Book Review

Sevan G. Terzian. *Science Education and Citizenship: Fairs, Clubs, and Talent Searches for American Youth, 1918–1958*. New York: Palgrave MacMillan, 2013. 252 pp. Hardcover $95.00.

If formal public education took shape in the young United States in the nineteenth century, in the twentieth century informal but coordinated education—sometimes identified as cocurricular, extracurricular, complementary, or voluntary—became pervasive, offering both a subtle critique but also a respected extension of standard curricula. Sevan Terzian's book investigates the ways in which science advocates were particularly active in creating venues and enduring programs. The historical justification and evidence for afterschool and intermittent activities is sometimes elusive, most often captured in ephemeral records, but this carefully documented volume provides new evidence of their origins and influence. An unstated but evident assumption of the active proponents was that projects and club activities supplemented what could be accomplished in the classroom and might, in fact, be more effective in inspiring youth to pursue such studies in school.

Already in the late-nineteenth century, increasingly literate middle-class children were drawn into voluntary groups that were typically directed by interested adult volunteers. Agassiz Clubs, Audubon Clubs, and later 4-H reflected an intention to enhance skills and basic knowledge by engaging small groups of pupils to engage with adult mentors with special expertise. While these clubs might be loosely linked to a larger national network via newsletters and membership cards, essentially all of the activity focused on local excursions or on afternoon or evening discussions of artifacts, readings, or guest speaker presentations. Whether in homes, church basements, or even schools, they were deliberately voluntary and extracurricular.

New York City figures largely in Terzian's account and, indeed, that city had been an innovative participant in the nature study movement and expanded the capacity of that school system by museum visits, school gardens, and library programs. Several ambitious educational leaders in both public and private schools developed important civic alliances and positioned themselves as active, articulate spokespersons for what they envisioned as a national movement modeled on their initiatives. Morris Meister, for example, worked closely with the American Institute whose capacity to coordinate resources became critical to undergirding the expenses of science fairs across the city. Meister, with a doctorate from Teachers' College, Columbia University, caught the enterprising spirit of his graduate student cohort with their

enthusiasm for hands-on and project science education. His work in its model schools, Speyer Junior High School and Horace Mann Elementary, led him into various local collaborations and tapped into other civic institutions eager to advance opportunities for children in and beyond the classroom. He worked with the Nature League, for example, and could tap into its network of local teachers ready to both advocate for and advance such work. By the 1920s and early 1930s, cocurricular activities were a visible complement to the school landscape and were supported by a confluence of corporate, professional, and community organizations that worked in conjunction with school administrators in ways that were clearly meant to link classroom initiatives to activities that occurred in and beyond classrooms.

A particularly good example provided by Terzian is the Children's Science Fair, a still familiar activity that provided a venue to display particularly outstanding work that had been generated in classrooms, often supplemented by at-home and after-school efforts as well. Led by Alice Rich Northrop, these fairs reflected the earlier garden and nature study projects but became more elaborate and quite competitive as the America Institute began to coordinate them citywide. More than a century old, the Institute had begun as a way to support annual agricultural events, but had lost its sense of purpose as its members were enveloped by urbanization in the twentieth century. This new project, echoing the collaboration and display of a century earlier and promoted by Meister, proved to be a way to revitalize the Institute as it supported education and dissemination around natural science studies by providing venues, publicity, and volunteers. Eventually the overhead costs of coordination and the loss of leadership within the collaborating Nature League as the depression of the 1930s deepened curtailed much philanthropic activity in the city.

In the meantime, however, other organizations had expressed an interest in broadening the topics pursued informally, hoping particularly to encourage more attention to the physical sciences. The local enthusiastic buildup to the New York World's Fair, planned for 1939, offered another opportunity. One of the early and leading corporate sponsors was Westinghouse Corporation, with its headquarters in Schenectady, New York. The growing and philanthropic company had contributed to the efforts of the American Institute and, with another relatively new media innovator, Science Service, decided to put some of the best talent on display at the New York World's Fair in 1939. This effort proved to be complicated to put in place and, once there, the displays of youth were no competition for the larger drama of the fair. Working with some of the talented youth did, however, lead the corporate sponsors to recognize its potential for identifying some of the best scientific talent in the region and indeed in the nation. During

the war years and immediately thereafter this led to a new program, the Science Talent Search, where success could be rewarded with college scholarships.

Under the guidance of its media savvy and energetic Watson Davis, Science Service reinvigorated the fair idea with a National Science Fair starting in 1950. By this time there were Junior Academies of Science in many states, typically linked to their State Academies. The American Association for the Advancement of Science played a useful role by giving them a forum at its annual meeting where leaders could share ideas even as their students engaged competitively. The growing sense of urgency around the issue of sufficient science talent underscored the importance of encouraging youth to pursue science and technology during the intensifying Cold War. Regionally, other corporations helped to underwrite state and regional fairs and provided scholarships for the top winners. Science education and good citizenship became even more closely linked in public thinking.

Over the course of the first-half century, the multiple strands of activity had invigorated standard school curriculum, at least for a talented few, and brought together a range of leaders from educators to enthusiastic scientific professionals to support the emerging cocurricular programs. While the emphasis in this volume is on New York, references to other parts of the country make it clear that these phenomena marked a cultural shift that had multiple and simultaneous initiatives elsewhere that could be quite distinct and reflect local and regional interests and resources.

Terzian read closely in the sponsoring literature in order to understand how motives, participation patterns, and activities changed over time. He argues that early efforts emphasized goals that linked to environmental, progressive goals with an emphasis on enhancing individual knowledge; some of these were introduced into inner-city schools with the goal of providing otherwise unattainable experience. However, programs that began as nature study in the elementary schools became more systematic and didactic as high school curriculum in the sciences expanded, and students were provided more advanced opportunities. Coordinated with cocurriculum opportunities, schools introduced more "project science" even as they encouraged students to prepare for the local and then national competitions that promised to identify the most talented future scientists. Terzian follows the rhetoric surrounding these activities and takes as his central argument that early democratic vocabulary that emphasized broad, collaborative, and inclusive experience as part of education in science was transmuted into a pragmatic emphasis on competition and with the goal of meeting national needs, especially in the 1950s. There is evidence to sustain that argument, but his sources also reveal that throughout the period multiple motives

were in play, particularly at the local level where sponsors typically spoke of individual development and opportunity. While girls were not discouraged, Terzian's analysis of participants and winners reinforces other historical accounts that describe the limits of their successful engagement in these activities over time. He also makes it clear that the cultural shift toward more science education involved a more competitive outlook and gained sponsorship from corporate sponsors, hoping to identify and advance prospects for advanced university training and employment.

It is precisely the elusive, complex, and yet pervasive quality of these science fairs, specialized clubs, and talent searches that coexisted and intersected with other studies of schooling that makes this book so important for our understanding of how science became so deeply embedded in twentieth-century culture. Terzian makes it clear that well before Sputnik went into space, an interest and infrastructure undergirded and reinforced an understanding that science was essential to national leadership, related to the innovative capacity of corporations, and would provide significant careers for those who advanced through its challenges. This book identifies and explores the little known and rarely studied transitional spaces that existed between schools and more visible public spaces, such as museums of science and industry, to show where, in fact, students actively explored science in ways that led some to careers and others into a more sophisticated understanding of science in their society.

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