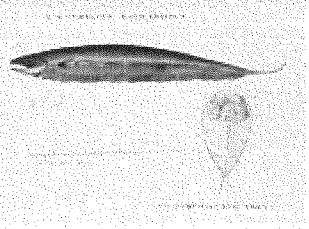
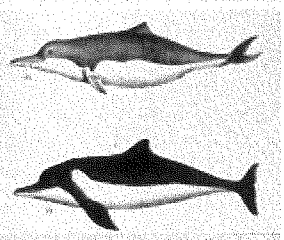
Meeting 10 • 06 February 2014
Week 4 (cont'd.): Plants – what they found, where they found it, why it was there, how they used it • Week 5: Week 5: Animals – Getting beyond Monsters, Jaguars, Eels, and Bambi

Version: **2/6/14**

picture of the week





electric eel (top) and freshwater dolphin (bottom)

thought-bite of the week:

"In this paradise of American jungles, as everywhere else, a long , sad experience has taught all living beings that gentleness is rarely linked to might."

(Humboldt, "Personal Narrative", from *Jaguars and Electric Eels*, ed. & trans. Wilson, p. 66)

mini-text of the week (start):

"In Calabozo, in the middle of the llanos, we found an electric machine with great discs, electrophori, batteries and electrometers..."

Humboldt, "Personal Narrative", from *Jaguars and Electric Eels*, ed. & trans. Wilson, pp. 57-8, 62 (read more)

Topics for today (key to symbols)

• (10') Mini-text of the week: Relation between human beings and Nature, and between mechanical and biological forces and substances. Sometimes the boundaries (or lack of boundaries) weren't understood: 1) Humboldt's battery with the bits of flesh between the disks. 2) Terms like "vitalism", "animal magnetism". 3) Ancient technique of tempering a newly-forged (and still red hot) sword with (human) blood. 4) Astrological (and scientific!) beliefs about the interaction of extra-terrestrial bodies / forces on terrestrial organisms. 5) Anybody know people who use dowsers?

Differences among species: Linnean concepts vs. modern cladistics (help from bio majors, please!)

• (10') Humboldt's enormous contribution to climate science and the origins of sustainabile environmentalism: the Chimborazo research and the iconic diagram – a brief look today, to be followed by a look at some contemporary discussions. How far are we ourselves qualified to judge the science, and how far must we take the "facts" and "data" on "faith"? Why was it so important that Chimborazo had snow on its peak AND was near the equator?

Response to previous meeting: How did people become scientists back then? "Be born male". Yes, but let's offset our presentism and consider the difference between obstacles and gateways. Check questions: What factor or feature was the gateway to literacy? (dmbtt /

xfbmui) For which classes did being born male or being born female make the greatest differences? How did literacy then differ from literacy now?

- (15') triangulation, including hands-on measurements of distances, heights, etc. Pre-Egyptian tools: height of vertical structure (tree, building); distances on the ground, especially in rough territory; why fiddle with barometers to measure the height of a mountain when all that nice trigometry is available? why did they learn geometry?

Great Trig Survey of India

- (10') An example of a very different course / project that relates to sustainabilty (and distant lands), and also illustrates how valuable are having many different kinds of knowledge / kills, and also teamwork and individual initiative

- (05') Continuation of setup for book review assignment: distribution of next load of books (sign out at end of class); introduction of Stegner reading: what and why

- (10') Activation of midterm examination (to be written outside class), with printed copies today.

Check your progress – and explore the related issues of standards, assessment and grading by exploring this self-evaluation guide for the middle of the term; this applies to your recent writing assignment, to your performance in the course, and to your larger roles as citizen and (possibly) parent.

- (05') if time: some more apps

- (0') Use your computer/ smartphone map links and applications to trace AvH's route in South America, starting with his travel up the Orinoco and down the Amazon. See Helferich, p. 52 map, but be aware that some place names have been changed over time.

Looking further ahead (projects, etc.): presentation (continuation) about educational standards and their parts in the course: 1) evaluating own education; 2) helping others to learn - how standards are used to develop curriculum (curricula?) and learning activities. Example of source of lesson plans; article (H0152) "School Gardens Blooming Teach Lessons On Nutrition, Environment, Science, Teamwork". This is preparation for assignments about species description and group projects.

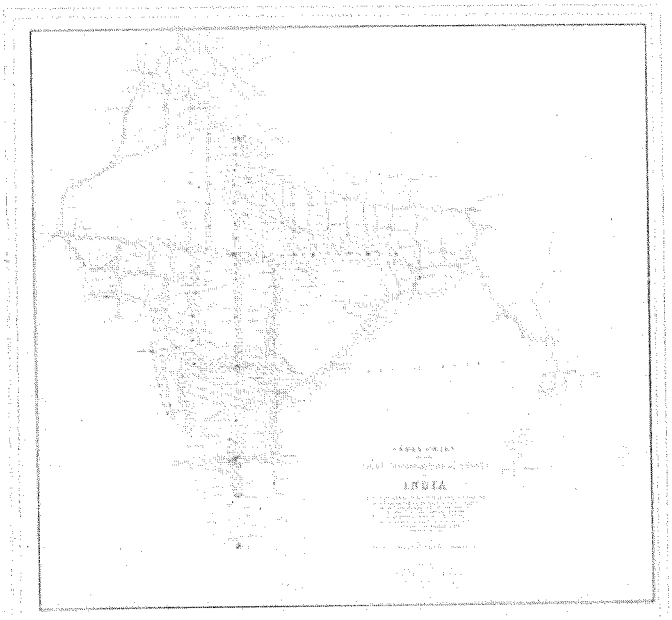
looking ahead: presentation of project ideas (just the ideas, not finished projects) in week ••

Later: what it's like to read Darwin; Humboldt-named species; forming teams and scoping out projects (ideas for group projects); the iconic graphic of Chimborazo; 5) apps Humboldt would have liked; what shall we do with (to??) the people who haven't revealed their interests and strengths and don't get "on board" when they're needed?

Great Trigonometric Survey

From Wikipedia, the free encyclopedia

The **Great Trigonometric Survey** was a project of the Survey of India throughout most of the 19th century. It was piloted in its initial stages by William Lambton, and later by George Everest. Among the many accomplishments of the Survey were the demarcation of the British territories in India and the measurement of the height of the Himalayan giants: Everest, K2, and Kanchenjunga. The Survey had an enormous scientific impact as well, being responsible for one of the first accurate measurements of a section of an arc of longitude, and for measurements of the geodesic anomaly.



A map by the survey, produced in 1870

Contents

History

The Great Trigonometrical Survey of India started on 10 April 1802 with the measurement of a baseline near Madras. Major Lambton selected the flat plains with St. Thomas Mount at the north end and Perumbauk hill at the southern end. The baseline was 7.5 miles (12.1 km) long. Lieutenant Kater was despatched to find high vantage points on the hills of the west so that the coastal points of Tellicherry and Cannanore could be connected. The high hills chosen were Mount Delly and Tadiandamol. The distance from coast to coast was 360 miles (580 km) and this survey line was completed in 1806.[1] The East India Company thought that this project would take about 5 years but eventually it took more than 60 years, draining the profits of the Company, so much so it was brought under the Crown after 1857.[*citation needed*] Because of the extent of the land to be surveyed, the surveyors did not triangulate the whole of India but instead created triangulation chains running from North to South and East to West. At times the survey party numbered 700 people.[2]

Baseline measurement

The initial baseline was measured with great accuracy, since the accuracy of the subsequent survey was critically dependent upon it. Various corrections were applied, principally temperature. An especially accurate folding chain was used, laid on horizontal tables, all shaded from the sun and with a constant tension.

Colonel Thomas Tupper Carter-Campbell of Possil, a surveyor in the Great Trigonometric Survey of the 3rd Grade.

Corrections

To achieve the highest accuracy a number of corrections were applied to all distances calculated from simple trigonometry:

- Curvature of the earth
- The non spherical nature of the curvature of the earth
- Gravitational influence of mountains on pendulums
- Refraction
- Height above sea level

Superintendents

- 1818–23 – William Lambton
- 1823–43 – Sir George Everest
- 1843–61 – Andrew Scott Waugh
- 1861–84 – James Thomas Walker
- 1885–1911 – Sidney Gerald Burrard
- 1912–21 – Sir Gerald Ponsonby Lenox-Conyngham

Land purchases by surveyors

Many surveyors became very rich. Prominent among them was Andrew Chamrette, his son Peter Chamrette, and his grandson Charles Chamrette, who worked for the GTS of India from 1802 to 1876. This family acquired in excess than 1,800 acres (7.3 km2) of land in the Kapsi, Yavatmal and Maharashtra (formerly CP Berar) districts. George Everest bought 600 acres (2.4 km^2) of land near Dehra Doon.[*citation needed*]

See also

- Principal Triangulation of Great Britain

References

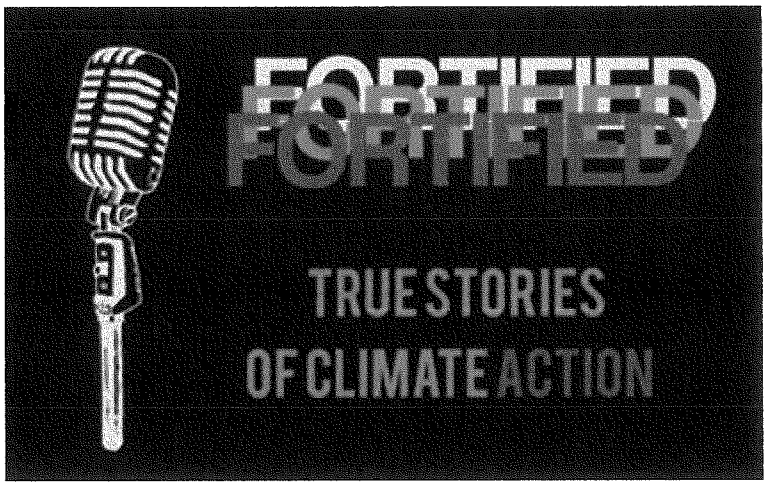
1. ^ Markham, Clements (1878). *A Memoir On The Indian Surveys* (http://www.archive.org/details/memoirontheindia025502mbp/) (2 ed.). London. W H Allen And Co. p. 67. Retrieved

"Institute for Sustainable Solutions at PSU"
<Institute_for_Sustainable_Soluti@mail.vresp.com>
To: fischerw@pdx.edu
Reply-To: "Institute for Sustainable Solutions at PSU"
<reply-2293a7ea4b-6cc0c5081a-694e@u.cts.vresp.com>
Compete to Conserve + True Stories of Climate Action

February 4, 2014 11:51 AM

Institute for Sustainable Solutions
PORTLAND STATE UNIVERSITY

Feb. 2014 | eNews



Time to tell a climate action story

Join the Institute for Sustainable Solutions and partners including the city of Portland, Climate Solutions, Ecotrust, Oregon Environmental Council, Renewable Northwest Project, and the VOIS Alliance for an evening of live storytelling performed by everyday heroes taking on climate change.

Storytellers will include a PSU student from the island of Palau, a veteran renewable energy engineer who went from fighting the Gulf War to the climate war, a business leader who dumped all his fossil fuel investments, and Oregon's First Lady Cylvia Hayes, a longtime climate warrior, will serve as emcee.

This event is FREE and open to the public.

Community Spotlight

Q&A with student Pam Campos-Palma, veteran, equity advocate, and student voice »

Upcoming Events

Thursday, Feb. 6
Should Oregon take the lead on carbon taxes? »

Thursday, Feb. 6
Exhibit: When passive residents become active urban designers »

Wednesday, Feb. 12
Legacy of MLK by Dr. Bernice King »

Thursday, Feb. 13
The PSU Student Craft

powered by NEOGOV

Job Title: Temporary- Educator Intern- Water Resources Education Center

Closing Date/Time: Mon. 03/31/14 11:59 PM Pacific Time

Salary: $12.43 Hourly

Job Type: 1040 Worker

Location: WREC, 4600 SE COLUMBIA WAY, Vancouver, Washington

Print Job Information | Apply

Definition | Benefits | Supplemental Questions

Position Summary

14-00006 – Educator Intern – Temporary

This position is open concurrently to regular city employees and outside candidates.

"Vancouver is recognized for its civic excellence. Our employees are proud to work in an open, supportive environment where we are empowered to create solutions and outcomes which exceed the expectations of the citizens we serve."

The City of Vancouver is currently seeking qualified candidates for the temporary position of Educator Intern to work at the Water Center for an average of 20 hours per week for at least three months.

Each Educator Intern will be required to work two mornings Monday through Friday 8:00am to 12:00pm and Saturdays. The duration of the position may be extended up to one year.

The person in this position will lead school and group presentations with hands-on activities, demonstrate water-related activities, greet visitors, give tours of the Water Center, present background, and start videos in the theater.

All candidates must be currently enrolled degree/certificate seeking students.

Instructions - Minimum Qualifications

The 'Work Experience' and/or 'Education' sections of your application must clearly describe how you meet the qualifications for this position as listed below; you must also answer supplemental questions.

A resume' or position description will not be accepted in lieu of a completed application. Incomplete or late applications will not be considered.

Minimum Qualifications:

Knowledge or interest in the environment, water-related issues or science, (i.e. Biology, Chemistry, or Geology) **AND** knowledge or interest in education

The successful candidate must be a self-starter; have the ability to work a flexible schedule; possess strong communication, problem-solving, and teamwork skills; display a friendly and helpful attitude;

enjoy working with people of all ages; have the ability to work on numerous projects simultaneously (multi-task); be organized and work independently; have reliable transportation; and maintain a professional, well-groomed appearance.

Questions?

For questions about the job announcement, call: 360-487-8417

For technical help with online application, call 1-877-204-4442.

Application Help: http://www.cityofvancouver.us/hr/page/general-applicant-information

The City of Vancouver may require successful completion of a criminal background investigation and additional pre-employment checks which may include drug screening (for selected positions), employment references, education, and licensing verification as a condition of employment.

Position Duties

Work as part of the Water Center team.

Lead school and group presentations with hands-on activities.

Demonstrate water-related activities.

Greet visitors; give tours of the Water Center and surrounding natural areas.

Set-up activities on and offsite.

Maintain the aquaria: 350-gallon aquarium in the lab, 55-gallon salmon aquarium and all other aquaria at the Water Center.

Clean and organize lab equipment.

Cover the reception and fulfill support duties area as needed (i.e. answering phones, visitor's questions etc.)

Help with project and exhibit research and development.

Assist staff and volunteers in planning and carrying out special events.

Work with volunteers in various capacities.

Carry out other tasks as needed.

Application Checklist

Electronic Application Checklist:

Application
Supplemental Questions

Announcement information can be made available in an alternative format by calling 711 (Relay Operator for the Deaf).

TOBACCO FREE/DRUG FREE WORKPLACE
EQUAL OPPORTUNITY EMPLOYER

The City of Vancouver is an equal opportunity employer. We strive to create a working environment that includes and values employees from all races, religion, color, sex, national origin, gender, sexual orientation, age or any other condition protected by federal, state or local law.

suburbs. People will eventually vote with their feet when taxes get high enough.

REX BRENTON
Northwest Portland

Energy and jobs

I was one of 150 paddlers on the Columbia River last week who were drawing the line against additional coal, oil

Northeast Portland

Convention center hotel

Regarding the commentary "Big boost, low taxpayer risk with convention hotel" (July 27) and the editorial "An OCC Hyatt goes public" (July 29): Our national trade association's annual convention is a prime example of why a new headquar-

"chugging along," saving victims, putting out fires, fixing our roads and teaching our children.

When PERS recipients are unfairly targeted for cuts to the benefits that we were promised, it tastes more like "gruel" than "gravy."

LINDA KLAUS
Sandy

HOW TO SUBMIT A LETTER Please limit letters to 150 words and include your home address and phone number. Letters may be emailed to **letters@oregonian.com** (attachments discouraged); faxed to **503-294-4193**; or mailed to Letters to the Editor, The Oregonian, 1320 S.W. Broadway, Portland, OR 97201. All submissions become the property of The Oregonian and will not be returned; submissions may be edited and may be published or otherwise used in any medium. Reach letters editor **Nora Simon** at **503-221-8461** or **nsimon@oregonian.com**. Readers may post their writing at The Oregonian's public blog, My Oregon, which is found at **oregonlive.com/thestump**.

bells with mud to stealthily steal bananas. In one recorded instance, when confronted with an electric fence, elephants followed the current around to the generator, destroyed it and made their escape.

They make images. Elephants will draw and, given the materials, paint. The drawings of an elephant named Siri in the Syracuse, N.Y., zoo were collected into a book in the 1980s, and Willem de Kooning praised them.

for an enhanced sense of fellow-feeling: "Listen with your ears, your eyes, your heart, your mind, your soul for the message from these kin as improbable as life itself, different and yet the same. We are not alone." Although on the current trajectory, we will be soon enough.

Reach Rich Lowry, editor of National Review, at comments.lowry@nationalreview.com.

PRESIDENTS AND THE ANTIQUITIES ACT

Oregonian 3 Aug 2013 B7

Protecting the Northwest's public lands in Oregon

Rep. Peter DeFazio is now in a far better position to assert national leadership in defense of our national parks as the new ranking Democrat on the House Natural Resources Committee. Oregon and the country can use his advocacy right now.

ROB SMITH
IN MY OPINION

One key reason that the National Parks Conservation Association recently recognized DeFazio as a friend of national parks was his commitment to keeping the president's authority to create new national monuments. When Congress won't act, or cannot do so in time to protect natural or cultural treasures, the president needs to be able to save places for future generations. The Antiquities Act, which provides this authority, has been under attack.

Northwest treasures, including Olympic National Park and Oregon Caves National Monument, were established through the Antiquities Act. Interestingly, it was presidents Teddy Roosevelt and William Howard Taft — both Republicans — who, respectively, used this power, soon after Congress approved it in 1906. Nearly every president since then has exercised this authority, and we're richer as a nation for it.

However, the House Natural Resources Committee continues to consider legislation that stands to weaken this important tool for preserving our public lands. The "Ensuring Public Involvement in the Creation of National Monuments Act," referred to as "EPIC," unfortunately received House committee approval last week. This bill is one of eight introduced this Congress that stands to weaken the president's authority to use the Antiquities Act.

Current leadership has also stymied many attempts to round out protection for deserving park units. To return to Oregon Caves National Monument, the existing 488-acre national park site does not fully protect the cave network and underground streams that created it and feed its life. DeFazio has proposed legislation to expand it by adding 4,000 acres of surrounding federal forestlands to the park unit to solve this problem. In his new leadership role, he should be in a better position to see that this gets done.

With the National Park Service approaching its 100th birthday in 2016, it's time to recommit to what Western historian Wallace Stegner termed "the best idea we ever had": our national parks system. That ought to include making sure that new and expanded park sites can be designated, to meet the increasing public demands to use them and to protect our national heritage for the future.

As a practical matter, national parks generate $10 in economic activity for every $1 of national funding they receive — a good economic engine for many communities that need some help.

Rep. DeFazio faces challenges in his new position, but it's good for Oregon and the country that a friend of national parks has been elevated to a more powerful role on the Natural Resources Committee.

Rob Smith is the Northwest regional director for the National Parks Conservation Association.

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full version (online platform) is on handout for meeting #4

THE CRITICS

BOOKS

THE BIRDS

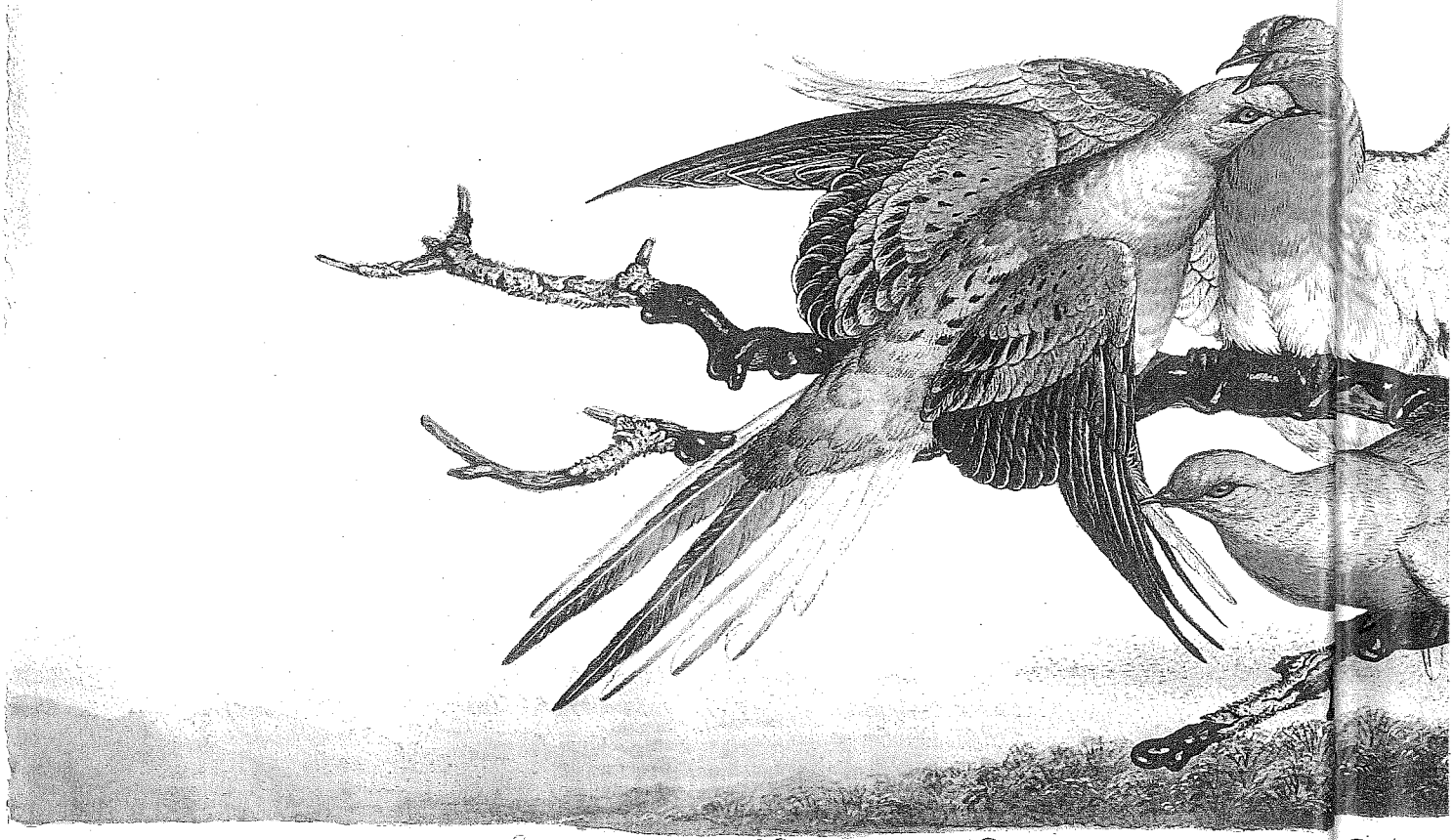
Why the passenger pigeon became extinct.

BY JONATHAN ROSEN

Imagine that tomorrow morning you woke up and discovered that the familiar rock pigeon—scientifically known as *Columba livia*, popularly known as the rat with wings—had disappeared. It was gone not simply from your window ledge but from Piazza San Marco, Trafalgar Square, the Gateway of India arch, and every park, sidewalk, telephone wire, and rooftop in between. Would you grieve for the loss of a familiar creature, or rip out the spikes on your air-conditioner and celebrate? Perhaps your reaction would depend on the cause of the extinction. If the birds had been carried off in a mass avian rapture, or a pigeon-specific flu, you might let them pass without guilt, but if they had been hunted to death by humans you might feel honor-bound to genetically engineer them back to life.

ABOVE: VASCO MOURÃO; BELOW: PHOTOGRAPH BY BUTCHER WALSH

Feathered Game



Adult Female Passenger Pigeon – Ectopistes

In his new book about the passenger pigeon, the naturalist Joel Greenberg sets out to answer a puzzling question: How could the bird go from a

PAINTING BY WALTON FORD

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ABOVE: VASCO MOURÃO; BELOW: PHOTOGRAPH BY BUTCHER WALSH

This thought experiment occurred to me while reading "A Feathered River Across the Sky: The Passenger Pigeon's Flight to Extinction" (Bloomsbury), Joel Greenberg's study of a bird that really did vanish after near-ubiquity, and that really is the subject of Frankenpigeon dreams of resurrection. Even before the age of bioengineering, *Ectopistes migratorius* could seem as much science-fiction fable as fact, which is why it is good to have Greenberg's book, the first major work in sixty years about the most famous extinct species since the dodo.

The passenger pigeon—sometimes called "the blue pigeon," for its color, though the blue was blended with gray, red, copper, and brown—should not be confused with its distant cousin, the message-bearing carrier pigeon, which is really just a domesticated rock pigeon in military dress. Unlike the rock pigeon—domesticated six thousand years ago, now feral, and brought to these shores by Europeans in the early seventeenth century—the passenger pigeon was native to North America, where it roved over a billion acres of the continent searching for bumper crops of tree nuts. It was here, like the American bison, when Europeans arrived, and it was here when the peoples we consider indigenous migrated across their land bridge thousands of years before that. It evolved on the unspoiled continent and was allied with the big trees that once covered much of the Northeast and the Midwest.

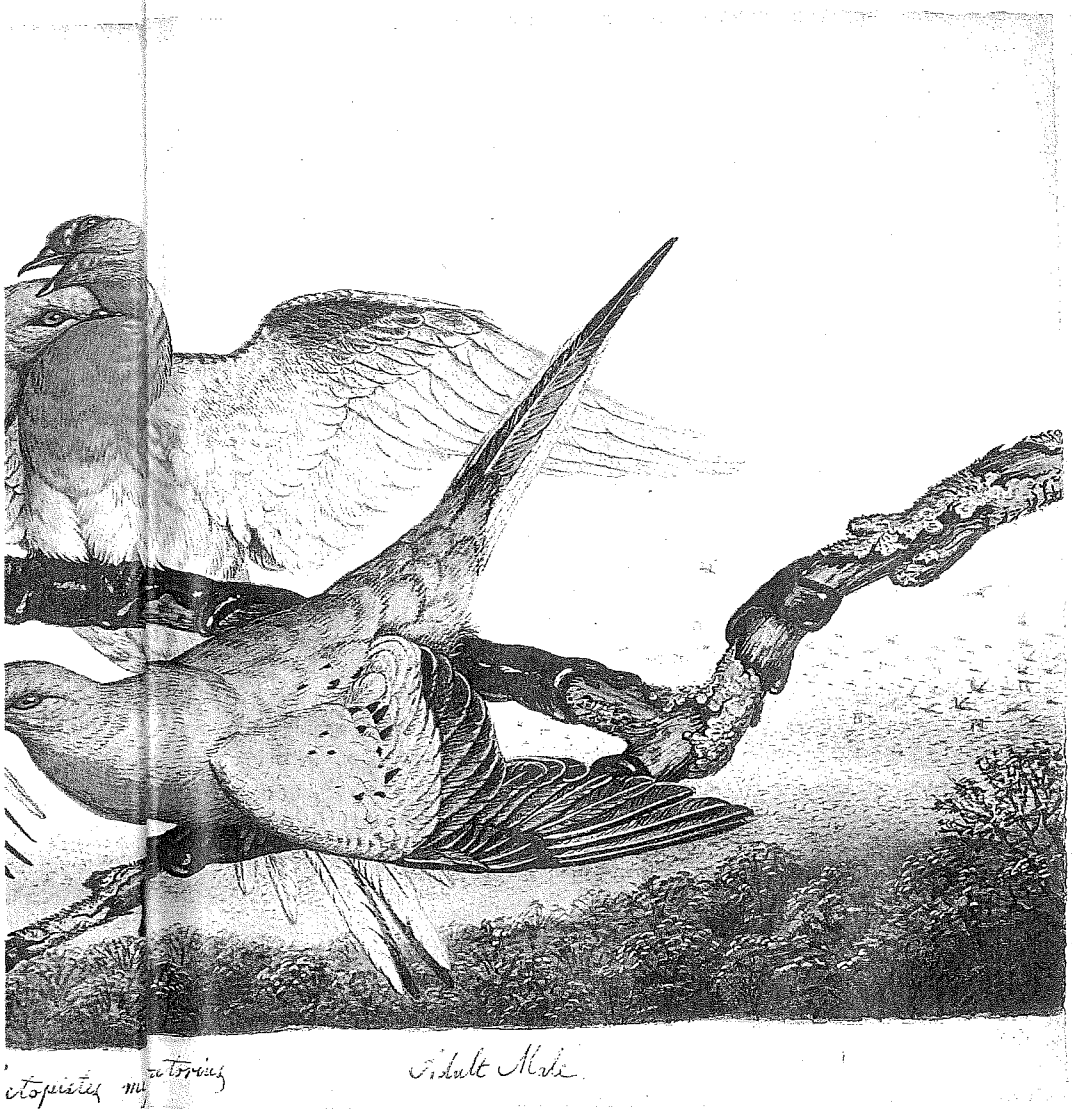
The passenger pigeon was also the most numerous bird species in North America, and possibly the world, dominating the eastern half of the continent in numbers that stagger the imagination. In 1813, John James Audubon saw a flock—if that is what you call an agglomeration of birds moving at sixty miles an hour and obliterating the noonday sun—that was merely the advance guard of a multitude that took three days to pass. Alexander Wilson, the other great bird observer of the time, reckoned that a flock he saw contained 2,230,272,000 individuals. To get your head around just how many passenger pigeons that would mean, consider that there are only about two hundred and sixty million rock pigeons in the world today. You would have to imagine more than *eight times* the total world population of rock pigeons, all flying at the same time in a connected mass.

No wonder witnesses frequently described the birds in quasi-Biblical, if not apocalyptic, language. A flight over Columbus, Ohio, in 1855 elicited the following eye-witness account:

> As the watchers stared, the hum increased to a mighty throbbing. Now everyone was out of the houses and stores, looking apprehensively at the growing cloud, which was blotting out the rays of the sun. Children screamed and ran for home. Women gathered their long skirts and hurried for the shelter of stores. Horses bolted. A few people mumbled frightened words about the approach of the millennium, and several dropped on their knees and prayed.

On the ground, the birds were equally prodigious. A joint at the corners of the lower bill enabled their mouths to more than double in size. Their crops could hold "up to a quarter of a pint of foodstuffs," and they could vomit at will if they saw a food that they liked better. Thoreau, a keen watcher of the birds, marvelled that they could swallow acorns whole. A Detroit newspaper in the late nineteenth century described the squabs as having "the digestive capacity of half a dozen 14-year-old boys."

In their wake, passenger pigeons left behind denuded fields and ravaged woods; descriptions conjure up those First World War photographs of amputated trees in no man's land. "They would roost in one place until they broke all the limbs off the trees," one old-timer recalled, "then they would move to Joining timber & treat it likewise, then fire would break out in the old Roost and Destroy the remainder of the timber." Their droppings, which coated branches and lay a



ɔuld the bird *go from a population of billions to zero in less than fifty years?*