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## On the Scientific Photography of Birds' Eggs

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A FEW months ago when in the room of my friend, Mr. De Lancey W. Gill at the Bureau of American Ethnology in Washington, D. C., I saw him making some photographs of a variety of small Indian relics. The method he employed is not altogether new, but is especially adapted to the taking of small and medium-sized objects of scientific material, and recently I have been wonderfully successful in employing this method in the photography of sea-shells, and my paper upon this subject will appear some time during the year in *The Photographic Times* of New York City. Later on it occurred to me that it would be the very thing to employ in the case of birds' eggs, as from their size, form and coloration they constitute a class of objects especially adapted to its application. Then, too, of all the reproductions of photographs of birds' eggs in oological works and magazines, how very few of them are really of a meritorious character? Of course the superb illustrations in Major Bendire's famous volumes are quite another thing, but I am inclined to think that with a little further practice and experience, I can, by the aid of the 3-color process in photography, come remarkably near rivaling even those celebrated figures.

Now to get photographic pictures of eggs after the method spoken of above,

we attach the specimens by means of wax to a 8x10 pane of thin, clear glass, perfectly free from imperfections of all kinds whatever. This is supported by any simple contrivance in the vertical position, while some two feet posterior to it, we suspend a large sheet of perfectly white, coarse, and "lincy" blotting paper. This must be held absolutely parallel to the glass bearing the eggs, and it serves as their background. When prepared, the entire affair can be sustained upon a spare tripod, an easel or anything of the kind, so long as its horizontal part is in the same plane, or nearly so, with the bed of the camera. We now focus with an open lens, and carefully study our subjects upon the ground-glass of the camera. It must be seen well to, that the blotting-paper is free from all *shadows*, and is uniformly and *brilliantly* lighted all over its surface. Next, make perfectly sure that all of the lights and shadows *on your eggs* are just as they should be. Study the glass closely to which they are attached, and be certain they make no *reflections* in it. Then with a pair of sharp-pointed compasses and a strong hand-lens, again study the eggs upon the ground-glass of your camera, and satisfy yourself that you have them precisely of the size of nature, and so well focused that you can see the *minutest pits* in the shell-structure. (My photographs show these distinctly.)

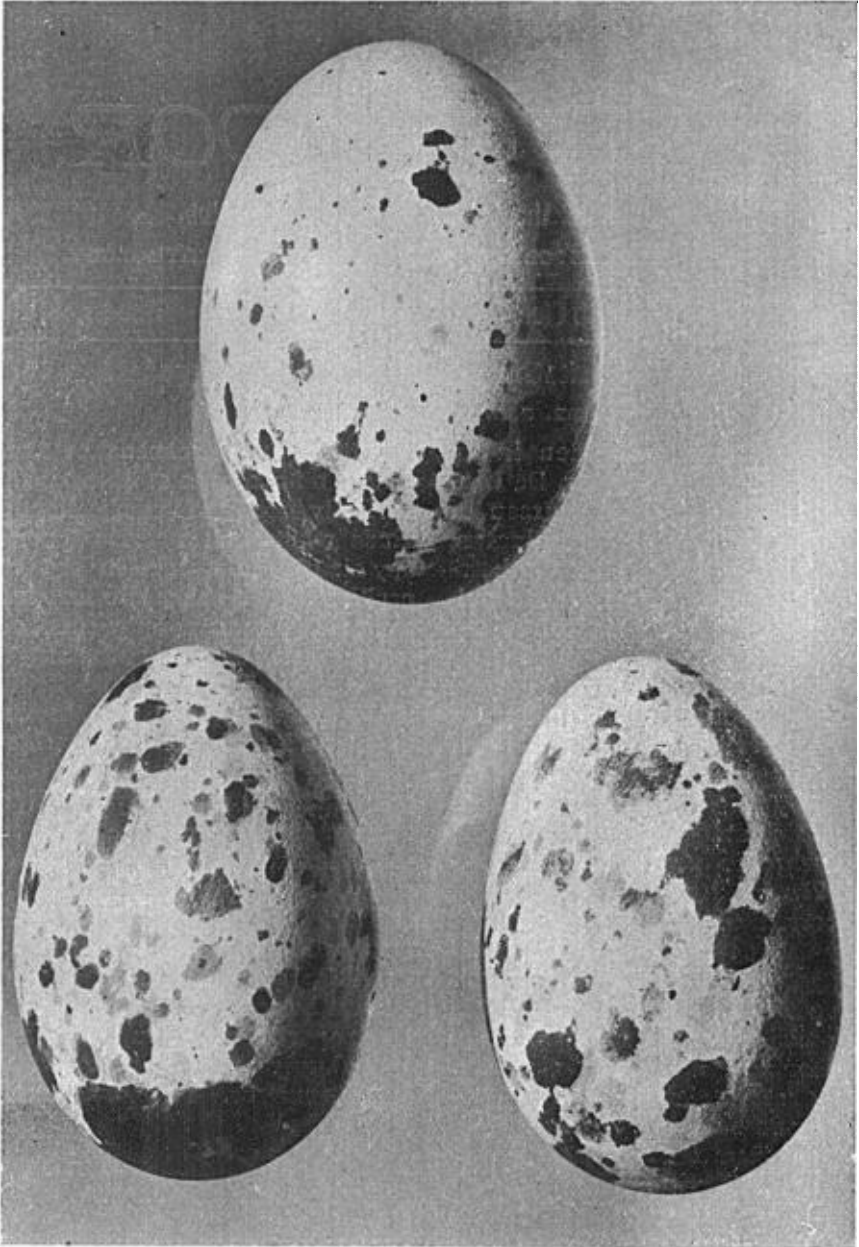


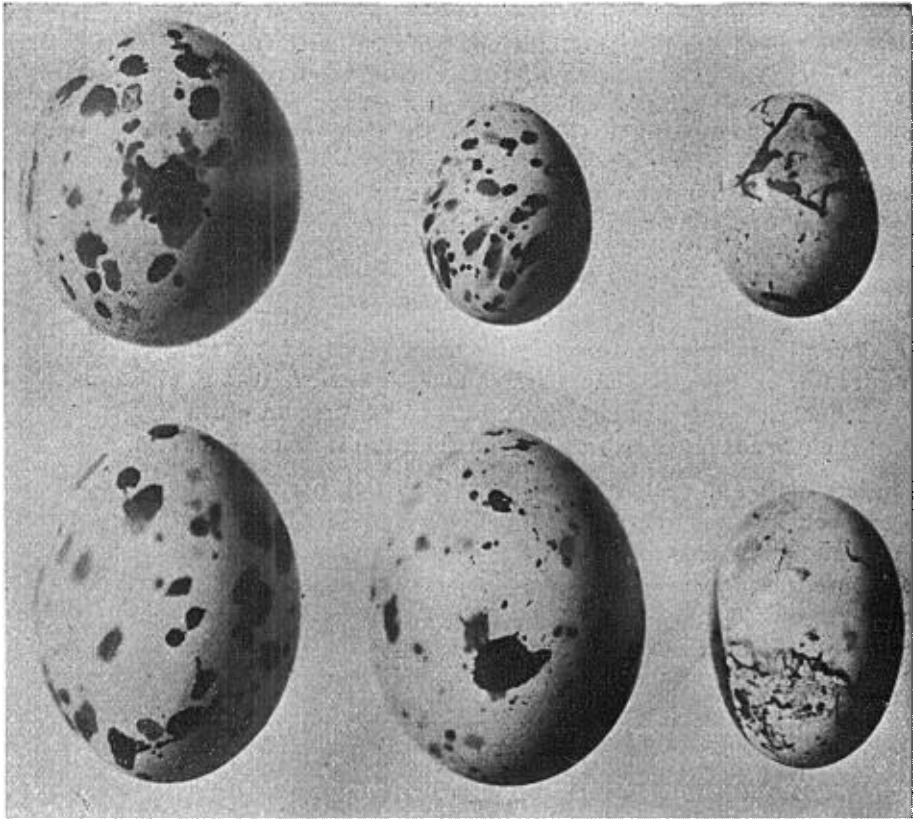
Fig. 1—3 (Upper one) Turkey Buzzard (*Cathartes aura*) natural size. (2 lower ones) Pigeon Guillemot (*Cephus columba*) natural size.

From photograph by D. R. Shufeldt.

Indeed, study *every point* on your ground-glass as you would criticise a plate of eggs in any scientific work. It is hardly necessary for me to say that you are to turn that side of your specimen or specimens towards your camera, that you desire to appear in the resulting photograph. When all is ready, "stop down" your lens with a dia-

and its effect is shown near the left hand figure of the Pigeon Guillemot's egg. If they happen to come on the specimen they injure the picture.

All of the eggs figured in this article, were with great generosity loaned me from the very choice collection of Mr. Edward Court of Washington, D. C., to whom my thanks are here tendered.



Figs 4-9. Photographs of Eggs by Dr. Shufeldt. The three large ones are of the Black Skimmer (*Rhynchops nigra*); the middle small one (upper row) is of the Least Tern (*S. antillarum*); the one next to it of the Purple Grackle (*Q. quiscula*), and the one below that, of the Chuck-will's-widow (*A. carolinensis*.)

phragm of the smallest size, and make an exposure from 20 to 45 seconds, according to the kind of subject you have. I use Seed's Gilt Edge plates (dry) 27 (instantaneous), but they are unfortunately not always free from air-bubbles in the glass, and at any time one of these may ruin your picture. In plate I of the present paper an air-bubble

not only for the assistance rendered, but more for the extreme courtesy in which he placed all of his oological material at my disposal.

Of the eggs in figures 1-3 of this paper, Mr. Court collected the one of *Cathartes aura*, while the two specimens of the Pigeon Guillemot were taken by the worthy editor of the CONDOR on

the Farallones, a number of years ago. The defect in making the egg of the Vulture is that the specimen is slightly reflected in the glass-plate; this is still better marked in the case of the right hand Guillemot's egg, and it, too, is a little tilted to one side, while its background is not properly illuminated. All of these faults are pointed out so that the naturalist-photographer can both recognize and avoid them. In the case of the egg of the Pigeon Guillemot in the lower left-hand corner of this plate, I consider it quite perfect. By studying the photograph with a hand-lens, the structure of the very egg-shell can be observed; the specimen is properly lighted and poised; and it is of

the actual size of the original, and its most interesting surface is towards the observer.

The figures in Plate II (4-9) speak pretty well for themselves,—still the skimmers' eggs are just a bit too highly illumined on their left sides, and the middle one of the lower row has cast a slim shadow on the egg of the Chuck-will's-widow next to it. However, I much believe that this method will be of assistance to any one desiring to make good photographs of birds' eggs, and if this proves to be the case, neither the time nor the labor and material I have used in the production of this paper will have been in vain.



### The Sierras in June

Long-loved haunts, again I greet your noble forest, ever green,

Your snow-clad peaks, deep, dark canons, flowers, ferns and air serene,  
Your sequoias, incense cedars, graceful spruces, firs and pines

Lift their heads much nearer heaven than the trees of other climes.

Countless lilacs and azaleas give the air their rich perfume,

Pure, cold streams from lofty snow-fields chime with birds in joyous tune!  
Swift waters flow pass moss and fern, past saxifrage and columbine,

We lure the trout where all things please; Sierra streams, rare charms are thine!

Where the river rushes madly, foams and frets to meet the tide,

The Canon Wren whistles gladly in caves by the river's shade.

Unseen thrushes sing divinely in the densest, darkest shade,

Ouzels sing and chase each other in and out of the cascade.

Happy birds! forgetting winter, you dread not what time may bring,

Wise are they 'mid scenes like these, who feel that life is always spring.  
Dark clouds make the sun seem brighter, without clouds there is no rain,

Souls are dwarfed by constant sunshine; too much sunshine shrinks the grain.

All the world is full of beauty when the heart is free from guile,

If we look at nature kindly she returns a radiant smile,  
Here her smile is ever brightest—charming, care-dispelling smile,

Here the heart is ever lightest, free from strife and trade's turmoil.

In the evening's varied shadows, in the canons dark and deep,

Graceful, timid deer leave cover, rainbow trout for insects leap.

Later when the thrush is silent, and the bright moon's searching light

Contrasts strangely in the forest with the darkest shades of night

Owls shriek, perchance a panther's scream unnerves the wandering deer, stills

Everything save sighing winds in moonlit tree-tops, noisy brooks and rills.

Night and day, summer and winter, have grand features each its own,

Rude tempests sweep o'er sleeping forms when the summer birds have flown.

*Lyman Belding.*

*Stockton, Cal.*