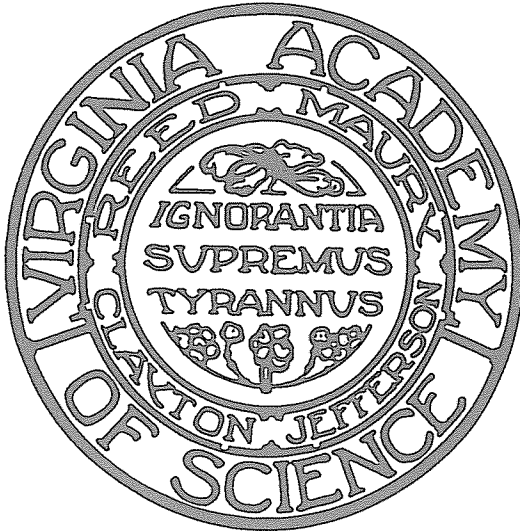
E.C.L. Miller, a chemistry professor at the Medical College of Virginia was elected Secretary-Treasurer — a position he would hold until 1953. In describing this "quintessential southern gentleman," Jeffers represented the opinion of the entire Academy when he wrote:

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."³²

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



The seal consists of symbols from the history of Virginia. In the outermost ring is inscribed Virginia Academy of Science. Printed around the inner ring are the names of four great Virginia scientists: Walter Reed — physician, Matthew Fontaine Maury — cartographer, John Clayton — botanist, and Thomas Jefferson — agriculturist and educator. In the center a dogwood blossom, the state flower, appears in full bloom at the top and as a bud at the bottom. The academy's maxim appears at the center of the seal: Ignorantia supremus tyrannus (Ignorance is the greatest tyrant).

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.³³

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 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 American Association for the Advancement of Science (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 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!”³⁴ By 1936, the two meetings proved unmanageable, and the 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.³⁵ From the beginning, the Virginia Academy sessions were discipline or “section” specific.³⁶ 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 to support the growth of science in the state. Viewing the new 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.³⁷ 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.

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.

A History of the Virginia Academy of Science

List of Members
of the
Virginia Academy of Science
May 2, 1925.

Miss Cornelia Adair	Richmond, Va. (1719 Grove Ave.)
Harold L. Alden	University, Va.
D. Maurice Allan	Hampton-Sidney, Va.
Miss Adeline Amas	Sweet Briar, Va.
Dice R. Anderson	R.-M. W. College, Lynchburg, Va.
S. W. Anderson	V. M. I., Lexington, Va.
Ernest L. Andrews	Bristol, Va.
C. O. Ashworth	Richmond, Va. (Medical Arts Bldg.)
Robert C. Astrop	University of Richmond, Va.
Albert A. G. Balz	University, Va.
Fred. H. Barber	Emory, Va.
Kellogg F. Bascom	Med. Col. of Va., Richmond, Va.
R. L. Bates	V. M. I., Lexington, Va.
Robert B. Bean	University, Va.
Leslie D. Ball	South Hill, Va.
H. E. Bennett	Col. of Wm. & Mary, Williamsburg, Va.
Abraham Berglund	University, Va.
Biological Society of Wash. & Lee University	Lexington, Va.
Lloyd C. Bird	Med. Col. of Va., Richmond, Va. R
Chas. M. Blackford, II	Staunton, Va.
Gordon Blair	Richmond, Va. (829 East Broad St.)
Randolph Bolling	Hampton Roads, Va. (U.S. Naval Base)
Paul H. Bowman	Bridgewater, Va.
John A. Bradford	R.-M. College, Ashland, Va.
Fred. L. Brown	University, Va.
G. W. Brown	Col. of Wm. & Mary, Williamsburg, Va.
William M. Brown	Washington & Lee Univ., Lexington, Va.
L. W. Bryce	Richmond, Va. (614 West 31 Street)
Miss Flora Bryson	East Radford, Va.
W. A. Burrows	Richmond, Va. (Cwens & Miner Drug Co.)
Miss Margaret Burwell	Roanoke, Va. (109 Walnut Ave., S.W.)
D. I. Bushnell	University, Va.
H. D. Campbell	Washington & Lee Univ., Lexington, Va.
R. G. Campbell	Washington & Lee Univ., Lexington, Va.
D. R. Carpenter	Roanoke College, Salem, Va.
Gardner L. Carter	University, Va.
Ralph R. Chappell	Richmond, Va. (2112 East Clay St.)
H. K. Chase	Danville, Va. (Box 95)
William Clift	Med. Col. of Va., Richmond, Va.
M. Estes Cocke	Hollins, Va.
H. DeJ. Coghill	Med. Col. of Va., Richmond, Va.
Glenn G. Cole	Lynchburg College, Lynchburg, Va.
J. W. Cook	Danville, Va. (708 Main Street)
Edwin Cox	Richmond, Va. (Box 72c)
M. Boyd Coyner	State Teachers College, Farmville, Va.
W. G. Crockett	Med. Col. of Va., Richmond, Va.
B. F. Crewson	V. M. I., Lexington, Va.

List of members of the Virginia Academy of Science's 1925 meeting in Richmond, Virginia, at which five sections — Astronomy, Mathematics, and Physics; Biology; Psychology and Education; Chemistry; and Geology — held sessions.

One: Weaving a Network

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.³⁸ 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 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.”³⁹ Committees, as defined by the early Virginia Acad-

emy 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 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 such as the Chesapeake Bay were disturbed to a greater extent than anyone perceived at the time.⁴⁰

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 New Lands Act were in place and pointed the way toward future federal environmental regulation. In large part, the network of national forests that Americans enjoy to-

day 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 *The Authority of Experts*, from this elevated platform scientists used their expert knowledge in public forums, and were believed without question.⁴¹

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 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 wildlife 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.⁴²

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 fol-

lowing 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."⁴³ 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 Conservation of Natural Resources.⁴⁴ 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. . . ." ⁴⁵ 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 representatives to make a substantial impact.⁴⁶ Today the Great Dismal Swamp remains in its natural state, open to visitors throughout the year.

The second project grew out of the earlier cooperation between the Garden Clubs of Virginia and the Conservation Committee. By 1930,

One: Weaving a Network

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.⁴⁷ 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 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.⁴⁸ 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 bi-monthly 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 publi-

cation, *Claytonia* was the Virginia Academy's first attempt to publish anything other than the *Proceedings*. From 1934 to 1939, *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*.

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 discipline's 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.⁴⁹ Financial hardship, inability to reach an audience outside 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 *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 Academy."⁵⁰ Sitler's suggestion did not gain full favor; however, it did pique the interest of the membership. Consequently, in 1939, *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.’”⁵¹ 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.”⁵² 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.⁵³

One early form of research assistance came from the 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 \$25 total payment.⁵⁴

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 Woman’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."⁵⁵

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 more than 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.⁵⁶

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 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

One: Weaving a Network

situation, the Southern Association of Colleges and Secondary Schools had promulgated a policy in which, regarding measurement of workload, laboratory instruction was not commensurate with that in the 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's 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.⁵⁷

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 "at the disposal of the Committee on Research of the Virginia Academy of Science." Such an 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."⁵⁸ 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 that 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 spirits 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." 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.⁵⁹

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.⁶⁰ 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

One: Weaving a Network

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."⁶¹ 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 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."⁶²

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 flair.⁶³

Horsley also solicited funds and expressions of support from outside the state. In 1937, he wrote to numerous individuals who, 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." 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 understanding, who give intelligently rather than emotionally, and these must be asked to give in larger amounts."⁶⁴ Mrs. Alfred Du Pont 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 had received 102 applications for aid — seventy-one of which had received a partial or full grant, totaling \$4028. The recipients had delivered forty-eight papers on their grant-supported topics and published sixty-six.⁶⁵ 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.⁶⁶

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.⁶⁷ 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 con-

One: Weaving a Network

test, 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.⁶⁸

On balance, the effort to raise research money was fairly successful. Very likely, only Horsley could have raised such an endowment. (As of December 31, 2000, it had grown to \$198,150.) 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 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."⁶⁹

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 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."⁷⁰ 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 curricula, 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.⁷¹ Given the conservative tenor of Virginia, the concern voiced by Ferguson was well-founded.

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

One: Weaving a Network

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?⁷²

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.⁷³ 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.”⁷⁴

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.⁷⁵

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.”⁷⁶

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 made to dictate the teaching of science in Kentucky, Florida, Texas, Oklahoma, North Carolina, West Virginia, and Minnesota.⁷⁷

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, there 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 to account for it, on the other hand, is not only not proved, but is subject to revision like any other theory. . . . But the fact of evolution stands on quite other grounds.⁷⁸

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. Murnaghan, Assistant Secretary of the AAAS, stating that “nothing further has been heard of any anti-evolution bill in Virginia.”⁷⁹ “Furthermore,” he remarks, “I do not believe that Virginia will ever vote that the earth is flat.”⁸⁰

One: Weaving a Network

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 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 that 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.⁸¹ 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.

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.⁸²

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."⁸³ 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 the appropriateness behind his being recommended to Governor Byrd.

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.⁸⁴

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."⁸⁵

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 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."⁸⁶ 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 Woman'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.⁸⁷ The program quickly caught on: in 1933, eighteen students attended the meeting. Two years later, the number had 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 that they simply could not expend the necessary effort to interact with the high-school 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 teach-

ers 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.”⁸⁸ 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 VAS members.⁸⁹ 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 . . ." ⁹⁰

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 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 Virginia ⁹¹

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 capital 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." ⁹² For the Virginia Academy, it appeared as if science had finally come of age in its fair state.

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."⁹³ 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."⁹⁴ As Colonel Edwin Cox of Richmond 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."⁹⁵

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 assump-

tions 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.

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. . . .”⁹⁶ 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, housed at Alum Springs in Rockbridge County, would serve as an excellent foundation for a new museum. Many years later, in 1975, D. Rae Carpenter, Jr. was asked to report to the trustees to assess the potential of this site to the science museum of Virginia. Although an endowment of \$500,000 accompanied the property, neither the property nor the collection ultimately contributed directly to the present day Science Museum of Virginia. The collection, however, was subsequently moved to Virginia Polytechnic Institute and State University and is currently available to the public among the nine collections housed in the Virginia Tech Museum of Natural History in Blacksburg, Virginia.⁹⁷

The Virginia Academy unanimously supported the idea of a state museum of science. Member J. James 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. . . ." ⁹⁸ 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 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'." ⁹⁹ 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. ¹⁰⁰ 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?" ¹⁰¹ 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 every sort, and he wants a guarantee also of its proper administration by scientists. . . ." ¹⁰² 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."¹⁰³ 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 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.

Reflections: 1920–1939

The years 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 — either within the state legislature or the 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, in which the Academy started a project, then either dropped it or offered insufficient support to reach the declared goal. On balance, however, this first period was one of solid achievement.

Endnotes

- ¹ George Jeffers, "History of the Virginia Academy of Science," unpublished manuscript. 1962. Special Collections, Virginia Tech.
- ² Richmond, capital 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.
- ³ Alden Hatch, *The Byrds of Virginia* (New York: Holt, Rinehart, and Winston, 1969).
- ⁴ Virginus Dabney, *Virginia: The New Dominion* (New York: Doubleday & Co., Inc., 1971), p. 483.
- ⁵ James W. Ely, Jr., *The Crisis of Conservative Virginia* (Knoxville, Tennessee: 1976); Francis Wilhoit, *The Politics of Massive Resistance* (New York: George Braziller, 1973).
- ⁶ Dabney, *Virginia: The New Dominion*, p. 490.
- ⁷ Edward Younger and Jane Tice Moore, eds., *The Governors of Virginia, 1860-1978* (Charlottesville: The University of Virginia Press, 1982).
- ⁸ Dabney, *Virginia: The New Dominion*, p. 494.
- ⁹ Virginia Rice Webb to Charlotte Webb. Informal conversation. March 1, 1996. Norfolk, Virginia.

One: Weaving a Network

- ¹⁰ Dabney, *Virginia: The New Dominion*, p. 502. See also Andrew Buni, *The Negro in Virginia Politics, 1902–1965* (Charlottesville: The University of Virginia Press, 1967).
- ¹¹ East 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.
- ¹² Randolph-Macon Woman'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.
- ¹³ It 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 until after World War II.
- ¹⁴ Paul Boyd, "The Future of the State Academy of Science," *Science* (11 June, 1920), pp. 575-580.
- ¹⁵ For 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.
- ¹⁶ *Organization and Proceedings, 1923–1924*, p.3. Special Collections, Virginia Tech. Those attending were Flora Bryson from East Radford Normal School; W.L. Dolley from Randolph-Macon College; P.F. Fackenthall 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 Smyth and Fromme of Virginia Polytechnic Institute.
- ¹⁷ "Minutes of Preliminary Meeting, Association of Virginia Biologists," November 24, 1920. Special Collections, Virginia Tech.
- ¹⁸ George W. Jeffers, "A History of the Virginia Academy of Science," p. 4, unpublished manuscript, 1962. Special Collections, Virginia Tech.
- ¹⁹ "Minutes of Preliminary Meeting, AVB," November 24, 1920.
- ²⁰ "Minutes of Preliminary Meeting, AVB," January 29, 1921. Special Collections, Virginia Tech.
- ²¹ Listed on a handwritten sheet placed within the aforementioned "Minutes," January 29, 1921.
- ²² W. L. Dolley to Donald Davis, March 8, 1923. Donald W. Davis Papers, Earl Gregg Swem Library, College of William and Mary, Williamsburg, Virginia.
- ²³ *Organization 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.
- ²⁴ W.L. Dolley to Donald Davis. Donald W. Davis Papers, Earl Gregg Swem Library, William and Mary, Williamsburg, Virginia.
- ²⁵ *Proceedings of the Virginia Academy of Science, 1923-1924*, pp. 4-5. 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.

A History of the Virginia Academy of Science

²⁶ Those 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 and 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.

²⁷ Paul A. Warren to A. Hughlett Mason, July 26, 1954. Special Collections, Virginia Tech.

²⁸ The group of charter members — from University of Virginia, William and Mary, Medical College of Virginia, Virginia Polytechnic Institute, Washington and Lee, Lynchburg College, Randolph-Macon Woman'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.

²⁹ *Proceedings of the Virginia Academy of Science, 1923–24*, pp. 4-5.

³⁰ *Ibid.*

³¹ George Jeffers, "A History of the Virginia Academy of Science," p. 4, unpublished manuscript, 1962. Special Collections, Virginia Tech.

³² It 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 Jeffers, "A History of the Virginia Academy of Science," p. 5.

³³ The seal of the Virginia Academy of Science was created by the work and recommendation of the ad hoc Committee, chaired by Earl Gregg Swem.

³⁴ Jeffers, "A History of the VAS," p. 69.

³⁵ It 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 or the equivalent in property. They paid no dues. The second, *Life* members, contributed \$150 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, immediately earmarked for the

One: Weaving a Network

general operation of the Academy. *Sustaining* members, the fourth class of members, contributed between \$10 and \$99 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.

³⁶ Eighteen 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.

³⁷ Jeffers, "A History of the VAS," p. 15.

³⁸ *Ibid.*, p. 18. Also, Vera Remsburg to Charlotte Webb, Phone interview, January 13, 1995.

³⁹ Nathan 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.

⁴⁰ Jack Temple Kirby, "Virginia's Environmental History: A Prospectus," in *Virginia Magazine of History and Biography* 99 (1991), pp. 449-488.

⁴¹ For 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).

⁴² Ivey Lewis to Executive Committee, 1923. Special Collections, Virginia Tech.

⁴³ "Report of the Secretary" in *Proceedings of the Virginia Academy of Science, 1925-26*, 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.

⁴⁴ It 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.

⁴⁵ "Report of Committee," April, 1927. Special Collections, Virginia Tech.

⁴⁶ "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

A History of the Virginia Academy of Science

- Crosby Brown, *Juniper Waterway: A History of the Albemarle and Chesapeake Canal* (Charlottesville: University of Virginia Press, 1980).
- ⁴⁷ Composed 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.
- ⁴⁸ E.C.L. Miller to Governor Pollard. August 4, 1931. Special Collections, Virginia Tech.
- ⁴⁹ See Nancy Smith Midgette, *To Foster the Spirit of Professionalism* (Tuscaloosa: University of Alabama Press, 1991).
- ⁵⁰ *Proceedings of the Virginia Academy of Science*, 1936, p. 8.
- ⁵¹ Walter S. Flory, "Research Committee History," p.1, unpublished manuscript, no date. Special Collections, Virginia Tech.
- ⁵² *Research News Leader* (1 May, 1925) in *Proceedings of the Virginia Academy of Science, 1924-25*. Special Collections, Virginia Tech.
- ⁵³ *Proceedings of the Virginia Academy of Science, 1924-25*, p. 3.
- ⁵⁴ Claude Baker, *History of the Academy Conference, 1926-1952* (Washington, D.C.: American Association for the Advancement of Science, 1952).
- ⁵⁵ E.C.L. Miller to R.F. McCracken, June 7, 1926. Special Collections, Virginia Tech.
- ⁵⁶ William MacDonald, *Science* 63 (26 March 1926), p. 320.
- ⁵⁷ "President's Report" in *Proceedings of the Virginia Academy of Science, 1933-34*, p. 7. Special Collections, Virginia Tech.
- ⁵⁸ J. Shelton Horsley to William M. Brown, December 21, 1925. Special Collections, Virginia Tech.
- ⁵⁹ J. 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.
- ⁶⁰ *Proceedings of the Virginia Academy of Science, 1928-29*, pp. 10-11. Special Collections, Virginia Tech.
- ⁶¹ E.C.L. Miller to J. Shelton Horsley, November 10, 1932. Special Collections, Virginia Tech.
- ⁶² *Ibid.*
- ⁶³ E.C.L. Miller to Jay Johns, July 1, 1936. Special Collections, Virginia Tech.
- ⁶⁴ J. Shelton Horsley form letter, 1937. Special Collections, Virginia Tech.
- ⁶⁵ "Virginia Academy of Science: A Review of the First Ten Years of the Research Committee, 1929-1938," 1939. Special Collections, Virginia Tech.
- ⁶⁶ Frank Geldard to E.C.L. Miller, October 12, 1939. Special Collections, Virginia Tech.
- ⁶⁷ Circular from E.C.L. Miller to the Virginia Academy of Science, July 17, 1936. Special Collections, Virginia Tech.
- ⁶⁸ *Proceedings of the Virginia Academy of Science, 1942-43*. Special Collections, Virginia Tech.
- ⁶⁹ George Ferguson to Ivey F. Lewis, May, 1923. Special Collections, Virginia Tech.
- ⁷⁰ Ronald 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 per-

One: Weaving a Network

- meated 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.
- ⁷¹ Numbers, “The Creationists,” p. 41.
- ⁷² Ivey Lewis circular letter, April 21, 1924. Special Collections, Virginia Tech.
- ⁷³ E.C.L. Miller to Ivey Lewis, April 23, 1924. Special Collections, Virginia Tech.
- ⁷⁴ E.C.L. Miller to Ivey Lewis, April 28, 1924. Special Collections, Virginia Tech.
- ⁷⁵ Henry Louis Smith to Ivey Lewis, April 23, 1924. Special Collections, Virginia Tech.
- ⁷⁶ R. C. Young to Ivey Lewis, April 24, 1924. Special Collections, Virginia Tech.
- ⁷⁷ Ivey Lewis, “Presidential Address, 1924.” Special Collections, Virginia Tech.
- ⁷⁸ *Ibid.*
- ⁷⁹ Virginia is the only southern state whose General Assembly has never had to consider an anti-evolution bill or resolution.
- ⁸⁰ Ivey Lewis to Francis D. Murnagan, February 10, 1926. Special Collections, Virginia Tech.
- ⁸¹ E.C.L. Miller to Ivey Lewis, early 1925. Special Collections, Virginia Tech.
- ⁸² E.C.L. Miller to Ivey Lewis, late 1925. Special Collections, Virginia Tech.
- ⁸³ Ivey Lewis to E.C.L. Miller, April 14, 1927. Special Collections, Virginia Tech.
- ⁸⁴ Louis Astell, “How State Academies of Science May Encourage Scientific Endeavors Among High-School Teachers,” *Science* 70 (May, 1930).
- ⁸⁵ “Minutes 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.
- ⁸⁶ William A. Kepner to Members of the Virginia Academy of Science, March 6, 1934. Special Collections, Virginia Tech.
- ⁸⁷ Nan Thorton to Council, April 5, 1931. Special Collections, Virginia Tech.
- ⁸⁸ C.L. Baker, *A History of the Academy Conference, 1926-1952* (Washington, D.C.: American Association for the Advancement of Science, 1952).
- ⁸⁹ Burton Livingston to E.C.L. Miller, March 21, 1925. Special Collections, Virginia Tech.
- ⁹⁰ Sidney S. Negus to Members of the Virginia Academy of Science, March 5, 1928. Special Collections, Virginia Tech.
- ⁹¹ Sidney Negus to Members of the Virginia Academy of Science, 1937. Special Collections, Virginia Tech.
- ⁹² William Sands Meachum to J. Shelton Horsley, June 9, 1937. Special Collections, Virginia Tech.
- ⁹³ *Proceedings of the Virginia Academy of Science, 1927-28*, p. 23.
-
-