

Charles Lewis Peticolas (1829-1919)

by Brian Stevenson, Kentucky, USA

C.L. Peticolas was a respected professional slide-maker, operating between approximately 1876 and 1914. He specialized in mounting diatoms, capitalizing on the rich and varied diatomaceous deposits found in his native Richmond, Virginia. He also mounted diatoms from locations throughout the world, as well as other types of specimens, such as foraminifera. All of the Peticolas slides with which I am familiar are strews of mixed species. Indeed, Peticolas boasted about the wide variety of species to be found in many of his preparations. However, he also advertised type slides in the style of J.D. Möller, with arranged rows of individual diatoms from 20 or more species. If any reader has such a Peticolas type slide, I hope that person would be willing to share pictures with others in the antique microscopy community.



Figure 1. Examples of microscope slides produced by Charles Peticolas, all being mixed strews of diatoms or foraminifera. He mounted both fossil (from diatomaceous earths) and recent (collected from water) specimens, from marine (Aqua Marin) and fresh (Aqua Dulce, “sweet water”) environments.

Charles Lewis Peticolas' grandfather, Philippe Abraham Peticolas, was born in France, went to Haiti with the military around 1790, then to Philadelphia, Pennsylvania, in 1791. Philippe there set up as a painter of miniature portraits. In 1804, he moved to Richmond, Virginia, working as a miniature painter and a teacher of the pianoforte and harpsichord. His four sons each took up similar careers, with Julius Adolphus being described as a “musician and merchant”. Charles Peticolas was a son of Julius, born May 20, 1829, in Richmond. Charles married Anna Marie Parham in 1854. Together, they had 9 children, 6 of whom survived childhood. The 1860 U.S. census recorded Charles as working as a “music teacher”.

The U.S. Civil War broke out in April, 1861, and Charles joined the Confederate Army as a member of Wolff's Company of the Virginia Second Class Militia. During the war, Peticolas wrote several marches and other works, including “General Morgan's Grand March” (Figure 2). One of his brothers, Alfred Brown Peticolas (1838–1915) also gained some renown during the war; his descriptions and sketches of the New Mexico campaign while serving in the Texas Mounted Volunteers of Sibley's Brigade were published as “Rebels on the Rio Grande”.

After the war, Charles Peticolas returned to his earlier business, with all subsequent censuses referring to his occupation as being a music teacher. Evidently, his slide-making operation was a more modest source of income.



Figure 2. Covers of sheet music composed by C.L. Peticolas. All but one are from the U.S. Civil War (1861-1865), with the 'Appomattox Waltz' dating from 1868. Adapted from images held by the U.S. Library of Congress, for nonprofit, educational purposes (<http://www.loc.gov>).



Figure 3. Construction of the Church Hill railroad tunnel, 1872. This massive excavation project cut through the Richmond deposit of diatomaceous earth, and provided C.L. Peticolas with substantial mounting material.

During the early 1870s, a railroad tunnel was dug under Richmond and exposed large quantities of diatomaceous earth. The earliest known records of Peticolas involvement with microscopy are descriptions from 1876 of him producing and selling Richmond diatom slides. However, Coryell's paper on "*The diatomaceous sands of Richmond, Virginia*", published in February, 1876, acknowledged "*C. Peticolas, microscopist*" and stated that "*The microscopic slides were prepared by Mr. C.L. Peticolas, from materials obtained from different localities, such as Church Hill, French Garden, the Capitol Grounds, etc. These localities yielded the most satisfactory and interesting specimens for the microscope, but failed to give the geological horizon or thickness of the strata containing the diatoms. Mr. Peticolas, recognizing the importance and value of the true position and thickness of the strata from a known base-line, very kindly devoted his time to establish these facts for this paper, and, with the knowledge and assistance of Major Channing M. Bolton, he was furnished with material from well-established points in the tunnel and the railroad excavations.*" That reference indicates that Peticolas was a competent and respected mounter of diatoms by 1876, and implies that he was at least dabbling with microscopy for some years prior.

Peticolas published a paper on "*The Richmond diatomaceous earth*" in 1877, cleverly enhancing world-wide interest in those deposits and simultaneously advertising his products. Excerpts from his paper follow:

“The stratum of fossiliferous earth underlying the cities of Richmond and Petersburg, in Virginia, when first discovered by Professor Wm. B. Rogers in 1842, was supposed to be peculiar to those localities. The further investigations of geologists have shown it to be a material constituent in various parts of the great tertiary formation which bounds the continents of North and South America, and, perhaps, those of the Eastern Hemisphere also.

The deposit at Richmond has long been famous with micro-geologists for the great variety of beautiful forms it contains, the illustrious Ehrenberg having assigned to it one hundred and twelve species - nearly double the number to be found at any other place on the Atlantic coast; and the subsequent researches of microscopists have shown it to be perhaps the richest deposit of the kind in the world, every new preparation of the earth revealing some forms not before noticed, many of the most interesting remaining unnamed or described to the present day. The stratum varies in thickness from twenty to forty feet; and Major Bolton, engineer of the Church Hill Tunnel, at Richmond, (which pierces the deposit for three-fourths of a mile), informed me that at certain points of that excavation it reached a maximum thickness of eighty feet. In addition to an inexhaustible supply of the diatomaceous earth, that work brought to light thousands of fossil remains of gigantic marine monsters, that, long ages ago, swam in the deep ocean that must have covered the spot where the city now stands.

*Upon exposure for some time to the weather, this earth assumes an almost snowy whiteness, and crumbles to a fine powder; but as first dug from the depths of the earth, it resembles bituminous coal in color and solidity—so tough and hard is it, that in removing it from the tunnel it was blasted with gunpowder, just as any other rock. Its composition, as nearly as can be estimated in a general way, is: 10 per cent unbroken forms of the diatomaceae, 25 per cent fine white sand, and the balance fine clay, formed, perhaps, mostly of the decomposed and broken diatoms - the whole mass interspersed with many sponge spicules, and a few polycystina, and so strongly impregnated with alum that many of the wells and springs in Richmond are injured by it. To the microscopist this deposit is a source of unfailing interest, whilst the most inexperienced in such matters, upon being shown the wonderful forms found in it, are struck with surprise and delight. In looking at these different forms, one is struck with the wonderful resemblance which they bear to things of everyday use, as among them may be found models of almost all the implements used by savages, whether for war, the chase, or in domestic life; witness, for instance, his stone hatchets, arrow and spear heads, knotted clubs, boomerangs, etc.; a catalogue of such matters used by civilized people would embrace plates, dishes, cups, saucers, gridirons, pins, balls, tops, spectacles, watches, anchors, dumb-bells, cannon, coin, musical notes, and many other articles - the investigator being constantly startled by the strange resemblance which hundreds of these ancient natural forms bear to articles used in our houses and workshops. Certain varieties, however, predominate, and their distribution varies with level and locality, the upper portion of the stratum being comparatively poor in forms, while they increase in number and variety as we descend to the middle, falling off again towards the bottom. The genus *Coscinodiscus* seems to characterize this earth, and of it there are dozens of varieties varying from the (microscopically) enormous *C. Gigas* to the minute and elegant *C. Subtilis*, which resembles closely a finely polished opal, requiring a lens of wide aperture and considerable power to show its revelations. *Orthisira Marina* is abundant, whilst many beautiful forms of *Navicula* are found in every gathering. Amongst these we may note two kinds of *Pleurosigma*, one of which, *P. Angulatum*, is a favorite test diatom, and the other, which it is proposed to call *P. Virginica* (as it is the most common form of *Pleurosigma* in the Virginia earths), is remarkable for the beauty of its contour, which exactly copies a willow leaf, and the want of uniformity in its striae, which are much coarser in the middle than at the ends of the valves. It is easily resolved with a 1/4-inch objective, without the aid of oblique light. The genus *Triceratium* is also well represented by many beautiful varieties, the most interesting of which is *T. Obtusum*, which can be resolved about as easily as *P. Virginica*. *Isthmia Enervis*, *Biddulphia**

Turmegii, *Terpsinoe Musica*, *Aulocodiscus Crux*, *Navicula Lyra*, *Gonphonema*, *Heliopelta*, *Asterolampra concinna*, *Asteromphalus Brookeii* and *Synedra* are comparatively rare.

From the great variety of its species, and the wide range in the character of their markings, the Richmond earth forms one of the best and most interesting tests for the performance of objectives of almost every power. On some, for instance, the areolations may be seen with a simple triplet, magnifying 25 linear; on others a first-class twelfth or sixteenth of wide angular aperture, aided by all the modern refinements of illumination, is needed to show them."

DIATOMS!!

Beautiful Slides, by new process, from Virginia, Maryland and California. 60 cents each; four for \$2; six for \$2 50; postpaid. Circulars free. See AMERICAN JOURNAL OF MICROSCOPY for February, 1877.

C. L. PETICOLAS, 635 8th St. North, Richmond, Va.

The following extracts from a few of the letters received by me will show the opinion of judges in regard to my preparations:

TROY, N. Y., Oct. 28th, 1876.

DEAR SIR—Much obliged for the excellent slide of Richmond Diatoms received. I cannot say less than that it surpasses every thing of the kind I have heretofore seen. It is an exquisite slide; in richness of material and success in cleaning and mounting, it is every way notable.

R. H. WARD, M. D.,

(Editor of Microscopical Department of the "American Naturalist.")

NEWARK, N. J., Dec. 18, 1876.

"I took the three beautiful slides—Nottingham, Petersburg and Richmond—you sent me, to a meeting of our Scientific Association, where they were much admired."

Yours truly,

A. MEAD EDWARDS, M. D.

PHILADELPHIA, 8—4, 1875.

"These (slides) are the very finest specimens of Richmond earth I have ever seen."

W. H. WALMSLEY, (of J. W. Queen & Co.)

Figure 4. 1877 advertisement from Edwards, Johnston, and Smith's "Practical Directions for Collecting, Preserving, Transporting, Preparing and Mounting Diatoms"

In addition to Richmond diatoms, Peticolas rapidly acquired specimens of diatomaceous deposits from around the world. The 1877 advertisement shown in Figure 4 describes specimens from Maryland and California. The 1878 *Transactions of the New York Microscopical Society* stated that, at that time, they had Peticolas mounts of diatoms from Nottingham (Maryland), California, Petersburg (Virginia), Calvert County (Maryland), Hanover (Virginia), Holland Cliff (Maryland), Lake Superior, Drakesville (New Jersey), Toome Bridge (Ireland), and St. John's River (Florida).

Also, by 1878, Peticolas had mastered skills to produce arranged mounts of individual diatoms. *The Cincinnati Medical News* wrote that year, "Mr. Peticolas prepares a 'probe platte', or test slide, of nineteen diatoms, after the manner of Moller. On it are two or three pleurosigmas, and an angulatum, a s. gemma, arachnodiscus Ehr., nav. lyra, nytzchia, nav. crassinervis, etc.; the latter being the most difficult. The p. angulata are said to be peculiar in that the striae on them all are singularly uniform - not differing in their fineness. They are the more valuable, therefore, as tests. We notice that the markings are finer than those that come from Germany". In 1885, C.S. Schultz exhibited to the New York Microscopical Society a slide of, "Eighty-eight Diatoms, arranged in three rows; mounted by Mr. Peticolas".

Peticolas also set his sights on the lucrative microscopy business in the British Isles. In 1878, he sent the editors of the popular magazine *Hardwicke's Science-Gossip*, "specimens of prepared

diatoms, from parts of the Richmond and Petersburg fields, lately discovered by me", with additional comments that were sure to titillate diatom aficionados, "A *Navicula* with curious beading on the connecting zone, and very fine striation, is shown in tolerable abundance, from four to six or more on each slide. This particular form, Prof. H.L. Smith thinks new, and it is a very good test for a 1-8th or 1-10th objective, which should resolve it into squares with oblique light. The areolations on the larger *Coscinodisci* can be seen with a good simple triplet, while to show the markings on some of the *Rhizosolenia* is a test for the very best high powers. The two Richmond *Pleurosigmas* *Virginica* and *angulatum*, are also plentiful, and as the striation on these is uniform, so far as my observation goes, this slide makes one of the best general tests to be had, furnishing an accurate measure for the comparison of objectives, of nature's own ruling, perhaps superior to any artificial lines made". The following year, he sent four slides as gifts to the Royal Microscopical Society, by way of Alfred Allen of the Postal Microscopical Society (thereby killing two birds with one stone).

In 1880, Peticolas announced that he was supplying a set of five slides that showed different aspects of the Richmond deposit. He also produced multi-slide sets from other deposits (Figure 5). The five Richmond slides consisted of:

"No. 1 is the natural cleavage, not quite a millimetre in thickness, the growth of one season perhaps, mounted opaque, showing the Diatoms abundantly in situ, just as they fell on the old ocean floor ages ago. With binocular, this specially beautiful, although it may I be well seen with monocular and any low power up to 4-10ths.

No. 2 is the natural deposit, dissolved in water, and mounted in hard balsam, without treatment of any kind. The very small quantity of sand contained enables one to draw the cover down close enough to obtain fine views with the high powers. With these the great richness of this specimen is well brought out, and it is exceedingly interesting as giving a clearer idea of the composition of the deposit than any other preparation.

No. 3 is carefully washed without chemical treatment, shows the Diatoms free from most foreign matters, and also such forms as are usually destroyed by acids.

*No. 4 is fully treated, most of the small forms and broken fragments removed. It shows a great variety of *Synedra* not usually seen on the Richmond slides from other localities, as well as all other forms usually met with, in fine condition.*

No. 5 is a separate mounting of the smaller forms, suitable for 1/4 inch or higher powers. It is particularly rich in the more uncommon species of the deposit, and has a great variety of them, on one small experimental slide for instance, I have counted nearly 60 different species (and) a number of other forms I was unable to classify, some of them very curious, and undescribed in any work to which I have access".

DIATOMS!!

New Series Richmond—W 1 to 5.....\$2.50
New find, Lower California,—1880,—2 Slides.
Santa Monica,—3 Slides.
New find, Petersburg, Va., 1880. Fine Actinocyclus,
etc.
Tests, 50 cents to \$4.00. 36 Slides, showing typical
forms of every known Diatom.....\$11.00

INTERESTING CIRCULARS FOR STAMP.

C. L. PETICOLAS,

635 Eighth St., RICHMOND, Va.

Figure 5. An 1880 advertisement, from *The American Monthly Microscopical Journal*.

RICHMOND DIATOMS!!

Twelve superb slides, the result of over ten years' collection and study, giving a completely unique showing of this celebrated deposit, with a rich specimen of the natural earth, postpaid, \$4.00; single specimens, 50 cents; descriptive circulars and catalogue, 4 cents.

C. L. PETICOLAS,

635 Eighth St., North, RICHMOND, VA.

Figure 6. By 1885, Peticolas' Richmond series had grown to 12 slides.

In 1894, Peticolas published a 24-page pamphlet and catalog, styled "*The Diatom*", described as "Price 10 cents. Mr. Peticolas is well known as a microscopist and preparer of excellent slides of the Diatomaceae. This little pamphlet contains some accounts of the Virginia and New Jersey fossil deposits, with a catalogue of about 400 slides. The articles are reprinted from various microscopical journals". Peticolas wrote numerous journal articles on diatomaceous deposits, including those reprinted in "*The Diatom*".

In 1901, Charles' wife, Anna Marie, died. Her death coincided with a breakup of the Peticolas household, although the reasons are unknown. The 1900 census recorded 71-year-old Charles, 68-year-old Anna, and four of their children all living together at 635 Eighth Street, but the 1910 census showed the widowed Charles without family, boarding with a plumber in another part of town.

Shortly afterward, in 1914, Peticolas retired from microscope slide making. He issued advertisements for a final sale, of which an editor of *The Guide to Nature* wrote separately to the readers, "A Faithful Microscopist. It is with especial interest that we call attention to Mr. C. L.

Peticolas' advertisement in which he offers his entire outfit in microscopy. Mr. Peticolas is eighty-six years of age. He has done more than any one else in this country to inspire an interest in some of nature's most beautiful, yet quite commonly unknown objects - the wonderful microscopic diatoms. To a large number of our readers, the word 'diatom' may be meaningless. Twenty years ago Mr. Peticolas inserted an advertisement in a journal edited by the editor of this magazine and it brought liberal cash returns, for many persons were then interested in diatoms, but diatoms are not things of the past. Beautiful fossil forms exist in abundance and in almost every pool, especially in the spring, myriads of these beautiful microscopic plants live and thrive. If schools and nature lovers desire to secure beautifully mounted slides of these beautiful objects, here is a good opportunity and at the same time to assist this aged and deserving microscopist".

FOR SALE!

THE PETICOLAS DIATOM COLLECTION AND MICRO OUTFIT

1600 mounted slides, perhaps 150 pounds rough material from nearly all prints in my Catalog, and about 600 vials cleaned material, all at about one-tenth cost.

Fine English Stand, Five Eyepieces, Five Excellent Objectives and Accessories, at less than one-half cost.

Catalog and Description for 4c in Stamps.

C. L. PETICOLAS
2300 West Grace
RICHMOND, VIRGINIA.

Figure 7. 1914 advertisement.

VETERAN MUSIC TEACHER DIES AT HIS HOME HERE

**Charles Lewis Peticolas, Aged Ninety,
Served Four Years in Confed-
erate Army.**

Charles Lewis Peticolas, one of the oldest citizens of Richmond and possibly the oldest music teacher in Virginia, died yesterday morning at 9:15 o'clock at the residence of his grandson, Charles W. Macfarlane, Jr., 1615 North Avenue. He was ninety years of age.

Professor Peticolas had taught music from the time he was seventeen years old up to a few weeks ago, when his strength began to fail, with the exception of the four years he served in the Confederate army. In addition to music, he devoted much of his time to microscopic research.

Professor Peticolas is survived by one son, A. Sidney Peticolas, of the Planters National Bank, and three grandsons, Charles W. Macfarlane, Jr., Capt. E. Lee Macfarlane, of the United States Army, and A. S. Macfarlane, of Winston-Salem, N. C., and three great-grandchildren. Funeral arrangements will be announced later.

Figure 8. Announcement of Charles L. Peticolas' September 12, 1919 death. From the Richmond Times-Dispatch.

This and other essays on the history of microscopy may be seen at the author's web site, <http://microscopist.net>

Resources

American Journal of Microscopy and Popular Science (1877) Richmond diatoms, Vol. 2, unnumbered page

American Journal of Microscopy and Popular Science (1878) Advertisement from C.L. Peticolas, Vol. 3, page 2

American Monthly Microscopical Journal (1880) Advertisement from C.L. Peticolas Vol. 1, September advertiser, page iv

American Monthly Microscopical Journal (1887) Advertisement from C.L. Peticolas, Vol. 8, December advertiser, page iii

American Monthly Microscopical Journal (1881) "Wanted - good gatherings of Diatoms, fossil or recent, especially of test forms. Liberal exchange in fine slides; prepared or rough material. Lists exchanged. C.L. Peticolas, 635 8th Street, Richmond, Va.", Vol. 2, page 160

American Naturalist (1876) The Richmond fossil earth, Vol. 10, page 753

Bracegirdle, Brian (1998) *Microscopical Mounts and Mounters*, Quekett Microscopical Club, London, pages 75 and 162, and plate 29-J and -K

Cincinnati Medical News (1878) Richmond diatomaceous earth, Vol. 7, pages 553-554

Coryell, Martin (1876) Diatomaceous sands of Richmond, Virginia, *Transactions of the American Institute of Mining Engineers*, Vol. 4, pages 230-232

The Guide to Nature (1914) A faithful microscopist, Vol. 7, page 415

The Guide to Nature (1914) Advertisement from C.L. Peticolas, Vol. 7, Advertisements page viii

Edwards, A. Mead, Christopher Johnston, Hamilton L. Smith, (1877) *Practical Directions for Collecting, Preserving, Transporting, Preparing and Mounting Diatoms*, The Industrial Publication Co., New York, advertisement

Journal of the New York Microscopical Society (1885) Notes on the meeting of April 30, Vol. 1, page 122

Journal of the Royal Microscopical Society (1879) "Four slides of "Fossil Diatoms" from Richmond, Va., Petersburg, Va., and Nottingham, M.D. (U.S.), were presented by Mr. C.L. Peticolas, through Mr. A. Allen, the Secretary of the Postal Microscopical Society", Vol. 2, page 219

Kendall Curlee, Kendall (2011, accessed September, 2014) Peticolas, Alfred Brown, *Handbook of Texas Online*. <http://www.tshaonline.org/handbook/online/articles/fpe78>

Johnson, Dale T. (1990) *American Portrait Miniatures in the Manney Collection*, Metropolitan Museum of Art, New York, pages 180-181

The Monthly Microscopical Journal (1877) The fossil earth of Richmond, U.S.A., Vol. 17, page 100

The Monthly Microscopical Journal (1877) The Diatom Earth of Richmond, U.S.A, Vol. 17, page 294

The Museum (1885) Advertisement from C.L. Peticolas, Vol. 1, page iii

The Observer (1894) Advertisement from C.L. Peticolas Vol. 5, numerous issues

Peticolas, Alfred Brown (1984) *Rebels on the Rio Grande: the Civil War journals of A.B. Peticolas*, edited by Don E. Alberts, University of New Mexico Press, Albuquerque, New Mexico

Peticolas, C.L. (1878) The Richmond diatomaceous earth, *The American Journal of Microscopy and Popular Science*, Vol. 2, pages 17-18

Peticolas, C.L. (1878) Diatomaceous deposits near Richmond, *Hardwicke's Science-Gossip*, Vol. 14, page 12

Peticolas, C.L. (1880) Some new slides from the Richmond, Virginia, diatomaceous earth, *The American Journal of Microscopy and Popular Science*, Vol. 5, pages 133-135

Peticolas, C.L. (1888) Notes on the diatomaceous formations of Virginia in connection with some recent discoveries made in the excavation of the Eighth Street Tunnel at Richmond, *The Microscope*, Vol. 8, pages 327-330

Peticolas, C.L. (1890) Notes on the fossil marine diatom deposit from artesian wells at Atlantic City, N. J., *American Monthly Microscopical Journal* , Vol. 11, pages 32-33

Peticolas, C.L. (1900) Diatoms of the James River Valley, *Popular Science*, Vol. 34, pages 189-190

Richmond Times-Dispatch (1872, accessed September, 2014) Photograph of construction of the Church Hill railroad tunnel, http://www.timesdispatch.com/multimedia/photos/news/church-hill-tunnel/collection_8c73d098-91f7-11e3-ae80-001a4bcf6878.html

Richmond Times-Dispatch (1919) Veteran music teacher dies in his home here, issue of September 13

Science (1880) The Richmond diatomaceous earth, Vol. 1, page 222

Scientific American (1894) New books and publications, Vol. 71, page 29

Stoutamire, Albert (1972) *Music of the Old South: Colony to Confederacy*, Associated University Presses, Cranbury, NJ, page 99

Transactions of the New York Microscopical Society (1878) Vol. 1, page 6

U.S.A. birth, marriage, military, death, and census records, accessed through ancestry.com

U.S. Library of Congress (accessed September, 2014) <http://www.loc.gov>