A Lantern-Slide-Inspired Look into Biology Teaching’s Past

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ABSTRACT

Using visual aids in the instruction of biology is a technique with deep roots. Collections of historical images, many now in the public domain, are currently being digitized and made available online by several academic and commercial organizations. Unfortunately, the original indexes, guides, and catalogs for the materials are frequently inadequate, and in some instances border on the fraudulent. Careful examination of these archives by the skilled eyes of present-day biology educators is needed to uncover historical imagery that will contribute valuable information useful for contextualizing contemporary topics in the classroom.

Key Words: Sources for historical biological images; history of biology teaching; biological visual aids; paid endorsements; public domain photographs; lantern slide; Keystone View 600 Set.

I just purchased a lantern slide showing a Key West, Florida, dock covered with living green turtles, turned upon their backs.

Giving a swanky name to the projector may have helped to raise the price, but more was needed to rouse the education community's interest in using the device as a teaching tool. That change required the availability of a large, inexpensively priced inventory of lantern slides. The Keystone View Company, manufacturers of home-use lantern-slide collections, jumped at the opportunity to fill that need.

The Growth of the Keystone View Company

During the early 1900s, the Keystone View Company of Pennsylvania was the largest producer of stereoviews in the United States. These were flat cardboard cards printed with paired stereoscopic images and, in order to get a three-dimensional effect, viewed with both eyes through a two-lens viewer. The viewer was usually handheld and allowed only one person to see the picture at a time. Keystone View also made lantern slides for projection, which enabled group viewing. Many of the slides were made from one of the stereoview’s paired negatives. Lantern slides were not stereoscopic but, being made directly from a film negative into a positive on glass by exposing a photosensitive emulsion, were sharper and had better tonal range than the stereoviews printed on photosensitized cardboard. B. L. Singley was Keystone’s founder and original photographer, and, although he was competent enough to make a living by taking and selling photographs, he realized that salesmanship was his best talent. He
began hiring others to do the picture-taking for him, thus freeing his time and energy to build Keystone View into a large, successful company (Dukesmith, 1904).

After the development of motion pictures in 1909, and with radio becoming a major form of home entertainment, the popularity of magic-lantern slides and stereoviews began a slow decline. Desperate to rescue his company from what he correctly predicted would be a continuing plunge in the popular lantern-slide market, Singley set a small army of salesmen onto school systems to generate a new market for lantern slides. The sales force's task was to promote a large lantern-slide collection that Singley put together for school use, named the 600 Set. It was a collection of six hundred 4- by 3.5-inch glass slides that came filed in a nine-drawer oak cabinet and weighed over a hundred pounds. For each of the slides there was a libretto that teachers could read aloud to classes while students gazed upon the projected images (see Figure 4). The scripts frequently ended with several questions useful for stimulating a class discussion or that could be given to students as an essay assignment.

The crowning jewel of the 600 Set's sales pitch was the 347-page teachers' guide that accompanied the slide collection. Mostly, the manual was a cross-reference index that grouped the slides' file numbers, 1 to 600, with the began hiring others to do the picture-taking for him, thus freeing his time and energy to build Keystone View into a large, successful company (Dukesmith, 1904).

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Teaching... in War and in Peace

They're looking at pictures today in schools--factory training schools, engineering schools and in military camps. They are pictures projected by B&L Balopticons... large clear, brilliant pictures that permit the whole class to see and study at once... that permit the instructor not only to point out and emphasize the important features of each, but also to utilize a wide variety of teaching material. Among these B&L Balopticons are models for standard size and 2 x 2 slides, color transparency, photographs, opaque objects or actual specimens... the same Balopticons which serve the needs of peace-time education as well... another instance where B&L instruments of peace have taken their place beside the optical instruments of war which Bausch & Lomb produce.

BAUSCH & LOMB
OPTICAL CO. • ROCHESTER, NEW YORK
ESTABLISHED 1853

AN AMERICAN SCIENTIFIC INSTITUTION PRODUCING OPTICAL GLASS AND INSTRUMENTS FOR MILITARY USE, EDUCATION, RESEARCH, INDUSTRY AND EYESIGHT CORRECTION

Figure 3. Full-page ad from a 1943 edition of The American Biology Teacher advertising a Bausch & Lomb Balopticon.

Missing the Mark for Biology Educators

The Hippopotamus Hunt picture was the example chosen to advertise the lantern-slide collection in education journals. In the ad, Keystone asked the question, “Does it appeal to you that we can supply the equivalent of 6000 subjects and [sic] necessary to purchase only 600?” (see Figure 2). The rationale for the claim was the teacher’s ability to use each slide in many different ways thanks to the extensive cross-referencing in the guide. Each lantern slide’s reference number was repeatedly listed under the various academic disciplines with which they could be included – match-ups that often can’t be justified without impressive stretches of logic. For example, the hippopotamus-hunt pictures were indexed under “Africa - Rhodesia,” “Mutton - Deer - Sea Foods,” “Silk - Leather,” “Making Paper - Tobacco - Irrigation” (under the subheading “Ivory”), “Fishing - Hunting - Mining,” “Composition Topics,” and “Elephants - Hippopotami.” It is a testimony to Singley’s salesmanship that he could not only adapt a home-entertainment slide collection for school use but also stretch tenfold the subject application of the slides. A part of the advertisement that does appear to be pure hype, at least in light of the biological references, is the idea that notable professionals in the field had anything to do with its creation other than producing what appear to be paid endorsements.

A computer search of the quarter-million-word revised 1922 edition of the teachers’ guide does not find the word “biology” used once, nor is the term “natural history” used – surprising for an educational series made at the tail end of a time often called “The Golden Age of Natural History.” “Nature Study” is the catchall heading the teachers’ guide uses to cover the collections of slides that have to do with the life sciences. The introductory comments to the section were written by Ernest Thomas Seton, an author of several nature books and the founder of the Boy Scouts. His opening to the Nature Study section includes a run-on sentence linking children’s interest in animals with education. He states:

Returning With Trophies from a Big Game Hunt

Big Game Hunting, Rhodesia, Africa
Keystone ID 17015

Africa is the hunter’s paradise. Elephants, lions, tigers, zebras, giraffes, hippopotamuses, rhinoceroses, and other large beasts of the jungle and plain are still to be found here in great numbers. Every year hunters from Europe and America go to Africa to try their rifles on the big game.

But hunting in Africa is a business. One would not dare or care to plunge into the wilderness by himself. Instead, a hunter hires natives to go with him. These natives go as guides, beaters, and carriers. The guides know the trails of the animals. The beaters surround a bit of wood and make a great noise. The beasts run out and the hunter fires at them as they cross the open. The carriers bring on the trophies of the hunt, and lug the camping outfit.

A hunting expedition is called a safari. Natives in a safari can carry 60 pounds to the man, and cover 25 miles in one day. They eat two meals a day of a vegetable paste, called mealies. They do not get meat often; but when a successful killing is made by the hunter his natives gorge themselves on the flesh of the animals.

The view shows an American hunter and his safari of 23 men. They are on a journey of 650 miles. They have covered 250 miles at this point. For 400 miles the hunter will pay each of them 6 pounds of mealies, 5 yards of muslin, and $1.75.

Some of the natives here seen are carrying heads of hippopotamuses. Others are carrying the camping outfit, the extra rifles, and the cameras. In very few places could this American get so much help at a cost of $5.00 a day.

Some of the big game hunting is done for sport, some for profit, and some for scientific purposes. Skins, hides, tusks, and horns are the products of the hunt.

Figure 4. Textual material accompanying lantern slide.
The animal, being nearer to man has usually first claim on the interest of the young naturalist; but, strange to tell, I know of some men who began by studying birds and quadrupeds and later drifted away to trees and plants; the reason given being: The latter are easier to study; they do not run and hide when you wish to be with them, and they respond so much better to attempts to cultivate and propagate them.

Despite Seton’s pontifications, the immediately following Index of Slides lacks any ape or monkey images whatsoever. What the animal section of the 600 Set does index under “Nature Study” includes 34 pictures of horses, 14 of mules and donkeys, and 15 of various types of cattle. Dogs, sheep, goats, pigs, and oxen are also well represented in the collection. The rest of the animal kingdom’s diversity is represented by only eight slides. Of these, three are of domesticated elephants, one of an alligator in a zoo, one of a beaver, one of a kangaroo, and two of dead hippopotamuses. One of the hippopotamus pictures is of parading native porters carrying severed hippo heads atop their own (see Figure 5). The mismatch of Ernest Thomas Seton’s written introduction to the slide index calls into question whether he had played any meaningful role on the “Committee of Educators” in selecting slides for the 600 series as the sales literature claims. The teachers’ guide does list Seton as a member of the 600 Set’s editorial board and as one of the specialists who compiled the “Nature Study” section. The introduction to the 1922 edition also states that the subject categories were “edited by 62 leading educators” who “have made a distinct contribution to visual education” (Keystone View Company, 1922).

Apparently B. L. Singley recognized the value of projected images in education but did little to create anything new for education with Keystone’s 600 Set of lantern slides for educators. Singley planned to do no more than repackage the company’s existing photographic inventory and shoehorn it into a market with deeper pockets than the home-entertainment community.

No section of the 600 Set is more revealing of this strategy than the nature-study division of the set when viewed from a biology educator’s perspective. If we compare the slide inventory of the 1906 teachers’ guide for nature study with the same section in the 1923 edition, we find it remains unchanged. Both editions list the same domestic-animal picture collection with the same two dead-hippo shots tossed in. No new photographic work has been added to the set to improve its applicability to animal biology education.

The Decline of Keystone View’s Lantern-Slide Era

B. L. Singley retired from the presidency of Keystone View Company in 1936 and died in 1938. Charles Crandall and George Hamilton, two longtime employees of the company, purchased enough stock to assume control of Keystone View. Crandall functioned as president of Keystone until he was discovered dead, slumped across his desk, in 1956. Hamilton assumed the presidency and made his son, Robert C. Hamilton, vice president. According to the Titusville, Pennsylvania Herald, Robert Hamilton was killed in 1961 when he crashed his car into the nearby French Creek. The Meadville Tribune reported that his father, George, died a year later. Keystone View merged with Mast Development Corporation to become Mast–Keystone in 1963. The financial reason for the merger was obtaining Keystone’s eye-training and ophthalmological instrument manufacturing resources. The entire photographic section of the company was left behind, stored in the basement of the former Meadville High School building.

According to Leigh Gleason, curator of collections at the University of California Riverside/California Museum of Photography (UCR/CMP), Mast Development Corporation’s president and former Keystone View employee Gifford Mast entered into negotiations with UCR/CMP regarding the possible housing and preservation of the 67,000-pound collection should it be donated to the university by the Mast family. Unfortunately for the state of Pennsylvania and the residents of Meadville, negotiations were almost completed by the time the pending deal was made public. As stated in the Meadville Tribune in 1977, Pennsylvania’s Governor Raymond Shafer intervened in an attempt to get the collection for Allegheny College—but it was too late. The negatives and prints are now stored at the UCR/CMP as the Keystone-Mast Collection. As grant funds become available, the collection is being digitized and made available online at http://www.cmp.ucr.edu/mainframe/collections/guides/kmast/.

The magic lantern’s use in education was pushed into obsolescence by the accurately and richly colored Kodachrome and other slide films during the 1950s. Keystone View never advertised the 600 Set in ABT, but the following personal ad run by a biology educator in the journal’s classified section in 1955 signals well the last gasp of the lantern-slide format in education (see Figure 6). The market for lantern slides had finally run its course. B. L. Singley’s efforts managed to pump enough life into the medium as an educational projection format to keep Keystone

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**Figure 5.** Returning With Trophies from a Big Game Hunt, Rhodesia, Africa (Keystone View Company, catalog no. 578 – [17015]). Porters are carrying the skinned and severed heads of the trophy hippopotamuses. Examining the teeth with a stereoscope reveals that the porters are carrying the hippo heads upside down, with the rami of the mandibles pointing skyward, looking like ears. Close examination also reveals that the huntsman is wearing sandals with socks.

**Figure 6.** A classified ad in *The American Biology Teacher*, 1955.
View lantern-slide sales alive for a half century after the home-use market started declining. For this he must be recognized as a successful entrepreneur, even though his sales claims and the ethics of his endorsers for the biological-sciences section must be viewed with a raised eyebrow.

**Keystone View’s Second Chance to Aid Biology Education**

Even though Keystone View’s 600 Set was inadequate for biology instruction, the rest of the company’s lantern-slide inventory should not be sold short. The Keystone-Mast collection contains a half century of scenes and events from around the world shot for the home-use and stock photography markets. Keystone also acquired the inventories of competing companies as they went bust, further enlarging their stock. The remaining inventory undoubtedly contains historical images useful to biology educators interested in finding views of things from a century ago. But it will take a patient and educated eye to find them, as few of the pictures are catalogued or titled in any way that would signal possible biological applications of the pictures. As the thousands of photographs and stereoviews now held in the Keystone-Mast collection at UCR are digitized and become available, online historians, anthropologists, art educators, and others are eagerly searching the resource for photographic documentation applicable to their fields. Biology educators need to be among that group.

The digitization process at UCR is moving slowly, but Keystone View Company lantern slides are frequently available on eBay and from antiquities dealers. Although this can be a costly way for educators to acquire the images, there is a benefit of purchase. Under US copyright law, copyright protection expires after 70 years. Educators who own a copy of an image produced before 1929 are free to reproduce and use the image as they choose (see [http://en.wikipedia.org/wiki/Copyright](http://en.wikipedia.org/wiki/Copyright) for a concise review of a complicated topic).

Searching online for high-quality historical images of value to one’s area of expertise can open new vistas to armchair biologist-explorers. Consider a firsthand example: I just purchased a lantern slide showing a Key West, Florida, dock covered with living green turtles, turned upon their backs, awaiting shipment to New York City’s food markets. As I am a teacher of ecology, that slide is now in my file for class display and future projects. The turn-of-the-century dress of the onlookers and workers on the dock establishes the picture’s place in history while their look of indifference as the upended turtles struggle in vain will speak a loud message to modern-day students. The lantern slide’s century-old frozen moment bears witness to a time when what now is a protected and endangered natural treasure was viewed as just a crop in need of harvest.

### References


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