

ATOM DEFENSE REEVALUATES THE ANCIENT ART OF TATTOO

By WILFRID D. HAMBLY
CURATOR OF AFRICAN ETHNOLOGY

THE POSSIBILITY of giving tattoo marks to indicate blood types and so to insure speed and safety in transfusions that might be necessitated by an atomic bomb attack was the subject of inquiry by the newspapers recently.

The exact antiquity of the practice of pricking the skin and introducing pigment is unknown. There is, however, in the Royal College of Surgeons, London, an exhibit that assures us that tattooing by puncture was practiced in Egypt about 1300 B.C. The exhibit consists of three pieces of human skin and a small clay doll taken from a Nubian cemetery in Egypt. Microscopic research showed that the lozenge-shaped marks are true tattooing, since the blue coloring is in the dermis or true skin. With the skin is a small figurine of clay that bears marks corresponding in shape to those on the human skin.

The girls of Chicago expressed many suggestions to reporters respecting the most desirable, or shall we say the least objectionable, locations for the tattoo mark. All were agreed on the need for concealment, and here they differ markedly from their primitive sisters, whose main desire is to wear facial tattoo marks for adornment and an indication of social distinction. Women of the Ainu tribe, northern Japanese islands, tattoo (or did so until recent times) elaborate moustaches. The men are naturally hairy, with well-developed beards and moustaches. Apparently the women were envious of the male adornment and wished to imitate it.

PERMANENT 'BEAUTY SPOTS'

Facial markings, usually tattooing by puncture and especially tattooing of the chin, have been widely accepted by many tribes in various parts of the world as a desirable female embellishment. In south-east New Guinea tattooing of a girl's face and body is done by easy stages over a period of several years. The completion denotes maturity and fitness for marriage, and the occasion is celebrated by a feast.

There are a few instances of hidden tattoo marks, notably those recorded by a criminologist named Lombroso. He examined inmates of jails in Italy and France and came to the conclusion that criminal gangs and members of secret societies were often the bearers of tattoo marks that were symbolic of their gangster unity. In early Colonial America and in many countries of Europe the hunting of witches was a crude pastime as well as a religious duty. Many innocent old women were executed because of their eccentricities and the physiological fact that as the teeth disappeared the nose tended to reach downward and the chin upward. Court officials searched for tangible

evidence of witchcraft, and the records state that members of a society pledged to sorcery often bore concealed tattoo marks. A tattoo picture of a toad was one of the common symbols of witchcraft. The presence of such a mark—called the devil's tattoo—was held to be undeniable evidence of guilt.

SAILORS' SENTIMENT

The writer's interest in tattooing was first aroused by observation of the tattooed designs of men of the Royal Naval Division and the Marines with whom he served in Gallipoli and France in 1914-18. The "in memoriam" design was a common one. In one instance there was a tombstone design beneath these words. On each side of the stone a sailor stood with bowed head and cap in hand. An added epitaph, all neatly tattooed, was "in loving memory of my dear mother." A few sailors carried on their forearms a record of their infidelity. The names Molly and Mary were partly deleted and the most recent conquest, Jane, was left intact.

The most elaborate tattooing, sometimes in several colors and covering the entire body, has been done by Burmese, Japanese, and natives of the Marquesas Islands (Polynesia). Many years ago the French government prohibited tattooing in the Marquesas Islands, and the Japanese government passed a similar edict.

To an anthropologist, tattooing is of interest not merely because of the intricacy and artistic merit of the designs. There is no doubt that from ancient, probably from prehistoric, times the practice had a social and psychological significance. For women the embellishment meant marriageable status. For men, marking the body was part of the tests of endurance associated with puberty rites. Tattoo marks of males have represented social distinction by birth, by prowess in war, by success in head-hunting, and in making canoe voyages.

MAORIS GO FARTHER

Among the Maori of New Zealand, who are Polynesians, a peculiar form of body marking called moko was developed. The operator chiseled grooves in the skin penetrating rather deeply into the dermis (skin under the outer layer). The instrument used was a small adze with a serrated bone edge. Into these facial and body cuts, which were usually in the form of spirals, red ochre or soot was rubbed. When the thighs were treated in this way the body appeared to be clad in a tight-fitting garment. The operation was performed by a well-paid specialist, sometimes a priest, who graded his class of work and the time taken according to the status and wealth of his patient.

During the period of tattooing, a warrior

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FUR EXHIBIT TO CONTINUE; ANIMAL PHOTO SHOW ON WAY

The special exhibit, "Stories in Hair and Fur," which opened in Stanley Field Hall on August 1, will continue on display until September 20. This demonstration of major facts about the fur industry is here on loan from the Cranbrook Institute of Science, of Bloomfield Hills, Michigan. An added feature, provided by members of the Associated Fur Industries of Chicago, Inc., is a case of finished fur garments of various types. These are changed each week of the show.

Shortly after the close of the fur show, the Museum will open another special exhibit, "Animals in Action." This collection of unusual photographs of wild life is a one-man show by the noted nature

photographer Roman Vishniac of New York, whose work frequently appears in *Life* magazine. The photo show is scheduled for October 1 to 31, inclusive.



FASHION MODELS AT MUSEUM FUR SHOW

At opening of special exhibit, Sandi Wells (left), Elaine Winn, and Joyce Ann Byers ("Miss Associated Fur Industries for 1950") posed for press photographers with garments supplied by local furriers.

FIFTY YEARS AGO AT THE MUSEUM

Compiled by MARGARET J. BAUER

The nucleus for the zoological collections in the newly organized Columbian Museum of Natural History (later to be Field Museum of Natural History, and now Chicago Natural History Museum) consisted of the



Beginnings of the Zoological Exhibits

mounted animals displayed by Ward's Natural Science Establishment of Rochester,

the World's Fair. Almost all of the old specimens received with the original collection have been replaced with newly mounted material. Exhibition of specimens not in glass cases has of necessity been reduced to a minimum, because the "Hands Off" signs proved ineffectual. The visitor should compare the habitat groups of the American elk and Alaskan moose in Hall 16 for examples of the best of modern taxidermy in contrast to the old exhibits.

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The nature of the Museum's publications in 1900 is well indicated by two specimen titles: *List of Mammals Obtained by Thaddeus Surber, Collector for the Museum, Chiefly in Oklahoma and Indian Territories*, by D. G. Elliot, and

Plantae Utovanae (plants collected in Bermuda, Puerto Rico, St. Thomas, Culebras,



Modern Taxidermy—Alaskan Caribou, Hall 16

New York, at the World's Columbian Exposition of 1893.

The entrance to the main zoological hall in the Fine Arts Building, taken over by the new museum, was flanked by mounted elk and moose, with sea turtles and a spider crab and mounted crocodile hung on the wall and with a hanging model of a bottle-nosed whale overhead.

The old specimens exhibit the unsatisfactory taxidermy in vogue at the time of

will continue on Saturdays throughout October and November. Like the adult programs, they are given in the James Simpson Theatre. The first one, "Big Bend Adventure," will be accompanied by a talk by Allan Cruickshank of the National Audubon Society. Details of the entire eight programs will be given in the October issue of the BULLETIN.

SEPTEMBER LECTURE TOURS, DAILY EXCEPT SUNDAYS

Tours of exhibits, under the guidance of staff lecturers, are conducted every afternoon at 2 o'clock, except Sundays and certain holidays. On Mondays, Tuesdays, Thursdays, and Saturdays, general tours are given covering all departments. Special subjects are offered on Wednesdays and Fridays; a schedule of these follows:

Fri., Sept. 1—Camouflage as Taught by Nature. Illustrated introduction in Meeting Room (*Harriet Smith*).

Wed., Sept. 6—Animals of the Six Continents (*Jane Sharpe*).

Fri., Sept. 8—Fashions in Furs. Illustrated introduction in Meeting Room (*Jane Buchwald*).

Wed., Sept. 13—Natural History Facts and Fallacies (*Lorain Farmer*).

Fri., Sept. 15—Adapt or Become Extinct. Illustrated introduction in Meeting Room (*Jane Sharpe*).

Wed., Sept. 20—Nature's Sweet Tooth—Story of Sugars (*Marie Svoboda*).

Fri., Sept. 22—Strange Sea Animals. Illustrated introduction in Meeting Room (*Lorain Farmer*).

Wed., Sept. 27—Measuring and Record-keeping—Early and Primitive Instruments and Writing (*Harriet Smith*).

Fri., Sept. 29—Nature's Fall Color Show. Illustrated introduction in Meeting Room (*Miriam Wood*).

There will be no tour on Saturday, September 2, and Monday, September 4, on account of the Labor Day week-end holiday, but the Museum will be open.

Technical Publications Issued

The following technical publications were issued by the Museum recently:

Fieldiana: Botany, Vol. 27, No. 1. *Contributions to the Flora of South America. Studies on Andean Compositae—I. Studies in South American Plants—II.* By José Cuatrecasas. June 8, 1950. 114 pages, 12 text figures. \$1.75.

Fieldiana: Zoology Memoirs, Vol. 2. *Amphibians of Western China.* By Ch'eng-chao Liu. June 15, 1950. 400 pages, frontispiece, 2 halftone plates and 8 colored plates, with captions opposite, and 100 text figures. \$7.50.

Santo Domingo, Jamaica, Cuba, the Caymans, Cozumel, Yucatan, and the Alacran Shoals, December, 1898, to March, 1899), by Charles F. Millspaugh.

Children's Programs Coming

The Raymond Foundation will present the first of its Autumn Series of free motion-picture programs for children on Saturday morning, October 7, at 10:30 A.M. These

GEOLOGIC PERIODS: HOW OUR CONCEPTS HAVE CHANGED

BY EUGENE S. RICHARDSON, JR.
CURATOR OF INVERTEBRATE FOSSILS

A hundred and twenty-five years ago it was a simple matter to learn the names applied to the periods of geologic history. It was just like one-two-three-four: Primary, Secondary, Tertiary, and Quaternary (the last one was added in 1829).

It was equally easy to recognize the rocks belonging to those four "periods." All hard igneous and metamorphic rocks were Primary because they looked older than the others and were generally found beneath them in the cores of mountain ranges. The fossil-bearing hard sedimentary rocks that tilted up against the Primary rocks were called Secondary because they were obviously created later and less had happened to them. On top of these were soft fossil-bearing sedimentary rocks, generally not tilted and apparently formed of the debris of Primary and Secondary rocks. "Tertiary" was a reasonable name for these. The name "Quaternary" was then appropriately adopted for the thin cover of glacier, stream, and lake deposits and volcanic lavas that lay upon all the others in patches.

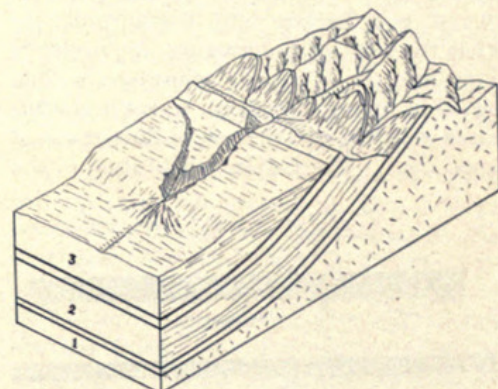
Presently, however, people noticed that each bed or group of beds of sedimentary rock had certain fossils different from those in other beds and that some layers with characteristic fossils could be traced from a clearly Tertiary terrain in one place, through

a Secondary area in another, to a region where they blended right into the Primary rocks. So it appeared that these terms were worthless as time terms.

We know now that there are sandstones in Wisconsin of Cambrian age (see Table 1), so soft and Tertiary-like that the winds build sand dunes on their outcrops, and that there are Quaternary rocks in Oregon and California that have been hardened and tilted and even partly metamorphosed, during the building of the Coast Range, to such an extent that they would formerly have been called "early Secondary."

It is to Sir Charles Lyell, Sir Roderick Murchison, and the Reverend Adam Sedgwick, of England, that we owe the modern concept of the geologic periods and many of their names. The three earliest periods following the appearance of life on the earth are the Cambrian, Ordovician, and Silurian periods. In 1835, Murchison, working in the hills and fields of Shropshire, described a succession of thousands of feet of ancient gray shales and limestones with distinctive fossils lying beneath the "Old Red Sandstone" of western England. Using a classical name, he christened these rocks in memory of the tribe of Silures, whom Julius Caesar had fought in that region. In the same year, Sedgwick, working in Wales, described a similar but older succession of rocks and named them for Cambria, the Latin name

of Wales itself. These names were applied to the actual sequences of rocks rather than to time periods. Each of these sequences,



YESTERDAY'S SCIENCE

The succession of rocks as they would have been named 125 years ago: 1. Primary, 2. Secondary, 3. Tertiary. The Quaternary rocks are represented by an alluvial fan at the base of the nearest slope.

plus all other rocks in the world of the same age, constitutes a "system."

It was soon noticed that the lower part of the Silurian system and the upper part of the Cambrian system had the same fossils in them and were, therefore, of the same age. In 1874, Professor Charles Lapworth gave this intermediate part a new name, derived from that of a Welsh tribe that had resisted Caesar's invasion, the Ordovices. Other systems have been named in a similar way, though not all the names have such classical derivations. The periods, defined

TABLE 1

TIME DIVISION	BEGAN YEARS AGO	NAMED BY	TYPE AREA
Archaean era	3,000,000,000	James Dana, 1872	(world)
Algonkian era	1,500,000,000	Charles Walcott, 1889	central Canada (territory of Algonkian Indians)
Paleozoic era (era of "ancient life")			
Cambrian period	540,000,000	Adam Sedgwick, 1835	Wales (Cambria)
Ordovician period	450,000,000	Charles Lapworth, 1874	Wales (territory of the ancient Ordovices)
Silurian period	380,000,000	Roderick Murchison, 1835	Shropshire, England (territory of the ancient Silures)
Devonian period	350,000,000	Murchison and Sedgwick, 1836	Devonshire, England
Mississippian period	310,000,000	Alexander Winchell, 1861	Mississippi River Valley
Pennsylvanian period	280,000,000	Henry Williams, 1891	western Pennsylvania
Permian period	240,000,000	Roderick Murchison, 1841	Perm Province, Russia
Mesozoic era (era of "mediaeval life")			
Triassic period	200,000,000	F. von Alberti, 1834	named for three ("tri-") conspicuous beds of rock in Germany
Jurassic period	175,000,000	Alexander Humboldt, 1799	Jura Mountains, French-Swiss border
Cretaceous period	110,000,000	J. J. d'Omalus d'Hallo, 1822	chalk cliffs, English Channel (Latin for chalk is "creta")
Cenozoic era (era of "recent life")			
Tertiary period	75,000,000	Giovanni Arduino, 1759	see discussion in text
Quaternary period	1,000,000	J. Desnoyers, 1829	see discussion in text

TABLE 2

Epochs of the
Tertiary and Quaternary periods

Quaternary period
Recent epoch
Pleistocene epoch

Tertiary period
Pliocene epoch
Miocene epoch
Oligocene epoch
Eocene epoch
Paleocene epoch

as the time of deposition of the systems, are given the same names. In Table 1 the names now used for the geologic periods are shown, together with their type areas, the region in which each system was first formally described. Two of the old names still in use, "Tertiary" and "Quaternary," no longer have their old rock-type meanings.

Just as geologic time is divided into periods, each period is again divided into

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