Learning with the Lights Off
Educational Film in the United States

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We dedicate this book to Ro-Reu.
# TABLE OF CONTENTS

Foreword by Thomas G. Smith ix  
Acknowledgments xv  
About the Companion Website xvii  

Introduction 3  
1. A History of Learning with the Lights Off 15  
   Devin Orgeron, Marsha Orgeron, and Dan Streible  
2. The Cinema of the Future: Visions of the Medium as Modern Educator, 1895–1910 67  
   Oliver Gaycken  
3. Communicating Disease: Tuberculosis, Narrative, and Social Order in Thomas Edison’s Red Cross Seal Films 90  
   Miriam Paner  
4. Visualizing Industrial Citizenship 107  
   Lee Griveason  
5. Film Education in the Natural History Museum: Cinema Lights Up the Gallery in the 1920s 124  
   Alison Griffiths  
   Jennifer Peterson  
7. Medical Education through Film: Animating Anatomy at the American College of Surgeons and Eastman Kodak 168  
   Kirsten Ostberr  
8. Dr. ERPI Finds His Voice: Electrical Research Products, Inc. and the Educational Film Market, 1927–1937 193  
   Heide Sollvirg  
9. Educational Film Projects of the 1930s: Secrets of Success and the Human Relations Film Series 215  
   Craig Kridel
FOREWORD

At a Fourth of July picnic in 2006, I found myself sitting across the table from Oscar-winning cinematographer Haskell Wexler. He had been recently selected by the International Cinematographer’s Guild as one of the ten most influential cameramen in history and had a star on Hollywood’s Walk of Fame. He also directed one of my favorite feature films concerning the tumultuous 1968 Chicago political protests, Medium Cool (1969). Wexler was eighty years old, physically spry, and mentally sharp. He extended his hand and we introduced ourselves.

Although he didn’t know it, we had one thing in common: the place where we both began our careers in film. So I asked him, “Do you remember working with Johnny Walker at Encyclopaedia Britannica Films in Wilmette?”

His eyes lit up. “How do you know about Johnny?”

“I worked at EBF from 1965 to 1980 and he told me you started there and worked with him.”

“Johnny taught me how to thread a camera,” Wexler said with tears glistening in his eyes. “Those were great days. My friends in features can’t believe it when I tell them about the freedom we had making those 16mm movies. Sometimes I wonder if I dreamed it or was it really part of my life?”

It wasn’t a dream but most physical traces are now gone. When I was in my twenties I started as a writer/director for Encyclopaedia Britannica Films (EBF), fifteen years after Wexler had moved on. While Wexler came to EBF after serving in the Merchant Marines during World War II, I was fresh from three and a half years in the U.S. Air Force during the Cold War.

Prior to the Air Force, Northwestern University’s Jack Ellis introduced me to film, diverting me from my first love, radio broadcasting. After I graduated from Northwestern in 1960, Ellis encouraged me to study film in France and I was fortunate to win a Fulbright Scholarship for a year overseas. While in Paris I ran into Milan Herzog, head of film production at EBF. Herzog was
The Chronicles of America: The Pilgrims (1924) 30 min., 35mm
PRODUCTION: Chronicles of America Picture Corp.
ACCESS: Library of Congress (LOC).

The Chronicles of America: The Puritans (1924) 30 min., 35mm
PRODUCTION: Chronicles of America Picture Corp.
DIRECTOR: Frank Tuttle. WRITER: Evangeline Andrews. CAST: Arthur Hohl, Audrey Hart. ACCESS: LOC.

Jungle Life in India (1933) 20 min., 16mm
SPONSOR: AMNH. PHOTOGRAPHER: Commander George M. Dyott. Documents the Fauna-Thorpe-Vernay Indian Expedition to India, Nepal, and Burma (1933–35). Made for designers of dioramas in the Hall of South Asiatic Mammals. ACCESS: AMNH Library Special Collections, Film Collection no. 198; on ¾” U-matic videotape.

The Morden-Clark Asiatic Expedition (1936), 73 min., 16mm

Related Films
Every Day Life of People in France (1924). Directed by Philip H. Pratt and Gladys L. Pratt.
The Last of the Mohicans (1910). Directed by Clarence Brown and Maurice Tourneur.
Nanook of the North (1922). Directed by Robert Flaherty.
Silas Marner (1921). Directed by Frank P. Donovan.

Glimpses of Animal Life: Nature Films and the Emergence of Classroom Cinema

JENNIFER PETERSON

Dissect him how I may, then, but I go skin deep; I know him not, and never will.
—Herman Melville, Moby-Dick

In a 1923 article in the New York World, an aging Thomas Edison extolled motion pictures not for their entertaining or artistic attributes but for their educational potential. The article explained Edison's proud belief that with cinema, "education can be manufactured wholesale like any other product of the factory." Although Edison had been making similar proclamations for many years—and he himself had recently tried and failed to popularize educational subjects with his short-lived Conquest Pictures series (1917–1918) —this time his ballyhoo contained a larger quantity of truth. The dream of an educational role for cinema, always an undercurrent in discourses about film since its inception, was finally becoming a reality in the early 1920s. So-called educational cinema was burgeoning not in commercial movie theaters, as some had hoped, but in the growing nontheatrical circuit of schools, churches, libraries, and museums. Moving pictures, once scorned as an bad influence for children, were becoming a new feature of the classroom in the 1920s. By the 1930s, what had been suspiciously viewed by

I am grateful to Diane Everett, Archivist at the Hugh M. Hefner Moving Image Archive at the University of Southern California, for his invaluable help with the 16mm educational films I researched for this article. I would also like to thank Tim Wilson of the UCLA Film & Television Archive's Stanford Theatre Lab for helping with research on paper materials at the George Eastman House.

had been largely unprofitable, however, and by the beginning of the 1910s, the
dream of a popular educational cinema for commercial moving picture theaters
had all but died. Film distributor George Kleine explained in a 1921 letter to
Edison, "Your own experience . . . to popularize so-called educational films . . .
demonstrated that the field was not profitable. Of late, however, the purchase
and use of smaller projecting machines have increased greatly." By the time edu-
cational films became successfully established, it was in a manner quite different
from what Edison, Kleine, and other motion picture moguls had imagined.

Kleine's letter anticipated an important change in the early 1920s, when
small-gauge film formats were about to become a key factor in the success of
educational cinema in the nonteatrical field. Although many in the industry
considered small-gauge formats "substandard" (Kleine himself would only dis-
tribute films on 35mm throughout the 1920s), small-gauge formats were cheaper.
Some small-gauge formats were already in use, such as Pathéscope (12mm),
used from 1912 to the mid-1920s, and Edison's own 22mm format for the Edison
Home Kinetoscope, introduced in 1912. However, it was the hugely successful
16mm gauge, introduced in 1923 by Eastman Kodak, that enabled the large-scale
success of the classroom film. It was economical (about one-sixth the price of
35mm) and nonflammable (unlike most 35mm, which used a highly flammable
nitrate film base until 1952), and it became the dominant format for the nonte-
atrical market until the ascendency of video in the 1980s. Perhaps even more
important than small-gauge formats, it was in the 1920s that a distinct distribution
network for the nonteatrical circuit was established. Nonteatrical exhibition
was at this time a relatively noncommercial enterprise. Schools did not show
films to make money, of course, but to educate students, and where there were
any profits to be made, these flowed to the producers, distributors, and equip-
ment manufacturers, not the exhibitor. Although the profits may not have been
spectacular, short subjects did not cost much to make, and some producers and
distributors managed to carve out a modest business in the nonteatrical niche;
even the big commercial studios produced short subjects that reached the non-
teatrical market. The era of mass-mediated visual education had begun.

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3 Letter from George Kleine to Thomas Edison, Apr. 10, 1922, box 18, George Kleine
Collection, Library of Congress.
4 See Anke Mebold and Charles Tlapczynski, "Resurrecting the Lost History of 16mm Film
5 Anthony Slide, Before Video: A History of the Non-Theatrical Film (New York: Greenwood
Press, 1992), 35. The fact that 16mm projectors required no projection booth or licensed operator
was also a boon to the classroom film movement.
6 Meier-Goldwyn-Mayer placed ads in 1921: The Blue Book of Non-Theatrical Films in 1919
and 1920. Universal advertised its Nonteatrical Department there in 1931. MGM had the largest
shorts department of the Hollywood studios and even published an in-house journal, MGM's
Films produced for the emergent classroom market in the 1920s and early 1930s contain several conventions that mark them as unique. First, classroom film subjects were organized along the lines of school curricula, which meant that educational movie genres fell into a different taxonomy than commercial genres. Second, these films were often released in a series by companies expressly dedicated to the production of classroom materials (such as Eastman Teaching Films or DeVry School Films), and thus certain "house styles" emerged. In this way, they did indeed begin to resemble Edison's vision of factory-manufactured products. Third, classroom films have a different style than movies produced for the commercial market: freed from the burden of turning a profit, they pursue an educational mandate. Educational cinema was not necessarily old-fashioned or boring, as stereotype would have it. Instead, these films carve out an alternative style that engages the spectator differently. Educational films do not present self-contained didactic worlds, as commercial films do, but instead they rely on outside context (a teacher's lecture, a class project) to activate the material on screen. Finally, unlike educational films made for theatrical release in the 1900s and 1910s (which were documented only sporadically), there was a large amount of information about classroom films generated in the 1910s and 1920s. Numerous academic studies on the effectiveness of visual education were conducted as classroom films began to be adopted by many schools. These studies, which I will discuss below, contain a wealth of data about how the films were used, including rare spectator feedback in the form of student testing and answers to questionnaires.

Early Nature Films: From the Theater to the Classroom

One of the most consistently popular classroom genres was the nature film. Motion pictures depicting animals, insects, plants, and other natural history subjects have been a staple since the beginning of film history, but the genre's divergent history on theatrical and nontheatrical screens has not previously been addressed.9 Some of the first subjects ever filmed were animals. Indeed, as Derek Bousé suggests, "the history of wildlife film must begin at the beginning of all film."10 The well-known experiments in animal locomotion using series photography by Eadweard Muybridge and Étienne-Jules Marey in the 1870s and 1880s are the canonical starting point in most histories of the emergence of cinema; although these were largely scientific experiments. In a more popular vein, beginning in 1891, Thomas Edison's employees W. K. L. Dickson and William Heise made numerous films of animals for viewing in Edison's peepope Kinetoscope viewer, such as The Cock Fight (1894).11 These early Edison films, like most commercial animal films, commonly featured animals fighting—either trained vaudeville animal acts such as The Boxing Cats (Edison, 1894), or staged bloodsport films such as Fight Between a Lion and a Bull (Lubin, 1900) or Fight Between Spider and Scorpion (American Mutoscope and Biograph, 1900). As these film titles indicate, a particularly violent vision of animals in conflict proved popular in the early years of cinema, and in fact, this quasi-Darwinian view of nature as a field of endless competitions constitutes a major trope of the nature film to this day.12 These earliest nature films, each consisting of a single shot, were not exactly natural history documentaries depicting animals in their habitat; they simply featured animals. Nonetheless, the earliest animal films established three key themes that remained central to the genre throughout the silent era and beyond: fighting, hunting, and feeding.13 It wasn't until around 1907 that nature films began to depict animal and plant habitats more carefully, with the release of British wildlife photographer Oliver Pike's film In Birdland. The success of this film garnered Pike a production deal with the major French company Pathé, which released more Pike films of animals in their habitat such as Glimpses of Bird Life (1910).

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10 Bousé, Wildlife Films, 41.

11 Other very early Edison Kinetoscope films featuring animals, all made by Dickson and Heise, include: [Monkey and Another, Boxing] (1893), [Mouse Shoving] (1895), [Trained Bears] (1895), The Wrestling Dog (1894), and Cat Killing (1894). See Charles Musser, Edison Motion Pictures, 1891-1910: An Annotated Bibliography (Washington, DC: Smithsonian Institution Press, 1997).

12 When Animals Attack, a 1996-1997 series on Fox, and Animal Face-Off, a 2004 series on Animal Planet, are just two of many recent TV series to exploit the persistent trope of animals fighting. And of course, these subjects thrive on YouTube. For a comedic account of this Internet phenomenon, watch infomaniac's "Animal Fights: Viral Video Film School," May 19, 2011, youtube.com/watch?v=E7raoMQIq4.

13 See Bousé, Wildlife Films, 44-45.
In 1908, British-based producer and distributor Charles Urban, who specialized in educational films of travel and science, began releasing films with plant, animal, and insect subjects made by Percy Smith, who was later to become famous for his "Secrets of Nature" series in the 1920s (many of which were photographed by Oliver Pike). Smith's films, such as the stop-motion *Birth of a Flower* (1910) and *The Acrobatic Fly* (1910), were hugely successful, although at this point it was Pike's films that made a more conscious effort to depict animals in their natural habitat, while Smith's films played up the sensationalistic aspects of their subject matter.

The depiction of natural settings, whether real or simulated, became perhaps the most important characteristic of the genre by the 1910s. As more films were released with an emphasis on natural habitat, the nature film—which was variously referred to as a *nature study film*, *natural history film*, or *natural science film*—began to take shape as a cinematic genre with its own conventions and iconography. "Cute" animal films of puppies and kittens also became popular at this time, and it is important to distinguish between films of domestic animals and films of wildlife, as indeed most catalogs of nontheatrical film later did. As the beginning of this era, it was still unclear what business practices or movie subjects would be the most profitable, and there was a brief moment when some in the industry (such as Edison and Kleine) hailed educational film subjects as the commercial future of cinema. The efforts to establish educational films as profitable theatrical subjects were largely unsuccessful, however. By the time educationalists found nontheatrical success in the 1920s, industry leaders from an earlier generation, such as Edison, Kleine, and Urban, were nearing the end of their careers.

By the 1920s, rather than the Progressive-Era dream of a commercial cinema loaded with "uplifting" and "moral" educational subjects, educational film exhibition was shifting to the nontheatrical field. At this time, the history of the nature film splits in two directions: theatrical and nontheatrical. On commercial movie screens, short-format nature subjects became less common as wildlife was the subject of feature films such as *Chang: A Drama of the Wilderness* (1927) and *Simba: The King of the Beasts* (1928). While theatrical wildlife films exploited nature as a sensationalistic domain, on the nontheatrical circuit the nature film became one of the dominant genres of the schoolroom, its subject matter modeled loosely after the canonical educational subjects of biology and zoology. However, as we shall see, classroom nature films also used many of popular cinema's sensationalizing tropes. Produced by newly formed companies such as Eastman Teaching Films and DeVry School Films, as well as established commercial outfits such as the Brwy Studios and the German Ufa studio, classroom nature films combined the popular cinematic trope of animals fighting with more sober attempts to depict and describe organisms in their habitat. Some, such as *Struggle for Existence* (1921), *A Murderous Midget Fish* (ca. 1920s), and *Wing, Claw, and Fang* (1946) presented nature as a strange and ferocious domain: a space to be tamed, or a space in the process of being tamed. Other films with more plainly descriptive titles such as *Beavers* (1930), *Trees* (1938), or *Bees and Spiders* (ca. 1927) were less sensationalistic, but they still relied on techniques of popular cinema, albeit reconfigured to suit classroom use.

By the early 1930s classroom films were becoming less of a novelty and more of a "standard piece of instructional technology." One study estimated that in 1931 "there were 350,000 non-theatrical projectors in the United States. About 6/7 of the total were 16 mm. projectors." A 1934 U.S. government study found that thirty-two states had "film libraries of varying qualities under the supervision of educational directors." This same study also reported that "more than thirty-five reliable commercial companies produce nontheatrical films, and nearly two-hundred companies distribute them." Film journals such as *Educational Screen and Visual Education* were launched to cater to this emergent wing of the motion picture industry. The nontheatrical field may not have been as profitable as the theatrical side of the movie business, but it was in some ways more stable. In fact, classroom films constitute one of the most significant and durable alternatives to the theatrical conception of cinema.

### Early Debates about Motion Picture Education

Educational motion pictures were a hotly debated topic in the 1910s and 1920s. Many educators were at first skeptical about the new medium as a tool for learning. The most common criticism of educational films (as opposed to commercial cinema, which was often dismissed outright) centered on the perception that cinema creates passive spectators, inert viewers who quickly forget

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6 A number of these films were recently released on DVD (*Region 0 PAL format*). See *Secrets of Nature: Pioneering Natural History Films, 1922–1931* (London: British Film Institute, 2010).

7 For more on the efforts of George Kleine and Thomas Edison to promote educational films in the United States in the 1910s, see Jennifer Peterson, ""The Five-Cent University": Early Educational Films and the Drive to 'Uplift' the Cinema," chapter 3 in *Education in the School of Dreams: Travelogues and Early Nonfiction Film* (Durham, NC: Duke University Press, forthcoming).

8 Kenneth P. King, "The Motion Picture in Science Education: 'One Hundred Percent Efficiency,'" *Journal of Science Education and Technology* 8, no. 3 (1999): 216.


10 Koon, *Motion Pictures in Education*, 7, 8.
what they see on the screen. One educator, for example, warned in 1913 that educational films were "dangerously convenient adjuncts of the old 'pouring-in' method of teaching." However, a standard defense of educational films quickly emerged, hinging on two points: film's efficiency (it was thought to educate students more quickly than reading or lecturing), and its realism (film's lifelike quality of representation was celebrated particularly in nature films and travel films). Praise for educational films in the popular press tended to uncritically celebrate visual education as an easier and faster method of communicating information with unsubstantiated claims such as, "The eye is far quicker than the ear." While the terms of this debate emerged quite early, the questions surrounding educational cinema were not seriously grappling with until the 1920s. The question of cinema's popularity—always an issue for the film industry, which was unsure of the market value of educational films—crashed with the question of how motion pictures could best be used as an educational tool, which was the main question concerning educators. In a sense, the nontechnical sector solved the first problem by marketing classroom films not to potential audiences (in this case, students) but to the teachers and educators who showed them.

As educational films moved into classrooms, the institutional forces of newly professionalizing academic departments of education stepped in to examine visual education more thoroughly. In 1923, the National Education Association (NEA) began appointing an annual Committee on Visual Education. By the late 1920s, a number of research studies had been conducted to examine the effectiveness of films in the classroom, and by the mid-1930s, a flood of new publications exploring the subject of visual education appeared—at least thirty-three books, according to one bibliography. In 1927, the NEA authorized what would become one of the most important of these early studies, conducted by Ben D. Wood of Columbia University and Frank N. Freeman of the University of Chicago, the results of which were published in 1929 as Motion Pictures in the Classroom. Unlike the vague and sometimes contradictory efforts of commercial film industry figures such as Edison and Kleine, this two-year study by two professors of education followed a clear methodology, asking teachers specific questions such as, "Do these films have a measurable value in supplementing class instruction? What are the values and influences of these films?" The study involved nearly 11,000 children in grades four through nine in twelve cities across the country. The children were taught the same basic curriculum, but half of the teachers—the "experimental" teachers—were given classroom films to supplement their lessons. The published study contains forty-four tables comparing test scores and other attributes of those children who watched classroom films and those who did not. The study concluded that the students who learned with motion pictures gained more knowledge than those who did not:

The foregoing analysis has shown that the motion picture film contributes to both [direct and indirect] aspects of the child's education. It shows, however, that the film contributes by a much larger amount to the direct than to the indirect aspects. In other words, the film gives the child clear-cut notions of the objects and actions in the world about him.

By "indirect" education the writers meant abstract ideas requiring reflection. These conclusions, despite being supported by a large amount of data, are perhaps unsurprising given the study's financial backing: the Wood-Freeman study was sponsored by the Eastman Kodak Company, and its findings resulted in the founding of Eastman Teaching Films, Inc. The Wood-Freeman study is even obliquely mentioned in the company's first advertisements (see fig. 6.1). (In this ad and elsewhere, the names "Eastman Teaching Films" and "Eastman Classroom Films" are used interchangeably, although the company itself officially went by the former name.)

The Wood-Freeman study's positive conclusions were consistent with other early research studies on classroom films, which also found that motion pictures helped students learn. Even more traditional educators reached similar conclusions. Prominent biologist George W. Hunter, whose Civic Biology (1914) was the "best-selling text in the field," published a 1934 book called Science Teaching at Junior and Senior High School Levels, which surveyed the use of visual education in science classrooms. Hunter takes up the concerns of previous educators, but his arguments are more systematically explained and supported.

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28 Ben D. Wood and Frank N. Freeman, Motion Pictures in the Classroom: An Experiment to Measure the Value of Motion Pictures as Supplementary Aids in Regular Classroom Instruction (Boston: Houghton Mifflin, 1929), xvii.
30 Wood and Freeman, Motion Pictures in the Classroom, xx.
31 Ibid., 32.
32 Edward J. Larson, Summer for the Gods: The Scopes Trial and America's Continuing Debate over Science and Religion (New York: Basic Books, 1997), 33. Incidentally, Hunter's 1914 textbook was at the center of the "Scopes Monkey Trial" of 1925; Civic Biology was used by John Thomas Scopes to teach evolution in a Tennessee high school. Larson, Summer for the Gods, 33, documents that a revised edition, published after the trial as A New Civic Biology (1926), excised all mention of evolution.
He concludes that students learn better and more quickly with the use of visual aids: "Children with high I.Q. learn by word quickly because they have adequate mental imagery, but the lower I.Q.’s have to be stimulated by visual aids." He also argues the familiar point that the motion picture saves time and effort: "It takes the place of the field excursion and the visit to the manufacturing plant." In addition, Hunter argues that films could visually capture natural phenomena in a way that would be otherwise impossible:

They can use slow motion picture and time-lapse effects. Cell division, growth, and movement of unicellular animals, yeasts, bacteria, and so forth, are examples of such usage... Animal life histories, such as the development of the frog or the life cycle changes of insects are summed up as in no other way.

Finally, Hunter expresses reservations which echo earlier concerns: Watching science films "is an easy way to go to school. There is no effort to see and to absorb."26

All of these studies of visual education had the effect of validating film as a tool for the classroom. The pros and cons expressed by earlier generations were systemically explored by dozens of educators, and classroom films were found, on balance, to be beneficial. This institutional endorsement of film undoubtedly helped transform educators’ attitudes from skepticism to acceptance. This academic institutionalization could never have been achieved by the commercial film industry. But what specific issues were raised by the discipline of natural history? And how did nature films engage with this discipline?

Natural History as Popular Science in the 1920s

Among scientists, natural history was not well respected in the 1920s. Biologist Charles Elton wrote in his important book Animal Ecology (1927), "It is a fact that natural history has fallen into disrepute among zoologists." Elton disparages local natural history societies, characterizing their work as a "mania" and writing that "however much pleasure they may give to their members, [they] usually perform no scientific function."27 This attitude is indicative of general scientific trends in the early twentieth century. Historians of science point to a major shift in biology that took place at the end of the nineteenth century.

"After reaching a peak in the first half of the nineteenth century with the establishment of natural history museums and zoological gardens, one historical account argues, "the social status of natural history underwent a relative decline with the rise of laboratory biology in the second half of the century.\textsuperscript{28} By the early twentieth century, natural history was often considered the province of amateurs. By mid-century, biologist G. F. Ferris could fondly mock the pre-1900 natural historian archetype—one who conducted the observational work in the field rather than in the laboratory: "He was the man who is referred to now, sometimes with respect, sometimes with a sort of envy, and sometimes with a slightly condescending air, as the 'Old Time Naturalist.'"\textsuperscript{29} The "Old Time Naturalist," interested in "the organism as a functioning whole and as a part of the living world," was not a specialist but a generalist.\textsuperscript{30} This type had been superseded in the twentieth century by specialized professionals committed to what Daston and Galison call "mechanical objectivity."

What is significant about this shift is that natural history films for the classroom made during the 1920s and 1930s still participate in the Old Time Naturalist version of the discipline: collecting, displaying, generalizing. The films present animals in their habitat, but with a minimum of detail about their physical characteristics or behavior, and completely independent of experiments then being conducted in biochemistry, anatomy, and genetics. For a practicing biologist in the 1920s, these films would have appeared as anachronistic natural history, not contemporary science. In fact, several studies of science education conducted in the 1920s came to the conclusion that science instruction in schools (without motion pictures) was stunted in just this way. "Observation and identification have become the predominant notes in nature study," one writer concluded, saying, "hence, with the vital elements of both scientific method and content lacking, nature study has become, in many cases, a conglomeration of busy work and object lessons.\textsuperscript{26} Similarly, another report concluded that "the kind of knowledge which children have of elementary science is largely of an observational and factual type, such as 'what is,' 'name,' and 'tell about.' It is the kind of knowledge which could be acquired incidentally, in the course of normal experience, with little or no regard to systematic classroom instruction.\textsuperscript{32}"

In fact, nature films for the classroom made in the 1920s fit into an older curricular model: nature study. Nature study was introduced into American public schools as part of the progressive school reforms of the 1890s, which updated school curricula and expanded elementary- and grammar-school education to reach a larger percentage of the population. As Sally Gregory Kohlsme, has shown, the nature study movement built upon new developments in child psychology, urging a child-centered approach that would "pique natural curiosity, build basic observational skills, and utilize materials familiar to children.\textsuperscript{32a} New in this method was an emphasis on what Kohlsme calls "nature, not books"—learning through direct experience with nature via classroom terrariums, field trips, and the like. As Kohlsme points out, with its emphasis on direct observation and participation, nature study "emphasized visual and other sensual experiences.\textsuperscript{32b} (With its emphasis on organisms interrelating within habitats, the nature study paradigm is most closely related to what we now call ecology.)

Elementary school science does of course lag behind the cutting edge of scientific research. As the examples below make clear, classroom nature films remain within the realm of observational knowledge rather than advanced scientific experimentation. As Daston and Galison observe, "Mechanical objectivity did not drive out truth-to-nature, but nor did it leave truth-to-nature unchanged.\textsuperscript{36}"

What we see in early classroom films is a range of visual appeals that borrow heavily from the old nature study model but occasionally utilize the tropes of mechanical objectivity. Science historians have argued that natural history’s "longstanding success seems to distinguish [it] as the most popular of all the sciences.\textsuperscript{37} Perhaps what these nature films demonstrate is not so much the shortcomings of the early classroom cinema curriculum but rather a difficulty in bridging the split between colloquial and academic knowledge that grew deeper as educational disciplines professionalized in the early twentieth century.


\footnotesize{\textsuperscript{29} G. F. Ferris, "The Contribution of Natural History to Human Progress," \textit{A Century of Progress in the Natural Sciences, 1831–1933} (San Francisco: California Academy of Sciences, 1935), 76.}

\footnotesize{\textsuperscript{30} Ibid.}

\footnotesize{\textsuperscript{31} Gerald S. Craig, "Certain Techniques Used in Developing a Course of Study in Science for the Horace Mann Elementary School," PhD diss., Columbia University, 1927, excerpted in Frank D. Curtis, \textit{Second Digest of Investigations in the Teaching of Science} (Philadelphia: P. Blakiston's Son, 1928), 41.}


\footnotesize{\textsuperscript{32a} Kohlsme, "Nature, Not Books," 341. For an overview of the historical nature study method see the influential book by Anna Bessford Comstock, \textit{Handbook of Nature-Study} (New York, NY: Comstock Publishing, 1911). This became a popular textbook for teachers, and was reprinted many times; a new edition from 1939 was still being reprinted in the late 1950s. The later edition can be downloaded at www.archive.org.}

\footnotesize{\textsuperscript{32b} Daston and Galison, \textit{Objectivity}, 111.}

\footnotesize{\textsuperscript{34} Droz and Benaude-Vincent, "Nature for the People," 409.}
"A Land of Strange Contrasts": Nature Films as a Classroom Genre

As a genre, nature films display characteristics that appear regularly: setting (natural habitat), "character" types (animals and plants), and dramatic incidents (fighting, hunting, feeding). And, as in all film genres, these conventions are often broken. Indeed, there is a great deal of variety in nature films from the twenties and thirties, given that the genre was hypothetically capable of documenting the entire natural world according to scientific taxonomy. Some films were made to illustrate individual scientific concepts, such as The Struggle for Existence (1925), which loosely deals with one part of Charles Darwin's theory of evolution. Others focused on a group of organisms populating a given region, such as Wildlife on the Deserts of America's Great Southwest (a.k.a. Wildlife on the Deserts, ca. 1920s), which documents plant and animal life in the Colorado Desert of southern California. But the largest number of nature films in this era focus on just one organism, or several closely related organisms, as in Frogs, Toads, and Salamanders (1924). These films present the life cycle, physiology, and environment of organisms in the style of a biology textbook of the old natural history mode. Within these various kinds of nature films, there is also a variety of approaches to scientific popularization.37

The Struggle for Existence, released the year of the infamous "Scopes Monkey Trial," was produced by the Bray Studios (also known as the Bray Pictures Corporation), a company known primarily for its animated films. After making a series of successful World War I instructional films for the U.S. Army, animator John Randolph Bray decided "the future of his company lay in expansion from the realm of entertainment into the production of industrial and educational pictures."38 Like Edison and Kleine before him, Bray discovered that educational films were not the financial bonanza he had hoped. Bray had its own nontheatrical distribution department handling educational subjects.39 Perhaps because of the company's drive for commercial success, The Struggle for Existence is filled with sensationalized scenes of animals in conflict. Indeed, a reviewer from The Educational Screen underscored the film's popularizing style by calling the film "an acceptable reel of the popular science variety."40


"Struggle for Existence" is the title of a chapter from Darwin's Origin of Species (1859), but rather than exploring Darwin's theory, the film uses the idea of "struggle" as an excuse for staging scenes of conflict between animals and plants. The film announces with its first intertitle that "life is a perpetual struggle, particularly in the animal kingdom, where one animal preys on another, and the law is to hunt, catch, kill, and eat."41 A dozen examples of this "perpetual struggle" are visualized in the film, which moves hierarchically from simple to more complex organisms—from the plant and insect worlds to birds and finally mammals. The film not only uses the popular cinematic trope of animals fighting, but it even anthropomorphizes its animals at one point when a seal feeding is shown and an intertitle provides dialogue: "Stop shoving, it's mine." Clearly, this film is less invested in science than in capturing the attention of young audiences.

These images of animals in conflict might be dramatic, but The Struggle for Existence has a concept to explain, for which it relies on intertitles. To explain Darwin's ideas, the film makes a nursery rhyme reference: "It is a kind of 'House that Jack Built.' Each creature is the 'dinner pail' of some other. What is death to one is life to another." This intertitle is followed by a staged fight between a weasel and a snake that resembles the animal fight films of early cinema. As an explanation of Darwin's complex theory of species interconnectedness and time unfolding, this nursery rhyme model is strikingly inadequate. But as a strategy for appealing to children, a nursery rhyme presentation of information seems appropriate. Students who viewed this film may have not learned any specifics about evolution or natural selection, but they would have viewed a loose interpretation of Darwin's concept that shares more in common with the fairground than the classroom.

Wildlife on the Desert, in contrast, uses fewer sensationalizing tropes and instead follows the tradition of the "romantic" documentary made famous by Robert Flaherty's Nanook of the North (1922).42 The desert in this film is a "grim, land of strange contrasts," where the environment is "harsh" and nature is "stern." The intertitles tell us. Unlike Nanook, the film does not present any maps, and instead only gestures broadly toward a vague "great southwest." Taking a traditional natural history approach, the film presents a variety of flora and fauna living in the region, such as the ocotillo plant, the cholla cactus, the gila monster, and the ringtail cat. The film contains some beautiful photography, moving from extreme long shots of the landscape to close-ups of

41 In contrast, Darwin concludes his chapter by saying, "When we reflect on this struggle, we may console ourselves with the full belief, that the war of nature is not incessant, that no fear is felt, that death is generally prompt, and that the vigorous, the healthy, and the happy survive and multiply." Charles Darwin, The Origin of Species (1859, reissue ed., New York: Penguin, 1958), 87.
42 I have not been able to identify Wildlife on the Desert's year of production, although it was certainly made before 1938, as I have found it in one filmography from that year. Judging from the film's visual style, it was probably made in the mid-1930s.
animals. A segment on the gray fox uses slow motion, allowing the viewer to focus on the fox's tail, which, we are told, serves as a balance when running. Even though it precedes by decades Walt Disney's acclaimed feature The Living Desert (1953), which documents this same region, Wildlife on the Desert uses many of the same conventions that proved popular in later theatrical nature films. The film presents simplified information, brought to life by compelling film imagery. We see various wildlife specimens, but we learn only a few details about them: what they look like, how they move, and what they eat.

This film, like most classroom films before the mid-1930s, is silent. Synchronized sound technology was available in commercial theaters beginning in 1927, but classroom films lagged several years behind. No 16mm sound-on-film projectors were available until 1934, and then they were expensive. The lack of synchronized sound would have given the teacher more room to tailor and adapt the film, however, by lecturing as the film unspooled. This lack of sound also means that each specimen is typically represented twice, first linguistically (by intertitles) and then photographically. In Wildlife on the Desert, the intertitles feature artistic renderings of idealized desert scenes, so that when the photographic images of wildlife subsequently appear, the animals are in a sense projected into a preexisting fantasy landscape (see fig. 6.2). This film may not resemble a fairground attraction as much as Struggle for Existence does, but it still popularizes science. Classroom nature films were becoming accepted as useful educational tools; however, as films, they still catered to popular expectations about entertainment.

In fact, the most "modern" nature films—by which I mean films that were conceived according to the most current ideas in visual education at that time—were the least sensationalistic. In an attempt to move toward modern scientific objectivity, which by definition runs counter to the fairground tradition of visual attractions, some nature films attempted to avoid the tropes of theatrical animal films. Eastman Teaching Films' output exemplified this modern, scientific approach. In May 1928, Eastman Teaching Films, Inc. was incorporated and began selling (not renting) prints to schools.44

As a commercial venture, Eastman Teaching Films was expected to make money, as one Eastman Kodak executive explained in 1927: "If [this] is a success...it will have to be justified to our stockholders as being an enterprise that will yield a reasonable profit to the company." However, the company was

43 Slide, Before Video, 89–90.
44 "Use of Films for Teaching Is Launched," Rochester Times-Union, May 5, 1928, GEH.
46 "Educational Movies Made by Kodak Company," Rochester Democrat and Chronicle, Apr. 21, 1927, GEH.
headed by educators rather than businessmen, and accordingly followed different principles of production, distribution, and exhibition than commercial promoters such as Bray. Wood and Freeman explained:

The films were written with definite pedagogical goals in view. . . . The films tell no story and present no drama other than that which inheres in motion pictures of concrete things, places, and actions. They are not entertainment films, though all who view them find them exceedingly interesting. The films were designed to stimulate close observation and to provoke, in the minds of the pupils, insistent questions. . . . The classroom film with which we are here concerned is not a self-contained unit carrying its own story which the student is to receive passively, and least of all is a story which has a definite and satisfying end. On the contrary, it is an instrument which the teacher is to use and not a substitute for the teacher, textbooks, maps, drawings, or other time-honored instrumentalities of the classroom. Filmakers attempted to keep intertitles to a minimum, and educators were instructed to show their pupils each film twice, at least during the experimental phase. Study guides accompanying each film were written by education theorist Edgar Dale, whose widely used 1935 book How to Appreciate Motion Pictures was one of the first to envision spectators as potentially engaged, critical participants in film viewing. This series of classroom films thus demonstrates some of the most up-to-date ideas of 1920s visual education, and it includes a number of nature films. One Eastman Classroom Films pamphlet listed twenty-nine titles under the category “Nature Study.” The films and guides were widely circulated in schools across the country, and quite a few of them survive in libraries and archives today.

A characteristic example is Frogs, Toads, and Salamanders (1932), which was made for classes at junior-high, senior-high, and college levels. As its title indicates, the film depicts three different (but related) organisms. Unlike the previous two films I have discussed, this one strives for scientific objectivity, depicting the life cycle of each amphibian from egg to tadpole to adult. The film even uses representational techniques of “mechanical objectivity” at several points. Microscopic photography, for example, is used to depict frog eggs (see fig. 6.3). This image is framed with the circular mating of early cinema days, a convention often used to denote objects deserving special visual attention, shown in close-up (as in the film Grandma’s Reading Glass [G. A. Smith, 1906]). While a similar circular mating was also used in nineteenth-century scientific photographs by Auguste-Adolphe Bertho and others (because it replicates the human eye’s perspective when looking through a microscope), for viewers familiar with the visual sensibility of popular cinema rather than scientific photography, the mating in this film might have had the effect of heartening back to the conventions of popular cinema, rather than connoting scientific objectivity.

Unlike Wildlife on the Desert, which devotes just a couple of shots to each specimen, Frogs, Toads, and Salamanders devotes approximately three minutes to each of its organisms, which allows the film to present more detail about each specimen than the previous two titles discussed above. However, the film still presents only the most basic information, certainly covering less ground than a textbook would: “only the [frog’s] hind feet are webbed,” “when the toad winks the eyes are pulled into the head,” and so on. What’s more, the film contains

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68 Slide, Before Video, 42–64.
69 Wood and Freeman, Motion Pictures in the Classroom, 36–37.
70 Ibid., 26–27.
72 Eastman Classroom Films: A Descriptive List, 21–25. Although this catalog is undated, it was clearly published before World War II.
73 Dorothy E. Cook and Eva Cottet Rabbel-Smith, Educational Film Catalog: A Classified List of 1773 Non-Theatrical Films with a Separate Title and Subject Index (New York: H. W. Wilson, 1936), 19.
moments reminiscent of the animal fight and animal feeding tropes when it depicts birds hunting for tadpoles to eat and, in particular, when it displays a toad eating a worm (see fig. 6.4). This brief segment also utilizes a technique of continuity editing, a hallmark of fiction film, by cutting from a master shot of the toad and its prey to a close-up of the toad, and back out to the first shot again, to increase the dramatic tension of the moment.

We can see, then, that even the more academically oriented Eastman Teaching Films productions used some devices of popular cinema to convey their information. Another Eastman Teaching Film, Some Seashore Animals (1930), features close-up shots that have clearly been staged in a controlled laboratory environment, as one can see from the careful, artistic backlighting in this image of marine tube worms (see fig. 6.5). It was certainly acknowledged in the 1920s that some stage management was necessary to film nature study specimens. Especially when recording discrete events such as a butterfly molting, a 1921 article in Visual Education said, "it is . . . vital that the stage be so ingeniously arranged beforehand as to make it possible to operate lights, camera, and focusing device on the instant." However, as the tube worm image demonstrates, it can be difficult to draw the line between capturing an "objective" image of nature and an "artistic" image of nature. Interestingly, I found the tube worm film in an archive on the same reel with a much more sensationalistic film called The Cattle Fish (ca. 1910s). While Some Seashore Animals feels careful and controlled, The Cattle Fish focuses on its subject's propensity to shoot ink while in conflict with other sea life, and it features a more obviously staged mise-en-scène along with more fight scenes. All this is to say that nature films have a difficult time moving away from the domain of popular science and into the realm of academic science. Some films popularize more than others.

Animals and other natural history topics were ideal subjects for uniting the competing needs of education and entertainment in the classroom film. As one of the most enduring popular science topics, and as a favorite subject for children, animals were, not surprisingly, a cornerstone of classroom cinema. As Akira Lippit writes, "Animals had found a proper habitat or world in the recording devices of technological media."9 Theorists since John Berger in 1970 have been arguing that animals appear in representations more frequently as they disappear from everyday life in the modern world.99 More often than not, as

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these critics have pointed out, animals serve as metaphors for human behavior. And yet early natural history films—particularly the more academic ones such as Eastman Classroom Films—sought to represent animals not as metaphors but as scientific subjects, as animals in themselves. While these films may not have entirely succeeded in modeling scientific objectivity for their young audiences, it is worth noting that this goal of pure objectivity was by definition unattainable even in the realm of advanced scientific practice. “Was mechanical objectivity ever completely realized? Of course not,” Daston and Galison write. But the fact that children and young adults were exposed to a cinematic version of natural history in the classroom as early as the 1920s is in itself a remarkable development, and should remind us that encounters with film at school may have been as significant for young viewers as going to the movie theater.

**Filmography**

*The Cattle Fish* (ca. 1920s) 2 ½ min., 16mm
DISTRIBUTOR: Film Featurettes, Inc. ACCESS: www.archive.org/details/some_seashore_animals_1930. NOTE: *The Cattle Fish* is found at the end of this video file. This is likely a film made by the German Ufa studio, as Film Featurettes, Inc. distributed Ufa educational films in the United States at this time.

*Frogs, Toads, and Salamanders* (1932) 9 min., 16mm and 35mm

*Some Seashore Animals* (a.k.a. *Seashore Animals*) (1930) 7 min., 16mm and 35mm

*The Struggle for Existence* (1925) 5 min., 16mm

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*Wildlife on the Deserts of America's Great Southwest* (a.k.a. *Wildlife on the Desert*) (ca. 1920s) 11 min., 16mm

**Related Films**


*Glimpses of Bird Life* (1930). Directed by Oliver Pike. Distributed by Pathé. Access (only if you are at a registered school or library location in the UK): www.screenonline.org.uk/film/id/1971010/index.html.

*In Birdland* (1907). Directed by Oliver Pike. Film is no longer extant.

*A Murderous Midget Fish* (ca. 1920s). Distributed by Film Featurettes, Inc. Access: www.archive.org/details/murderous_midget_fish. NOTE: This film was produced by Ufa and distributed in the United States by Film Featurettes, Inc.

