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In the Field

The Bulletin of The Field Museum

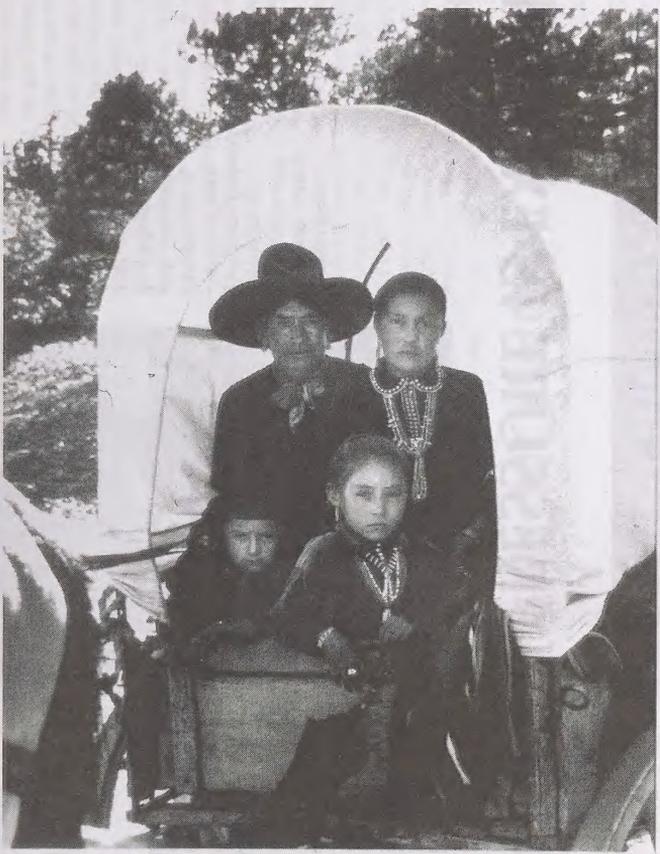
March/April 1995

THE SANTA FE
INDIAN
SCHOOL

FESTIVALS
HONORING
GIRLS, MOMS,
& GRANDMAS

OLDEST
KNOWN
SKULL OF
NEW WORLD
MONKEY

MUSEUM
PAGES ON
THE WORLD
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LAURA GILPIN:
s of the Southwest
March 11 – May 21

In the Field

The Bulletin of The Field Museum

March/April 1995

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People

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ECOCIDE IN MADAGASCAR

Despite international efforts to preserve Madagascar's forests and their unique animal species, logging proceeds at a rapid pace. A Field Museum biologist reports from the field.

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OLDEST NEW WORLD MONKEY SKULL FOUND IN THE ANDES

The oldest-known and most complete skull of an extinct South American monkey has been discovered high in the Andes mountains of Chile by an international team of scientists co-directed by John J. Flynn, chairman of The Field Museum's Department of Geology and curator of fossil mammals.

Reported in the February 16 issue of the British scientific journal *Nature*, the discovery provides a missing piece in the puzzle of monkey evolution and clues to what the environment was like in South America at the time.

The 20-million-year-old skull, which represents a new species, is amazingly well preserved — with both eye sockets and every tooth in the upper jaw intact. It helps fill a huge gap in the fossil record of New World monkeys.

"You could take all the primate fossils from South America and they wouldn't even fill a baseball cap," says Flynn. "They're so rare, you never really expect to find one."

The oldest South American monkey, found in Bolivia, lived about 28 million years ago. But it's known only from a few teeth. In the Chilean skull, "we have every tooth in the skull, with no cracking or breakage of teeth," says Flynn. "That's spectacular preservation."

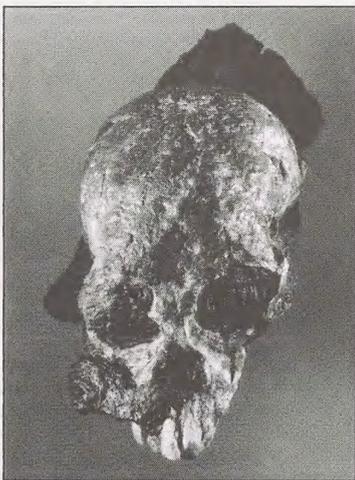
The new species is named *Chilecebus carrascoensis*: "Chile" for its country of origin, "cebus" for an ending commonly applied to New World monkey names, and "carrasco" for Gabriel Carrasco, the Chilean fossil hunter who first spotted the specimen.

"New species are not that rare, but this is obviously something in a different ballpark than all other South American fossil monkeys," says Ian Tattersall, chairman of the Department of Anthropology at the American Museum of Natural History in New York. "It opens a whole new window on the early evolution of primates in South America."

Big Eyes and a Fat Brain

Flynn and his co-authors — Andre R. Wyss of the University of California at Santa Barbara, Reynaldo Charrier of the University of Chile, and Carl C. Swisher of the Berkeley Geochronology Center — with Carrasco, colleagues from the American Museum, and others have been exploring the crest of the central Chilean Andes mountains for more than five years with support from the National Museum of Chile, the U.S. National Science Foundation, and the University of Chile.

Two years ago, the team unearthed the remains of a 32-million-year-old rodent — the oldest known in South America. Last January, they had returned to the same rock formation at a location about 100 kilometers to the north. They were trekking around rocks formed from the debris of an ancient volcano when Carrasco saw something in a house-sized block of volcanic rock that had fallen from the cliffs above.



John Weisenborn / GDC08944

All that was visible were the weathered sides of a few teeth. When Flynn and Wyss popped the fist-sized piece of rock out, they saw a skull that was round and bulbous. "No other kind of creature has such a big, fat brain but a primate," says Flynn. The eye sockets are large, round, and aimed forward. "When we got back to the lab and saw the combination of big eyes and a big, fat brain, we knew it had to be a primate," says Flynn.

"In the field, we were always joking about finding a monkey skull — it seemed so preposterous," says Andre Wyss. "When it really came to pass, it was a shock."

Seeing Inside the Rock

Most of the monkey skull was encased inside very hard volcanic rock — the key to its good preservation. Field Museum preparator Steve McCarroll is using dental picks to remove rock from delicate bone one grain at a time — a task that could take more than a year to complete.

To learn more quickly about the monkey's anatomy, the scientists turned to a medical instrument, the CAT scan, to literally see inside the rock. In this way, they were able to calculate the brain volume, the eye size, and different aspects of the teeth. The CAT scan also gave them a clear picture of where the bones lay inside the rock, so preparators could avoid accidentally chipping away clues.

"This is a very exciting new use of the CAT scan — being able to study the internal structure of a fossil without having to do all the manual preparation," says Tattersall.

The monkey's brain volume was smaller than that of most New World monkeys living today, but comparable to other fossil forms. The size of the eyes indicates that the monkey was

diurnal (most active during the day), rather than nocturnal.

A cast of the fossil teeth was photographed with a scanning electron microscope to produce enlarged three-dimensional images. Using those photographs to zoom in on details and to make precise measurements of the teeth, the researchers have determined that the monkey was a fruit or leaf eater — like many of today's small tropical monkeys.

The Family Tree of New World Monkeys

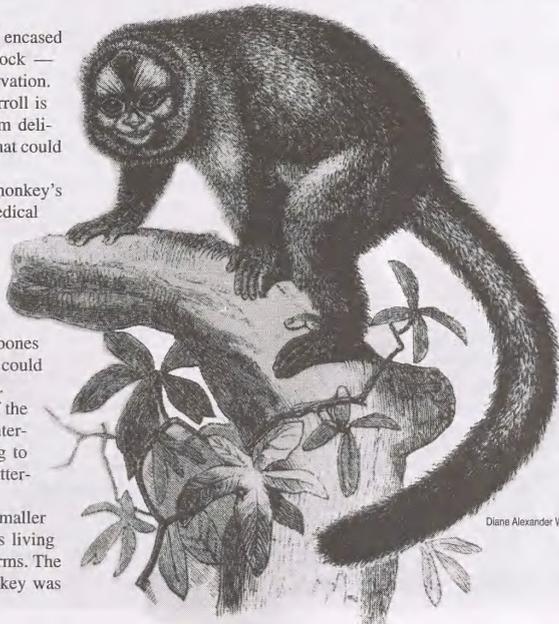
Among all major primate groups, perhaps the least is known about the evolution of New World monkeys. Part of the reason their fossil record is so poor is that the majority of monkeys live in tropical regions of the world.

"Typically, when something dies in the Tropics it's either eaten by something else or rots away," says Andre Wyss. "Our fossil record of tropical animals is very, very poor. New World monkeys are rare to begin with, and restricted to the Tropics — so it's sort of a double whammy."

There are about 85 species of New World monkeys living today, including tamarin marmosets, owl monkeys and capuchins (known as organ-grinder monkeys). Scientists disagree on how the major groups of living New World Monkeys are related to each other — and how they fit into the Anthropoid suborder. Anthropoids include New World monkeys, Old World monkeys (found mainly in Africa and Asia), apes (such as chimpanzees, gorillas and orangutans), and humans.

(Continued on page 9)

The remarkably preserved skull of Chilecebus carrascoensis is about two inches long. Scientists' best guess is that the animal may have looked something like the lemurine douroucouli (Nyctipithecus lemurinus), below.



Diana Alexander White / Z94043 b/w

WE ARE OUR INSTITUTIONS



By Willard L. Boyd
President, The Field Museum

We are our institutions. People not structures make great museums. Yet many visitors and non-visitors think of museums as huge buildings exhibiting inanimate objects not to be touched by humans. In reality everything about a museum is human. Humans create museums, humans build collections, humans operate museums, humans use museums, and humans pay for museums. Individuals determine the future of a museum.

We have been thinking a lot about the active and differing roles of individuals in the future of The Field Museum. This concern was generated by a conversation with Bill Searle in the late 1980s. Bill and Sally Searle had made an extraordinarily generous gift to The Field Museum. They did not want to designate a particular use for the funds because they believe so strongly in funding the basic mission of The Field Museum. In the conversation with Bill, he made the point that he wished that we could make clear to visitors their role in The Field Museum. He wanted us to enlist greater public participation as volunteers and as donors — new partners for The Field Museum.

As a first step we assessed our volunteer needs for the next decade. We already had a long standing and strong volunteer program. Nevertheless, we found we needed to double the number of volunteers involved in every aspect of the Museum whether it be working with the collections, assisting in research or educating the public through on-the-floor programs and the new visitor resource centers. Since our meeting with Bill Searle, we have doubled the number of volunteers working in the Museum on a regular weekly basis.

Approximately five hundred volunteers are engaged in all sorts of vital Museum activities. The Field Museum could not function without these committed volunteers whose talents and background reflect the diversity of our commu-



Orisegun Olomidu demonstrates African drumming in the new Searle Lounge. The display cases, which will change from time to time, exhibit objects donated to the Museum collections by individual supporters.

nity. To recognize their vital role we have established the Searle Volunteer Recognition Award for volunteers who have given their time weekly for twenty years. To date ten people have received that Award.

Our second step in enlisting more partners was to commit ourselves to reaching out. In 1992 the Board of Trustees adopted a new Museum mission statement charging the trustees, staff, and volunteers of The Field Museum with the responsibility to reach out to others to provide educational opportunities to varied publics. Specifically the new mission statement provides:

"Field Museum serves diverse publics ranging from children, adults, and families to the national and international research community. We reach out to our diverse publics and their changing educational needs. We have a special responsibility to reach out to the people of Chicago, neighboring communities, and the State of Illinois. Our visitors should reflect the cultural, educational, and economic diversity of the Chicago metropolitan area. We must work collaboratively and sensitively with the people in our locality, country, and world whose cultures and habitats are represented in our collec-

tions, research, and public programs. In reaching out, the Museum must build on its long-standing tradition of "outreach" which takes its resources and programs to schools, parks, and communities."

In reaching out we want to serve others but in the process we want to enlist others as partners in the future of The Field Museum. To help

accomplish this objective we have created a public lounge which is also an "exhibit" describing for our visitors the opportunities available to them — and the need for them — to join as active Field Museum partners.

In planning this area we looked around the country to see what other museums were doing. We found only one exhibit on philanthropy, the unique American tradition of citizens giving of their time, their money, and their objects to build museums. We saw many members lounges that focused on the role of individuals in the museum. We finally decided to create a public lounge that would be open to every visitor and which would also be an exhibit about participation.

In January, 1995, we opened the Searle Lounge on the north mezzanine of Stanley Field Hall looking to Lake Michigan on the east, the Michigan Avenue skyline on the west and Lake Shore Drive to the north. This area is designed as a place where visitors can rest and in so doing learn about how crucial they are to the present and future of The Field Museum. Volunteer needs are described and the opportunity to participate is presented. Opportunities for general membership, Friends of the Museum Library, the Collections Committee, and other interest groups are made available. A part of the area is set aside for exhibits of collections given to the Museum by individual collectors. A special tribute is made to the people of Chicago for their generous tax support of the Museum through the Chicago Park District.

We have named this combined exhibit visitor area The Searle Lounge. It is formally dedicated "To William L. and Sally B. Searle, distinguished benefactors, who have inspired volunteerism and philanthropy through the example of their lives and through the Searle Award, given annually in recognition of exceptional volunteer service at The Field Museum."

We see the Searle Lounge as a means of "personalizing" the role of each visitor in the future of The Field Museum. It is our "recruiting office" for the new partners needed to serve our many publics.

DONALD COLLIER DEAD AT 83



Dr. Donald Collier, Curator Emeritus in the Department of Anthropology, died in Oakland, California on January 23 at the age of 83. Dr. Collier was born in Sparkill, New York on May 1, 1911, the son of John Collier, Commissioner of Indian Affairs during the New Deal years. He received a Ph.D. in anthropology from the University of Chicago in 1954 and spent most of his career at The Field Museum where he was Curator of Middle American Archaeology and Ethnology from 1941 to 1976 when he retired. He served as Chief Curator of the department from 1964 to 1970 and was a lecturer in anthropology at the University of Chicago from 1950 to 1970.

Dr. Collier is known primarily for his contributions to Ecuadorian and Andean archaeology, particularly his delineation of late prehistoric pottery sequences in southern Ecuador and the Virú Valley of Peru where he carried out fieldwork between 1937 and 1956. At The Field Museum Dr. Collier was responsible for the installation of permanent exhibition halls on the archaeology of Mesoamerica and Central America and on the Indians of South America as well as several important temporary exhibitions of American Indian art and culture. Between 1945 and 1965 Dr. Collier participated in the organization and teaching of one of the earliest museology courses in cooperation with the Department of Anthropology, University of Chicago. He was president of the Central States Anthropological Society during 1953-1954, and a founding trustee of the Council on Museum Anthropology.

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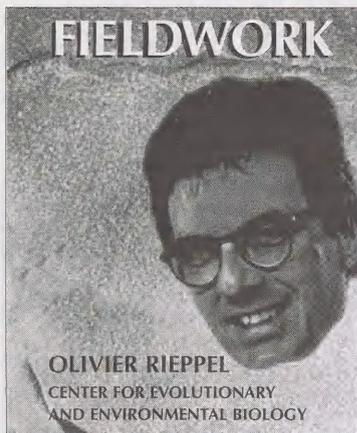
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The Field Museum
Exploring
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CREATION, DELUGE, APOCALYPSE

Science is a matter of hard facts, so it seems. And yet, science is also an eminently creative process. Every branch of science celebrates heroes whose creative minds linked known facts in novel ways, thus opening the door to major innovations in their respective fields.

One such is Alfred Wegener, a German geophysicist (1880-1930) whose imaginative mind linked the observed shorelines of the continents and combined them in a supercontinent, Pangea. This supercontinent would have broken up in the distant geological past, and given rise to the present-day surface of the Earth by "continental drift," a process that Wegener first postulated in print in 1915. He was not the first to notice the congruence of the western shoreline of Africa and eastern shoreline of South America — the science philosopher Francis Bacon had commented on it in 1620. But Wegener was the first to propose a hypothetical causal mechanism, continental drift. At the time, however, continental drift remained as much an occult force as did gravitation at Newton's time, and Wegener's ideas succumbed to ridicule.

If anything, the history of continental drift illustrates the power of images — in this case the ideal matching shorelines of continents — in the creation of novel scientific ideas. To turn an idea into a scientific theory requires the testing of underlying causal mechanisms. If those cannot be demonstrated, the idea remains only a hypothesis — and if Wegener's belief in moving continents has proved right after all, he still was unable to explain how and why it happens. That explanation would have to await the development of the theory of plate tectonics in the 1960s.

The creative hero of comparative biology, of course, is Charles Darwin. Again, images of an ever-changing world are as ancient as human cultures, but it was left to Darwin to propose hypothetical causal mechanisms of natural change, i.e., variation and natural selection. These forces might cause the evolution of new species — but what, exactly, might cause the observed extinction of species? Competition between species, perhaps, or change in the physical environment? His theory would shed new light on the origin of mankind, Darwin professed, but what could that mean? Would

mankind ultimately succumb to competition with other species — insects perhaps? Or could it be that physical causes would ultimately drive mankind towards extinction in an ever-changing environment?

Darwin's creative thinking was constrained by Western philosophical tradition under the influence of Christian beliefs, such as the doctrine of a beginning and an end in time. Ancient philosophers had emphasized the cyclical nature of change; Plato, for example, conceptualized human destiny as an eternal cycle of birth, death, and reincarnation, coupled with change. If a man was unjust or acted cowardly during his earthly existence, he would be re-born as a woman, according to Plato. Worse behavior would result in his reincarnation as a bird or a tetrapod, while his soul would have descended to the lowest rung in the ladder of life if he were reborn as a creature living in the sea. Aristotle held that any kind of change was movement, which implied an immovable First Mover. Similarly, any kind of change might affect matter, but matter itself would have to be eternal. The attempt to accommodate Plato's ideas with Aristotelian philosophy in the developing Christian tradition resulted, by the 14th century, in an emphasis on the cyclicity of change. Divine Creation thus turned into the Creation of order from chaos, a change of eternal matter initiated by a never-changing (i.e., eternal) entity. Similarly, the Deluge turned eternal matter into chaos from which a "new world order" emerged. And as predicted by Holy Scripture, the Apocalypse would signify another episode in the eternal cycle of destruction and reincarnation, of death and birth, of change.

These are powerful images, which have left their imprint on modern biological thinking. Dinosaurs once ruled the earth, as mankind does today. Yet dinosaurs succumbed to the cycle of destruction and change, and the nagging question remains as to when it might be man's turn. This parallelism may lie at the heart of today's fascination with dinosaurs, and may explain the intense interest in dinosaur extinction.

On January 3, the *Chicago Tribune* reported yet another theory of dinosaur extinction, according to which a supernova (the explosion of a star) may have resulted in the destruction of the ozone layer, causing the demise of the dinosaurs. This theory neatly reflects today's concern with the depletion of the ozone layer, which is linked not to a supernova but to man-made chemicals called chlorofluorocarbons (CFCs), according to a NASA announcement last December 19. The idea that a supernova could have caused the extinction of dinosaurs is not entirely new. In fact, it had been proposed, in the journal *Nature*, on February 19, 1971, during the heyday of the Cold War. This hypothesis led some to suggest that nuclear explosions could produce atmospheric effects comparable to a supernova and result in a new round of mass extinctions — a thesis revived in recent years as the "nuclear winter" scenario. The greenhouse effect is another suspect in the hit list of explanations offered for dinosaur extinction (*Science*, August 4, 1978), and it was identified as a major threat to human welfare at the international conference on environmental problems in Nairobi in May 1982.

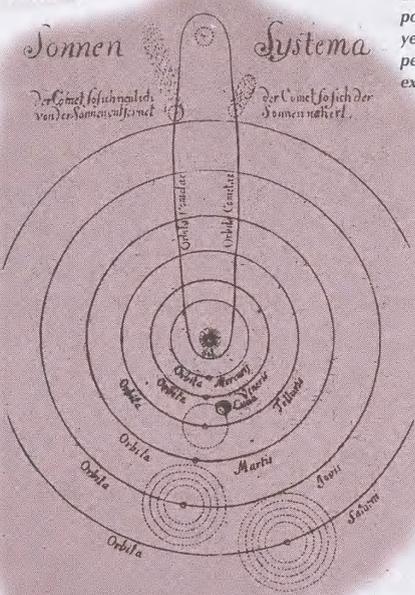
But the parallelism of images does not stop there. A questionnaire designed to collect as many of the diverse ideas on dinosaur extinction as possible produced such hilarious theories as "anatomical degeneration," i.e., herniated intervertebral discs, or "overspecialization" (a common phenomenon in modern industrialized nations), and "mass psychosis" (no religious hysteria involved!). None of those theories

explains, of course, why dinosaurs had to go, while crocodiles and turtles survived; why ammonites and mosasaurs had to go, while sharks and bony fishes were allowed to thrive. As with Wegener's ideas on continental drift: There is a parallelism of phenomena, but no hypothesis of an underlying cause open to test and potential refutation.

The demise of the dinosaurs did not mark the first, nor the only, major event of extinction. Indeed, the fossil record points to repeated events of mass extinctions, and an elaborate statistical treatment of changes in faunal diversity over time indicates a regular periodicity in major extinction events, on the order of 26 million years. These periodically recurrent catastrophes appear to correlate with rare-element abnormalities in marine sediments which suggest extraterrestrial impacts as a cause of cyclical catastrophes. It is the same image again — "Creation, Deluge, Apocalypse" — but this time framed within a scientific context. And as with Wegener's theory of continental drift, a causal mechanism had to be found to render periodic extraterrestrial impacts a scientifically valid explanation for the recurrent major extinction events during earth history.

Such a model explanation was not generated by paleontologists, but by astronomers. An as yet unknown companion star of the Sun with a highly asymmetrical orbit, called "Nemesis," would cause a periodic disturbance of gravitational relations in the planetary system, and cause a periodical comet shower on Earth. Heralded as a major innovative idea, few people seemed to bother that "Nemesis" remained elusive, and that its discovery might pose insurmountable practical problems. Interestingly enough, a theory of cyclical change on Earth ("Creation, Deluge, Apocalypse") had been explained by William Whiston in an analogous manner, i.e. by the effects of

William Whiston's explanation (first proposed in 1696) of cyclical change on Earth caused by a comet shower triggered by an asymmetrically orbiting companion star of the Sun. A similar thesis has been proposed in recent years to explain periodic mass extinctions.



a companion star of the Sun with a highly asymmetrical orbit, as early as 1696.

Images transported by creative minds influence the course of science. There is nothing wrong with this process, nor does it diminish the significance of science. Quite to the contrary, images transported by creative minds are the source of scientific innovation. All that this discussion is meant to emphasize is that empirical tests of hypothetical underlying causes are essential correctives of the eternal metaphors of cyclical change.

'STRENGTH & DIVERSITY' OF JAPANESE AMERICAN WOMEN

Kay Kuwahawra poses during an opening reception January 12 in front of a display of photographs of Chicago-area Japanese American women. The local photographs and other items were presented by the Chicago Japanese American Historical Society in conjunction with the traveling exhibit "Strength and Diversity: Japanese American Women 1885 - 1990." Below, a visitor contemplates Dorothea Lange's photograph of Camp Manzanar in the California desert, where thousands of Japanese Americans were confined during World War II. The exhibit is in the Special Exhibits Gallery on the ground floor through March 19.



Diane Alexander White / GNR7435.358

Diane Alexander White / GNR7435.34

Mae Nakano, author of *Japanese American Women: Three Generations 1885 - 1985*, autographs a copy of her book for Willard L. Boyd, president of the Museum, after delivering a lecture on the subject.

from the shops of The Field Museum

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The Shops of The Field Museum

GIFT FROM GENERAL MILLS



Howard Millhuff, Capital Investment Accountant, from General Mills Consumer Foods Technology and Operations, presents a \$15,000 contribution to Jessie Thymes for the Museum's Community Outreach Program. Standing next to Jessie is Susan Nemoj, Staff Assistant at General Mills. At left is Carolyn Blackmon, who heads the Museum's Education Department. The General Mills Foundation also contributed \$100,000 to the Museum's "Africa" Exhibit.

CALENDAR OF EVENTS

LAURA GILPIN: PHOTOGRAPHS OF THE SOUTHWEST

In photography, where an increasing demand for technically-minded composition has influenced how photographs look and feel, emotion in print has become a secondary attribute. Placing emotion into a photograph is nearly impossible, capturing emotion on film perhaps even harder. In The Field Museum's latest photography exhibit, "Laura Gilpin: Photographs of the Southwest," one sees a successful combination of both detail and emotion.

Laura Gilpin (1891-1979) began taking photos as a young woman growing up in Colorado. Her experience at the Clarence H. White School of Photography not only began her professional career but also taught her a sense of

mood in photography. A chance happening in 1930 — Gilpin and her companion, Elizabeth Forster, ran out of gas in a remote section of a Navajo reservation — sparked her interest in and formed an early bond with the Navajo people. Forster stayed at the reservation as a nurse and was often visited by the intrigued photographer Gilpin.

Gilpin's interest in the Navajo people was immediate, and many of her photographs of the Navajo were taken before 1940. But with the tribulations of the Depression and World War II Gilpin's work in the Southwest was put on hold while she did more commercial work. By 1949, however, Gilpin had published three chronicles of her work in the Southwest.

Then 1950 came and Gilpin went back to the Navajo reservation to join Forster and continue her work with the people there. Times had changed since her photographs like *Camera Study at Acoma Pueblo* (1939), and Gilpin was forced to catch up with the new ideas while capturing what she had missed in the post-war era. Eighteen years later, Gilpin published *The Enduring Navajo* (1968), a collection of her work around the Red Rock area.

Through her work Gilpin proved a photograph could evoke an emotion. Even in *White Sands* (1945), a photo of rippled dunes, an amazing calm is both captured and implied. Her love of the Southwest is the common bond of her photographs. This love helps to explain her ability to work closely with the Navajos and portray them not as an unhappy people but as a strong, enduring community.

"Laura Gilpin: Photographs of the



Georgia O'Keeffe (1953) by Laura Gilpin. Gilpin's work captures the nature of the subject by relating the surroundings to the emotions of the people in them. Left, *Camera Study at Acoma Pueblo* (1939).

Southwest" opens in the South Gallery on March 11 and closes on May 21. As inspiring as they are educational, these photographs will certainly give back what they once captured. This exhibition was organized by the Museum of Fine Arts, Museum of New Mexico, and is circulated through TREX: Traveling Exhibitions Program of the Museum of New Mexico.



FIELD MUSEUM
THE SMART WAY TO HAVE FUN.

ONE HOUSE, ONE VOICE, ONE HEART

The Santa Fe Indian School was founded in 1890 in New Mexico, one of many federally operated schools designed to bring Native Americans into the "white world." Ironically, many whites did not even believe the Indian culture was teachable. In an attempt, perhaps, to forestall public ridicule, Santa Fe and schools like it became virtual military schools.

Children of many tribes came to the schools only to be stripped of their clothing, their language, and their culture. These were replaced by uniforms, marching, and the English language. In uniform, many of the Pueblo Indians found the new way of life more than a little alienating. Often students would run back to their homes (some were as close as 60 miles away), never to return.

But to find a Pueblo Indian with a bad thing to say about the school is quite a task. Pueblo culture taught the positive in everything, and the young students came to cooperate. In 1930, a positive change came from outside the Indian culture. Chester Faris, an Indiana Quaker, abol-

ished the marching and developed a high school program. In 1934, the first senior class graduated from Santa Fe Indian School.

Though the school was closed for several years in the mid-sixties, its success today is impressive. Now tribally operated, 80 percent of the students plan to continue education after graduation. The basketball team recently won state championships and in 1987 the school was given a national award for excellence by the U.S. Office of Education.

In a traveling display, the history of the Santa Fe Indian School is captured on film, in interviews, and in four photo murals. "One House, One Voice, One Heart: Native American Education at the Santa Fe Indian School" is on display through May 8. Based on an oral history project at the Santa Fe school in 1986 and 1987, the exhibit was made possible through funding provided by the National Endowment for the Arts, the New Mexico Endowment for the Humanities, and the Foundation for Indian Leadership. It is brought to The Field Museum by TREX: the Traveling Exhibitions Program of the Museum of New Mexico.



Laundry Class, 1904, Santa Fe Indian School

FROM PLAINS, PUEBLOS & TUNDRA SATURDAY, MARCH 18

Though physically separated by thousands of miles of mesas, high mountains and broad plains, and with distinct cultures and unrelated languages, the Zuni, Lakota, Cherokee, and Yup'ik share a devotion to music and dance. "From Plains, Pueblos, and Tundra" presents the music and dance traditions of the Zuni of the Southwest, the Lakota of the Great Plains, and the Yup'ik Eskimos of southwestern Alaska. Produced by the National Council for the Traditional Arts and co-sponsored with the Old Town School of Folk Music, the featured performers will be the Cellicion Traditional Zuni Singers from Zuni, New Mexico; renowned Lakota flute player and hoop dancer Kevin Locke with singer Dale Weasel and his daughter from Standing Rock Reservation in South Dakota; and Chuna McIntyre, a singer, dancer, and artist from the village of Eek on the Bering Sea. Acting as master of ceremonies will be Cherokee storyteller Gayle Ross, a descendant of John Ross, chief of the Cherokee Nation during the infamous "Trail of Tears." Support has been generously provided by the Lila Wallace Reader's Digest Fund, WBEZ-FM, The I.A. O'Shaughnessy Foundation, and American Airlines.

Tickets for this event are \$18 (\$16 for members of The Field Museum and the Old Town School of Folk Music; \$14 for students and seniors). It begins at 8 p.m. in the Museum's James Simpson Theatre. For information call (312) 322-8854.



Gayle Ross, master of ceremonies and Cherokee storyteller, March 18.

MARCH/APRIL EVENTS

3/4 Saturday Hinamatsuri Festival

11 am -12:30 pm. This traditional Japanese celebration honors girls with peach blossoms. Bring your favorite doll or toy. See Visitor Programs Page for more information.

3/4 Saturday Symposium: Crossing Boundaries

1-3 pm. In conjunction with the exhibit "Strength and Diversity," join us for an afternoon in which five ethnically diverse women share stories of overcoming personal obstacles and barriers. The speakers are Faith Smith, Lorna Stone, Barbara Ransby, Maureen Lai-Ping Mark, and Carmen Velasquez, with moderator Joy Yamasaki. Cost is \$7 (\$5 for members, students, and seniors), registration required; call (312) 322-8854.



Hannibal Peterson, composer and jazz trumpeter, in an eclectic afternoon of music and storytelling in "African Portraits," April 29.

3/4-25 Saturdays New Voices: Latin American Women's Fiction

10 am - noon. This course focuses on the works of contemporary Latin American women writers. Selected stories from the book *Beyond the Border: A New Age in Latin American Women's Fiction* will provide information about similarities and variations between Latin American women authors and their counterparts. The course fee includes a copy of the text. Cost is \$63 (\$55 for members). Registration is required; call (312)322-8854.

3/11-12 Sat., Sun. Matsuri Festival

11 am - 4 pm. A performance by Taiko drummers from the Midwest Buddhist Temple starts this celebration which honors mothers and grandmothers. See Visitor Programs Page for more details.

3/11 Saturday Exhibit Opening: Laura Gilpin Photos

"Laura Gilpin: Photographs of the Southwest" includes 44 evocative images. This exhibit will be displayed at The Field Museum through May 21. See Calendar of Events page for more information.

3/13 Monday Nature Camera Club

7:30 pm. A slide program titled "Depth of Field in Depth" will be presented by Ron Rubenstein. Everyone is invited to this meeting. For more information call Bill Burger at (312) 922-9410, ext. 318.

3/14-4/4 Tuesdays

Chocolate, Coffee, Sugar, and Spice

In this four-week course for adults, you'll have the opportunity to learn about the growth and production of chocolate and selected fruits and spices while tasting some of these culinary treats from the plant kingdom. Cost is \$58 (\$50 for members). Hours are 6:30-8:30 pm. Registration required. Call (312) 322-8854.



3/18 Saturday Native American Performance

8 pm. Join Native American artists for an evening of music and dance. The Field Museum will host performances "From Plains, Pueblos and Tundra." See Calendar of Events page for details and ticket prices. For information call (312)322-8854.



4/7 Friday-Saturday Family Overnight

5:45 pm Friday to 9 am Saturday. Come join our popular overnight for adults accompanied by children grades 1-6. \$40 per participant (\$35 for members). Preregistration is required. Call (312) 322-8854 for space availability.

4/10 Monday Photo Competition

7:30 pm. The Nature Camera Club sponsors a slide competition on the subject of trees. Entries will be scored and discussed by three judges. Everyone is welcome. For more information, please contact Bill Burger at (312) 922-9410, ext. 318.

4/29 Saturday African American Historical Tour

10 am - 4 pm. Jean Baptiste Pointe DuSable, an African American trader and trapper, became Chicago's first resident in the late 1700s. Since then millions of African Americans have made Chicago their home. Take a trip through time in this day-long bus tour of African American historical sites that contributed to the growth of the city. Enjoy soul food at Gladys' Luncheonette. Cost is \$45 (\$39 members). Registration is required; call (312) 322-8854.

4/29 Saturday African Portraits

1 pm. "African Portraits" performance. Exerpts from an oratorio tracing 350 years of African-American history. Hannibal Peterson, noted composer and jazz trumpeter, is joined by griot Alhaji Papasusso, blues musician David "Honeyboy" Edwards, and the Itone Drummers. Presented in cooperation with the Chicago Symphony Orchestra, this show is free with Museum admission.

Thru 5/8 The Santa Fe Indian School

"One House, One Voice, One Heart: Native American Education at the Santa Fe Indian School" is an exhibit featuring the history of this American Indian school. The history of Indian education and issues of assimilation and self-determination are explored. At The Field Museum through May 8, free with general admission. For more information, call (312) 922-9410.

25TH ANNIVERSARY OF EARTH DAY

GREEN AND GROWING . . . AN EARTH DAY CELEBRATION: APRIL 1 - 3

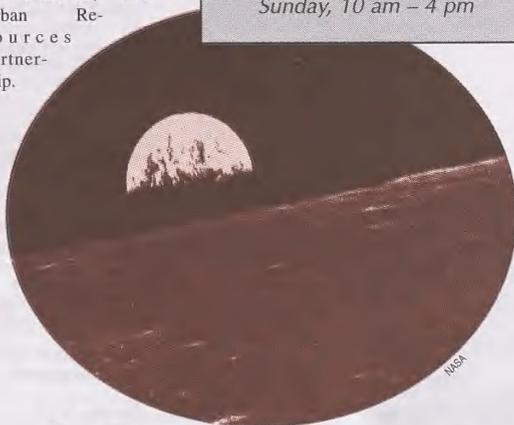
This year's Green and Growing Fair is a celebration of the 25th Anniversary of Earth Day. Green and Growing is designed to be an interactive forum where the general public can learn about and meet representatives from a variety of non-profit organizations.

Ecologically-based performances, demonstrations, hands-on activities, and teacher workshops are planned. Performance highlights include visits by Hody Coyote and Looking Glass Theater on Saturday and storyteller Nola Carlson on Sunday (see the next page for a full schedule of performances and times). The fair will also serve as a resource for information about regional environmental projects and programs, and will feature displays by local teachers and school groups. Scientists from The Field Museum will exhibit specimens from the research collections and talk about their work. The fair is free with regular Museum admission. There will be a nominal charge and pre-registration for participation in teacher's workshops.

For more details, please call (312) 322-8854.

The Green and Growing Fair is co-sponsored by The Field Museum, Chicago Botanic Garden, City of Chicago - Departments of Environment and Transportation, Chicago Park District, Openlands Project, University of Illinois Cooperative Extension, the Chicago Environmental Network, and Urban Resources Partnership.

Green & Growing Weekend:
Saturday, 10 am - 2 pm
1-3 pm (teacher's workshops)
Sunday, 10 am - 4 pm



EARTH DAY IN ILLINOIS

FAMILY WORKSHOP APRIL 8 SATURDAY

The 25th anniversary of Earth Day is April 22. This is the day when we take time to be more aware of our natural environment and take measures to preserve it for future generations. In this family workshop learn to identify plants that are native to Illinois, make a simple terrarium that can be transplanted outdoors later, and take home a list of nearby natural areas that your family can visit. For adults with children grades 2-6. Cost is \$9 per participant (\$7 per member). Hours are 10 am - noon. Pre-registration is required. Call (312) 322-8854.

EARTH DAY AND THE ENVIRONMENTAL PROSPECT - APRIL 22

Join us for an afternoon of thought-provoking discussion as the Field Museum commemorates the 25th Anniversary of Earth Day with Norman Myers, Ph.D. and Henry Henderson. Dr. Myers will address the global-scale experiment that our current population of 5.7 billion people is conducting with the planetary ecosystem through pollution, deforestation, soil erosion, mass extinction of species, and climate change. Within the next four decades the world population may double, imposing further strains and aggravating the environmental ruin in our planetary ecosystem.

That's the bad news. According to Dr. Myers, there is also good news. Much of the predicted environmental disaster may be avoided if we tackle our problems ahead of time. There is still time, Dr. Myers argues, for citizen activism to play a major role in helping deter global and local problems. In his lecture, Dr. Myers will discuss what individuals can do to become a part of the solution.

Dr. Myers, one of the world's most consulted environmentalists, advises governments and development and scientific

organizations on an array of issues from global warming and the population explosion, to the future of our economies and the overall theme of living in an interdependent, connected world.

Following Dr. Myers' lecture, Henry Henderson, commissioner of the City of Chicago's Department of Environment, will talk about Chicago's urban environment restoration agenda. "Sustainable environmental and economic development requires a revision of our view of the nature of the city as an environment, and its relation to a bigger ecosystem of which it is an essential part," he says. Mr. Henderson will discuss the City's program to create a natural habitat for human beings including the Chicago Brownfields initiative, the restoration of natural habitats at North Park Village Nature Center and Jackson Park, and the implementation of the City's Solid Waste Plan.

This program starts at 1:30 pm Saturday, April 22 in the James Simpson Theatre. The cost is \$5 (\$3 for members).

To register for these lectures, please send a check made payable to the Field Museum, Education Department, Roosevelt Road at Lake Shore Drive, Chicago, IL 60605, attention: Program Registration. Indicate the number of tickets you are requesting, your name and address, membership status and a daytime phone number. Please also include a self-addressed stamped envelope.



Norman Myers, Ph.D., speaks on the environmental future April 22, at 1:30 pm.

Become a Member of The Field Museum and receive these benefits:

- Free general admission
- Free priority admission to "Life Over Time"
- Free coat checking and strollers
- Invitation to Members' Night
- Free subscription to *In the Field*
- 10% discount at all Museum stores
- 10% discount at Picnic in the Field
- 13-month wall calendar featuring exhibit photographs
- Reduced subscription prices on selected magazines
- Opportunity to receive the Museum's annual report
- Use of our 250,000-volume natural history library
- Discount on classes, field trips, and seminars for adults and children
- Members-only tour program
- Opportunity to attend the annual children's Holiday Tea
- Children's "dinosaur" birthday card

MEMBERSHIP APPLICATION

New Members only. This is not a renewal form.

Please enroll me as a Member of The Field Museum

Name _____

Address _____

City _____

State _____ Zip _____

Home phone _____

Business phone _____

GIFT APPLICATION FOR

Name _____

Address _____

City _____

State _____ Zip _____

Home phone _____

Business phone _____

GIFT FROM

Name _____

Address _____

City _____

State _____ Zip _____

Home phone _____

Business phone _____

MEMBERSHIP CATEGORIES

- Individual - one year \$35 / two years \$65
- Family - one year \$45 / two years \$85 (Includes two adults, children and grandchildren 18 and under.)
- Student/Senior - one year \$25 (Individual only. Copy of I.D. required.)
- Field Contributor - \$100 - \$249
- Field Adventurer - \$250 - \$499
- Field Naturalist - \$500 - \$999
- Field Explorer - \$1,000 - \$1,499

All benefits of a family membership — and more

- Founders' Council - \$1,500

Send form to:
The Field Museum, Roosevelt Road at Lake Shore Drive, Chicago, Illinois 60605

VISITOR PROGRAMS

Wednesday, March 1

9am-12noon Arthropod Cart activity
11am Museum Highlights Tour
1pm Museum Highlights Tour

Thursday, March 2

11am Museum Highlights Tour
1pm Museum Highlights Tour

Friday, March 3

11am Museum Highlights Tour

Saturday, March 4

10am-2pm Africa Puzzle Game activity
11am-1pm Horns & Antlers activity
11am-12.30pm Hinamatsuri Girls' Day Festival
See schedule below

Sunday, March 5

1:30-2:30pm Origami demonstration by teens from Midwest Buddhist Daruma School

Monday, March 6

11am Museum Highlights Tour
1pm Museum Highlights Tour

Tuesday, March 7

9am-12noon Owl Pellet activity

Wednesday, March 8

9am-noon Arthropod Cart activity
10am-2pm Africa Puzzle Map activity

Thursday, March 9

11am Museum Highlights Tour
1pm Museum Highlights Tour

Friday, March 10

11am Museum Highlights Tour

Saturday, March 11

9am-10am Adinkra activity
10am-2pm African puzzle map activity
11am Museum Highlights Tour
11am-4pm Matsuri Festival Weekend
See schedule below
1pm Museum Highlights Tour
1:30pm "Tibet Today" and "Bhutan: Land of the Thunder Dragon" slide lecture

Sunday, March 12

11am "Into the Wild" tour
11am-4pm Matsuri Festival Weekend
See schedule below

Monday, March 13

11am Museum Highlights Tour
1pm Museum Highlights Tour

Tuesday, March 14

11am Museum Highlights Tour

Wednesday, March 15

10am-2pm Africa Puzzle Map

Friday, March 17

11am Museum Highlights Tour
10am-2pm Africa Puzzle Map

Saturday, March 18

10am-2pm Africa Puzzle Map

Sunday, March 19

1pm Origami demonstration
1pm Owari Traditional Japanese musical instruments and dance demonstration by Japanese-American seniors

Monday, March 20

11am Museum Highlights Tour
1pm Museum Highlights Tour

Wednesday, March 22

11am Museum Highlights Tour
1pm Museum Highlights Tour
10am-2pm Africa Puzzle Map activity

Thursday, March 23

11am Museum Highlights Tour
1pm Museum Highlights Tour

Friday, March 24

11am Museum Highlights Tour

Saturday, March 25

9am-10am Adinkra activity
10am-2pm Africa Puzzle Map activity
11am Museum Highlights Tour
1pm Museum Highlights Tour
1:30pm "Tibet Today" and "A Faith in Exile" slide lecture

Monday, March 27

11am Museum Highlights Tour
1pm Museum Highlights Tour

Wednesday, March 29

10am-2pm Africa Puzzle Map activity
11am Museum Highlights Tour
1pm Museum Highlights Tour

Thursday, March 30

11am Museum Highlights Tour
1pm Museum Highlights Tour

Friday, March 31

11am Museum Highlights Tour

Saturday, April 1

Green and Growing
Earth Day Celebration:
noon Hody Coyote Puppet Show
1pm Looking Glass Theater presents "Gluscbi and the Wind Eagle"
2pm Hody Coyote Puppet Show

Sunday, April 2

Green and Growing
Earth Day Celebration:
10am GAIA Theater presents "Use it Again"
1pm Museum Highlights Tour
1pm Master Storyteller Nola Carlson
2pm Master Storyteller Nola Carlson

Monday, April 3

Green and Growing
Earth Day Celebration
10am GAIA Theater presents "Use it Again"
11am Museum Highlights Tour
1pm Museum Highlights Tour

Saturday, April 8

11am-3pm Recycled Jewelry activity
1:30pm "Tibet Today" and "A Faith in Exile" slide lecture

Monday, April 10

1pm Museum Highlights Tour

Saturday, April 15

10am-4pm Insects on Display demonstration

Sunday, April 16

10am-4pm Insects on Display demonstration

Monday, April 17

11am Museum Highlights Tour
1pm Museum Highlights Tour

Saturday, April 22

10am-4pm Insects on Display demonstration
11am-3pm Birds demonstration
11am-3pm Recycled Jewelry activity

Monday, April 24

11am Museum Highlights Tour
1pm Museum Highlights Tour

Saturday, April 29

1pm "African Portraits" performance

Museum Highlights tours are offered frequently.



Ben Dohman



VOLUNTEERS NEEDED FOR BATTY ASSIGNMENT

Volunteers are needed to help staff "Masters of the Night: The True Story of Bats," a traveling exhibit at The Field Museum from June 17 to September 4. Volunteers will help out in the exhibit and staff hands-on activities. Activities range from puppeteering and storytelling to teaching about the anatomical differences between bats and other mammals. So if you are a bat enthusiast or simply would like the opportunity to interact with the Museum's vast array of summer visitors, consider volunteering. Volunteers are required to devote one day a week during the summer and attend two training sessions prior to the exhibit opening. Please contact Anita Morgan, Volunteer Coordinator, at (312) 922-9410, ext. 360 for more information.



MARCH 4, 11 & 12

HONORING YOUNG WOMEN, MOTHERS, AND GRANDMOTHERS

As part of the continuing series "Strength and Diversity," two separate Japanese festivals occur in March. **The Hinamatsuri Girls' Day Festival** honors girls with peach blossoms. Bring your favorite doll or toy and view miniature dolls representing the Imperial Court of Japan. **The Matsuri Festival** honors mothers and grandmothers. Matsuri has always played an important role in the lives of the people of Japan as they come together to share music, song and dance.

SATURDAY, MARCH 4

HINAMATSURI GIRLS' DAY FESTIVAL

11am-12:30pm **Kamininyo Paper Dolls activity** Paper dolls of colorful, elegant paper materials are a beautiful, attractive art form made with the help of Jean Mashima.

11am-12:30pm **Miyuki Art Flowers activity** Toshi Sakata's class will demonstrate and display how these handmade, artistic flowers are carefully cut, dyed, and shaped to capture the essence of every part of the flower. To achieve the breathtaking likeness, a wide range of materials are used.

11am-12:30pm **Boats and Balloons activity** The Japanese Volunteers of Chicago will help make fun paper

boats and balloons.

SATURDAY, MARCH 11

MATSURI FESTIVAL WEEKEND

11am-4pm **Katakana Names activity** Try writing your name in Japanese or have an expert calligrapher write your name with a fude brush.

11am-4pm **Sakura (Cherry Blossom) Flowers activity** The cherry blossom has traditionally been identified as a beautiful symbol of Japan. Learn to make cherry blossoms with paper and wire.

11am-4pm **Paper Fans activity** Design a round, flat uchiwa fan using Japanese designs or your own imagination.

11am **Taiko (Japanese Drums) performance** Members of the Midwest Taiko Group will present an exciting, highly visual performance of Japanese drumming. Made of wood, taiko drums have long been used to signal people to come together to celebrate special occasions. When played in traditional festival fashion, the many drums symbolize a unity between instruments, drummers, and listeners.

noon **Angel Island Asian American Theatre Company** will perform from the "Salad Bowl Dance," an original play by Dwight Okita.

1pm **Singer-pianist Yvonne Harada performs and teaches traditional Japanese songs.** The audience will be taught simple tunes and encouraged to participate in sing-along.
2pm **Storyteller Ann Shimojima**
3pm **Minyo folk dancing performance** Each region of Japan has a unique style of music and dancing called minyo. Festive gatherings of folk dancers using fans, hats, hand towels, clackers, and flowers reflect the rich variety of folk traditions. The Japanese American Service Committee Minyo Group will perform with the audience.

SUNDAY, MARCH 12

MATSURI FESTIVAL WEEKEND

11am-4pm **Katakana Names (Calligraphy) activity**

11am-4pm **Sakura (Cherry Blossom) Flowers activity**

11am-4pm **Paper Fans activity**
11am **Taiko (Japanese Drums) performance**

noon **Angel Island Asian American Theatre performance**

1pm **Singer-pianist Sunnie Hikawa performs and teaches traditional Japanese songs.**

2pm **Minyo (Folk Dancing) performance**

3pm **Storyteller Ann Shimojima**

MONKEY SKULL . . .

(Continued from page 1)

A large time gap in the fossil record of South America — from about 55 to 30 million years ago — represents a crucial period in the evolution of New World monkeys. It was during this time that monkeys first arrived on the continent, as did rodents.

South America was an island at the time — completely surrounded by oceans. Questions baffling scientists include: How did the monkeys and rodents get there, and where did they come from? They could have traveled to South America from another continent: perhaps Africa or North America or Antarctica.

One theory holds that the animals “rafted” across the Atlantic Ocean from Africa on giant floating mats of trees and other vegetation. At the time the New World monkeys arrived, when Africa was closer to South America than it is today, the distance would have been about 800 miles — a journey that would have taken only one or two months with prevailing ocean currents.

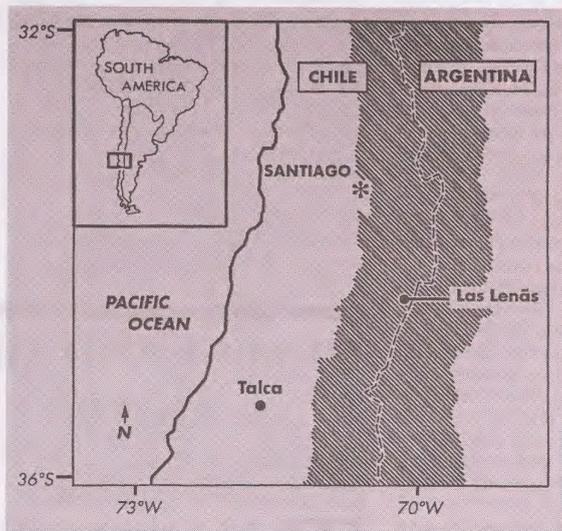
Anatomical similarities between the 20-million-year-old *Chilecebus* and Old World anthropoids provides new evidence of an African origin for New World monkeys.

Rewriting the Geologic History of the Andes

When the researchers first started finding mammal fossils in this part of the high Andes mountains five years ago, Flynn says some geologists were incredulous. The rocks along the crest of the Andes were thought to be more than 100 million years old — formed during the Age of the Dinosaurs.

But in those rocks the team found a group of mammal bones about 50 million years old, and another that was only 32 million years old. The rocks were indeed much younger than geologists had suspected, indicating that the mountains had been formed more recently.

“Since then, we’ve been working together as an international team of geologists and paleontologists to get a better picture of the geologic history of the Andes,” says Flynn. “It’s



John J. Flynn, curator of fossil mammals and chairman of the Department of Geology, shows off the fossil skull of *Chilecebus carrascoensis* in the Museum's fossil-preparation laboratory. The map locates the area on the crest of the Andes where this and other fossils have led scientists to rewrite the geological history of the region.

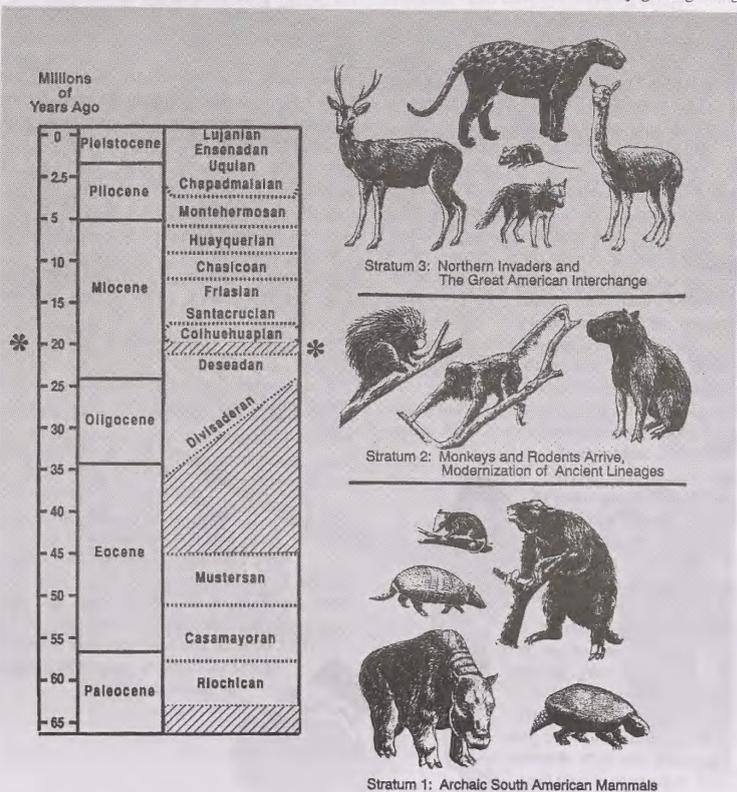
completely transforming our understanding of the age and geology of the formation, uplift, and deformation of the mountain range.”

Their latest discovery shows that the rocks along the crest of the Andes were crunched together even more recently than others had previously thought. The monkey fossil was found in the middle of giant folds in the rock. Since the rocks were flat-lying when the monkey was buried in a flow of volcanic debris, that folding had to happen sometime after 20 million years ago. “Just as importantly, we’re now finding volcanic activity in these rocks occurring at times when volcanoes weren’t supposed to be active in the Andes,” says Flynn.

The kinds of mammals the researchers have found throughout the Chilean Andes — many of them plant eaters specializing either on forest plants or grasses from open plains — are also telling a new story of climate and environmental change in South America. The team’s earlier discovery of 32-million-year-old communities of fossil mammals dominated by grass-grazing



John Winsten / GEDR43717



forms documented the earliest known occurrence of widespread grasslands anywhere in the world.

According to Flynn, it appears that the southern part of the continent later experienced a general warming 20 million years ago and that forests and grasslands were expanding southward towards higher latitudes and Antarctica. The fossil monkey is the earliest found outside the Tropics, providing further evidence of a warm climate.

All of the fossils have been found in a rock unit called the Abanico Formation, which is one of the most geographically widespread in the central Andes, stretching over hundreds of miles.

“This very widespread formation points to a huge warehouse of fossils that no one knew about,” says Wyss. “Nobody had ever looked there before.”

“It’s certainly expanded the region in which fossil primates are known in South America,” says Tattersall. “If there’s one primate there, there are presumably more.”

The team is returning to the Chilean Andes early this year to find out.

In the chart at left, the asterisks mark the time, 20 million years ago, when *Chilecebus carrascoensis* lived. The right-hand column of the scale indicates the succession of South American land-mammal assemblages through geologic time, suggested by the corresponding illustrations.

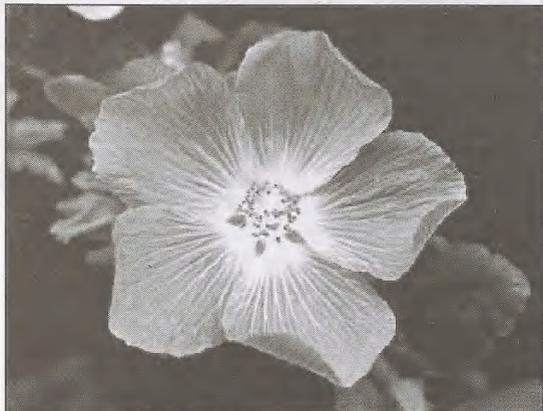
FIELD MUSEUM ON THE WEB

People with access to the World Wide Web of the Internet can visit a "virtual Field Museum" now under construction. As of mid-February, materials available on the Web site include a century-old collection of Javanese (Indonesian) masks and related information about the dance-dramas in which they were used, and an abbreviated interactive version of the exhibit "DNA to Dinosaurs." Also available on the Web is a collection of field photographs and associated Field Museum herbarium information on rare plants of the Chilean and Peruvian coastal desert.

The most elaborate of these projects is the multimedia "DNA to Dinosaurs," which includes text, photographs, sketches, animations, audio segments, and a 3-D *Tyrannosaurus rex* tooth that can be spatially manipulated for examination from any angle. The selections currently on-line are mainly from the parts of the exhibit dealing with the Triassic Period (245 to 208 million years ago), when dinosaurs first appeared, diversified, and became the dominant creatures on Earth.

The Indonesian masks are from a group of 80 in the Museum collection. All were brought to Chicago by dancers from the island of Java who performed traditional *wayang topeng* dramas at the "Java Village" that was part of the Dutch East Indies exhibit at the World's Columbian Exposition in 1893. Carved from soft wood and painted in traditional patterns and colors, they are among the oldest and most beautiful Indonesian masks in the United States.

A brilliant violet flower of *Cristaria integerrima* photographed by Michael O. Dillon in the Antofagasta region of Chile, October 27, 1988. The actual flower is about 2 cm across. This color image file and that of the Javanese mask below were downloaded from the World Wide Web and electronically converted to black and white for use in In the Field.



Drama mask *topeng* of Buta Macan, a tiger demon. Used in an as-yet unidentified *wayang topeng* dance drama. Central Java, Indonesia, ca. 1880 A.D.

other information services. They will also be bundled with the operating-system software on many new computers, starting later this year.

The address — or URL, universal resource locator — of the Experimental Field Museum WWW Server is:

<<http://rs6000.bvis.uic.edu/museum>>. (The brackets are not part of the address.)

A selection of several dozen photographs from botany curator Michael O. Dillon's expeditions to Peru and Chile after the major El Niño

phenomenon of the mid-1980s is accessible from the Biology Image Archive, a Web site at Cornell University. BIA too is still in development, and currently includes images and data from the research of botanists at Harvard University and the New York Botanical Garden as well as Dillon's photographs. The photos and herbarium data may be copied or downloaded and used for educational or other noncommercial purposes.

The address of BIA is:

<gopher://muse.bio.cornell.edu/11/images>.

A menu page explains how to navigate the

archive and includes DOS, Windows, and Macintosh versions of the JPEG image viewer.

Field Museum anthropologists Jonathan Haas and Bennet Bronson initiated the project to put Museum collections on-line. Steve Borysewicz, a Field Museum exhibit developer, worked with Brad Blumenthal and Paul Neuman of UIC to translate "DNA to Dinosaurs" for the new medium. Mary Rasmussen and students in the Biomedical Visualization Lab designed and produced the Web pages.

OF MICE AND MEN
... AND RED TOMATOES

By William Burger
Department of Botany

The theory of evolution gave biology unity where, before, there had been only the grand diversity of God's creation. Suddenly there was a single over-arching theme: Descent through eons of time might possibly explain the richness of living things. The ways in which plants and animals were earlier grouped into "natural orders" fit easily into the new idea of groups of descendant lineages. The fossil record provided strong evidence that simple early life preceeded the richer and more diverse later periods. Additional evidence for the unity of life came with the discovery that all living things use the same twisted chains of nucleic acids (DNA and RNA) to encode their hereditary information. Now that we are able to extract selected pieces of this genetic coding and analyze the actual make-up of specific genes, the unity of life is becoming ever more apparent.

Each species has small, highly variable regions of DNA which, like fingerprints, differ in almost every individual. But there are important larger regions of DNA that code enzymes or regulatory genes and that are similar among very different plants and animals. It is these stable regions of the DNA chains that bear testimony to the relatedness of all living things. Scientists at The Field Museum and elsewhere are using snippets of DNA to clarify the course of evolution in related lineages.

By using the more variable regions of DNA they examine the kinship of closely related species. The more stable areas of DNA can be used to compare less closely related lineages: classes, orders, and families. These DNA datasets help us determine how lineages have diverged, and help place groups whose relationships have been controversial. The DNA data, together with the morphological features that scientists have been using for more than 200 years, are giving us a much clearer picture of evolutionary diversification.

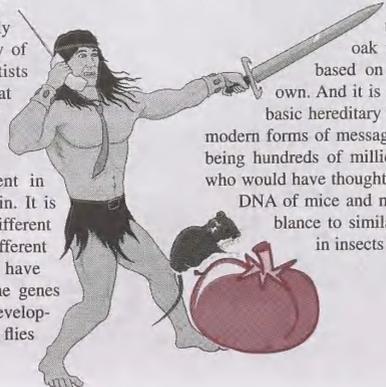
Geneticists and physiologists have also been probing the fine structure of DNA in specific genes, and some of their results bear directly on the underlying unity of living things. Scientists have long thought that the compound eyes of insects and the camera-like eyes of vertebrates are profoundly different in both structure and origin. It is true that these very different eyes develop in very different ways, but geneticists have recently learned that the genes controlling the early development of the eyes of fruit flies

are very similar to certain genes that control the development of eyes in mice (and by extension our own eyes). This is evidence for a common origin hundreds of millions of years ago. One can imagine that an ancient common ancestor, perhaps a worm-like creature, had the genetic information for nothing more than bringing together a few light-sensitive nerves. But these "eye spots" (and the genetic information that produced them) were probably the starting point for vision in a wide range of later animal lineages. It appears that the same original genetic information has been transformed and amplified through eons of time to produce both a many-faceted image for the dragonfly and the single sharply focused image in the eye of the eagle.

Earlier, geneticists had discovered that the genes controlling the early differentiation of the fruit fly embryo were very similar to some genes controlling early differentiation in the mouse embryo. Further studies have substantiated these findings in the early development of these very different animals. Fruit flies and laboratory mice have been studied intensively for decades in genetics and physiology laboratories. It is therefore not surprising that these newest revelations have come from these particular animal species.

The differentiation of the early embryo and the development of eyes are controlled by genes that express themselves in the growth and development of groups of cells. Modern DNA studies are also shedding light on even deeper relationships in the genes that determine biochemical processes within the cells. Would you believe that a medicine recently developed to reduce cholesterol production in people has precise effects in the development of tomatoes? By injecting this drug into small (1 cm), immature tomatoes, botanists have been able to produce large, mature tomatoes without red pigmentation. The biochemical pathways that produce cholesterol in humans and red pigments in tomatoes are not that different. It is likely that the genes controlling these processes within the cell have arisen from the same precursor genes before plants and animals took their separate paths.

We've all been told that the genetics of an oak tree or a butterfly are based on DNA, just as is our own. And it is not surprising that our basic hereditary blueprints might carry modern forms of messages that first came into being hundreds of millions of years ago. But who would have thought that some parts of the DNA of mice and men still bear a resemblance to similarly functioning genes in insects and plants?



'THE HUMAN PRESSURE IS EXTREME'

Field Museum biologist Steve Goodman spends much of each year in Madagascar, where he participates in a variety of programs. In collaboration with the Madagascar office of the World Wide Fund for Nature (WWF), Goodman supervises a student training program and organizes field surveys of Madagascar's threatened reserves. He also teaches paleontology students at the Université d'Antananarivo. Colleagues Dave Willard and Tom Schulenberg recently received the following letter, in which Goodman describes the highlights of a two-month expedition to Anjanaharibe-Sud, a remote and poorly known reserve in northern Madagascar, and other news from the field:

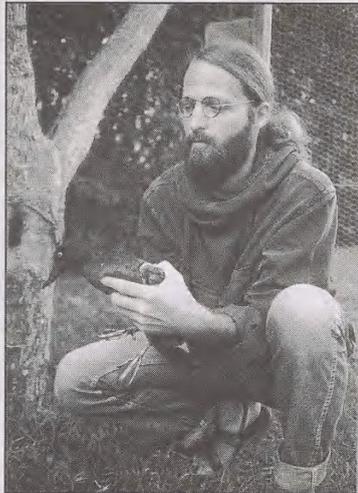
DEAR DAVE AND TOM,

Life here is good. As time goes on I become more accustomed to the mode and pace, and at this point, even though the country, economy, etc. are in desperate shape, it all seems normal to me. I am in the same house that I have occupied for the past three years. Things at WWF are more or less the same, although there is measurable advancement in the students taking part in the Ecology Training Program. This is most satisfying and provides the fuel to continue.

The situation with forest destruction does not improve. It is amazing that after all of the attention and money this island has received in the past five years, there is no measurable change in the policies of the government toward forest protection nor any decline in the destruction of forested areas within protected areas. A recent fly-over and aerial photographs of Marojejy shows that about 4,000 hectares of forest have been cut within the reserve in the last few years. This represents over ten percent of the total area of the reserve, and an even greater portion of the lowland forest. Marojejy is not exceptional in this regard. Thus, in short the inventories that we have been doing have important archival value, since many of the sites will not exist as forest in the near future. For example, our lowest site in Anjanaharibe-Sud reserve will be gone within a few years. The human pressure on the remaining forest is extreme.

The Anjanaharibe-Sud trip was most interesting. Jean Marc Thiollay and Frank Hawkins were responsible for the majority of the bird work. I concentrated my efforts on small mammals. Thiollay saw Madagascar Serpent-Eagle. Other interesting things include large numbers of Sunbird-Asity in the lowland forest and gobs of Yellow-bellied Sunbird-Asity high up, remarkable numbers of Rufous-headed Ground-Roller, a few Bernier's and Helmet vangas, two observations of Red-tailed Newtonia, and just about everything else one would expect in humid forest. I think the only thing missing from the list is Pollen's Vanga. The survey was in the heart of the breeding season and evidence of breeding was found for almost 30 species. Thiollay found a nest of Nuthatch Vanga — previously unknown. The coua species in the reserve include Blue, Red-fronted, and Red-breasted couas. Hairy-eared Dwarf Lemur was regularly observed in the lowland forest. Nothing else particularly exciting with lemurs, although Gray Gentle Lemur occurred all the way up to the summit (2,000 meters).

Last week I was down in Toliara to check



Biologist Steve Goodman, in Madagascar, holds what may be the last Madagascar Pochard, a species of duck. This specimen, a male, was captured by a fisherman in 1991; no others had been seen for 20 years. The bird was kept in hopes that a female might be found so that a captive-breeding program could begin.

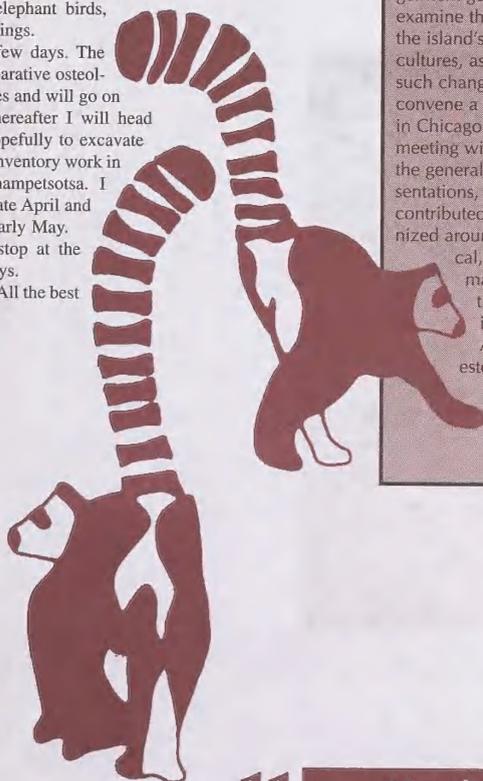


out a large subfossil deposit discovered a few months ago. The patron of the land lives in French Guyana, and I need his permission before the site can be excavated. I hope this will happen in early February. A pretty interesting site — remains of giant subfossil lemurs, giant tortoises, two genera of elephant birds, hippos, and lots of other things.

I start teaching in a few days. The course will be on the comparative osteology of Malagasy vertebrates and will go on to the end of January. Thereafter I will head back out into the field. Hopefully to excavate the subfossil site and also inventory work in Analamera and/or Tsimanampetsotsa. I will leave Madagascar in late April and will arrive in Chicago in early May. On my way back I will stop at the Paris museum for a few days.

Well, that is the news. All the best for the new year.

CHEERS,
STEVE



NATURAL AND HUMAN-INDUCED CHANGE IN MADAGASCAR

An International Symposium at The Field Museum
June 2-4, 1995

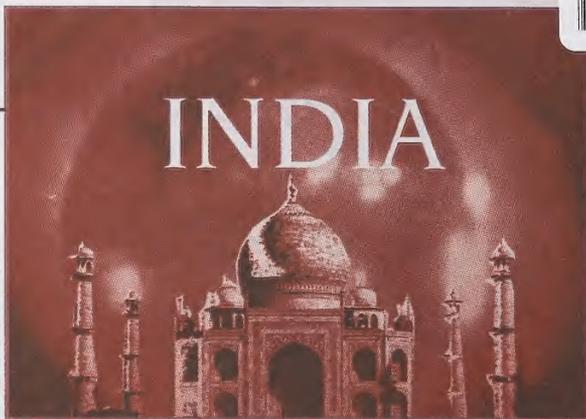
The island of Madagascar supports countless species of plants and animals found nowhere else. Yet environmental changes—over several time-scales and under both natural and human controls—have caused the extinction of many species, and even survivors are now at grave risk.

To mitigate the calamitous extinction wave now underway in Madagascar and to better understand tropical endangerment generally, we must carefully examine the processes that have shaped the island's landscapes, ecosystems, and cultures, as well as biotic responses to such changes. The Field Museum will convene a three-day scientific meeting in Chicago to address these issues. The meeting will consist of presentations to the general public, invited technical presentations, scientific workshops, and contributed poster presentations organized around geological, anthropological, biological, and resource management/conservation themes. Invited speakers will include leading Malagasy and American researchers. Interested persons should call Jodi Sedlock, Symposium Coordinator, at 922-9410, ext. 256.



Temples, Tigers & Palaces

Oct. 19 –
Nov. 2, 1995



Total Solar Eclipse

Bharatpur
Oct. 24

Although it will be possible to view a solar eclipse from many locations on October 24, in most places the eclipse will not be total. The precise alignment of the sun, moon, and earth sends the tip of the moon's deep central shadow cone to a very small area of the earth, and only in this cone is the eclipse total. To find yourself in the eye of this cone, it is best to be in the state of Rajasthan, north-west of the Arabian Sea in India.

Here, a five-city tour stops at the Koe-

ladeo Ghana Sanctuary in the city of Bharatpur. And while the New Moon crosses the path of the sun, your surroundings change dramatically. Singing birds become quiet, the temperature drops, and suddenly it seems someone has pierced a hole through the stratosphere.

On a wonderful journey with Field Museum Tours, this rare sighting is only Day Five of a fifteen-day tour of central India. You will travel from Delhi to Bharatpur to Agra and beyond. By train and

motorcoach, you'll see everything from exquisite ancient architecture to Bengal tigers at Ranthambhor National Park.

Join Dr. Alaka Wali as the Field Museum curator on this eclectic tour of one of India's richest cultural areas. Dr. Wali, an anthropologist, will share her knowledge of cultures in India along with our local guide, Mr. Vishnu Singh.

Cost for this trip will be \$4,935, including round-trip airfare from Chicago.



Join Field Museum Tours on a voyage into the sheltered

coastline of the North Pacific. From Seattle to Juneau, explore the histories of nature and Native Americans.

You'll visit Ketchikan and the Native village of Alert Bay, where totems abound and ancient crafts are carefully preserved. With special permission of the National Park Service, cruise aboard the *Yorktown Clipper* into Glacier Bay National Park.

The Folklore and Natural History of British Columbia & Southeast Alaska

May 24 – June 3, 1995

Something spectacular is always within reach — and within sight.

The *Clipper's*

shallow draft allows close navigation into places such as Tracy Arm,

where ice calving into the water and mountain goats are observable from on deck.

Off the boat, museums and local people offer a plethora of information on ancient and contemporary cultures. Learn about groups including the Tlingit, Tsimshian, Haida, Kwakiutl, and Athabaskan.

There is an optional extension to Denali National Park through June 8. Call for details.

THE RUSSIAN WATERWAYS

From Moscow to St. Petersburg ❖ July 25 – Aug. 7, 1995

Travel from the commercial city of Moscow for 12 days to the Russian cultural mecca of St. Petersburg by way of the Russian Waterways. We'll stop at Zagorsk and visit three basilicas, enjoy sight-seeing guided by our ship company, and learn about the areas with our own resident lecturer. All along the rivers, we'll explore some of the most culturally rich parts of Russia. In St. Petersburg we'll spend four days exploring the Pavlosk Palace, the theater of the Tsars in the Winter Palace, and a special cultural performance at the private Yusupov Palace.

Cost of the excursion is \$4,765, main deck, including round-trip air fare from Chicago.

OTHER FIELD MUSEUM TOURS IN 1995:

Alsace, France (September 16 – 24)

Cruising Through Provence (Sept. 19 – Oct. 1)

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