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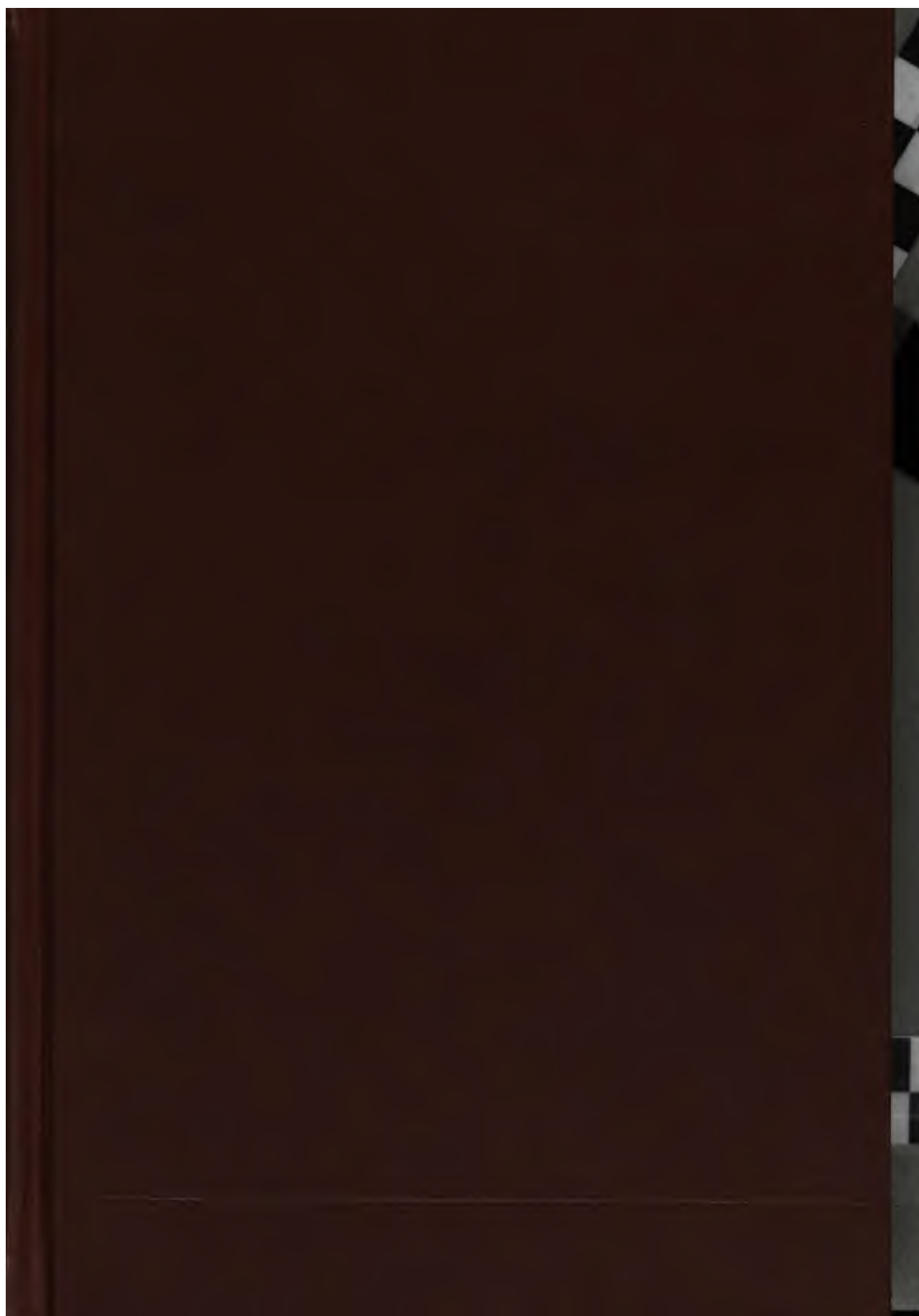
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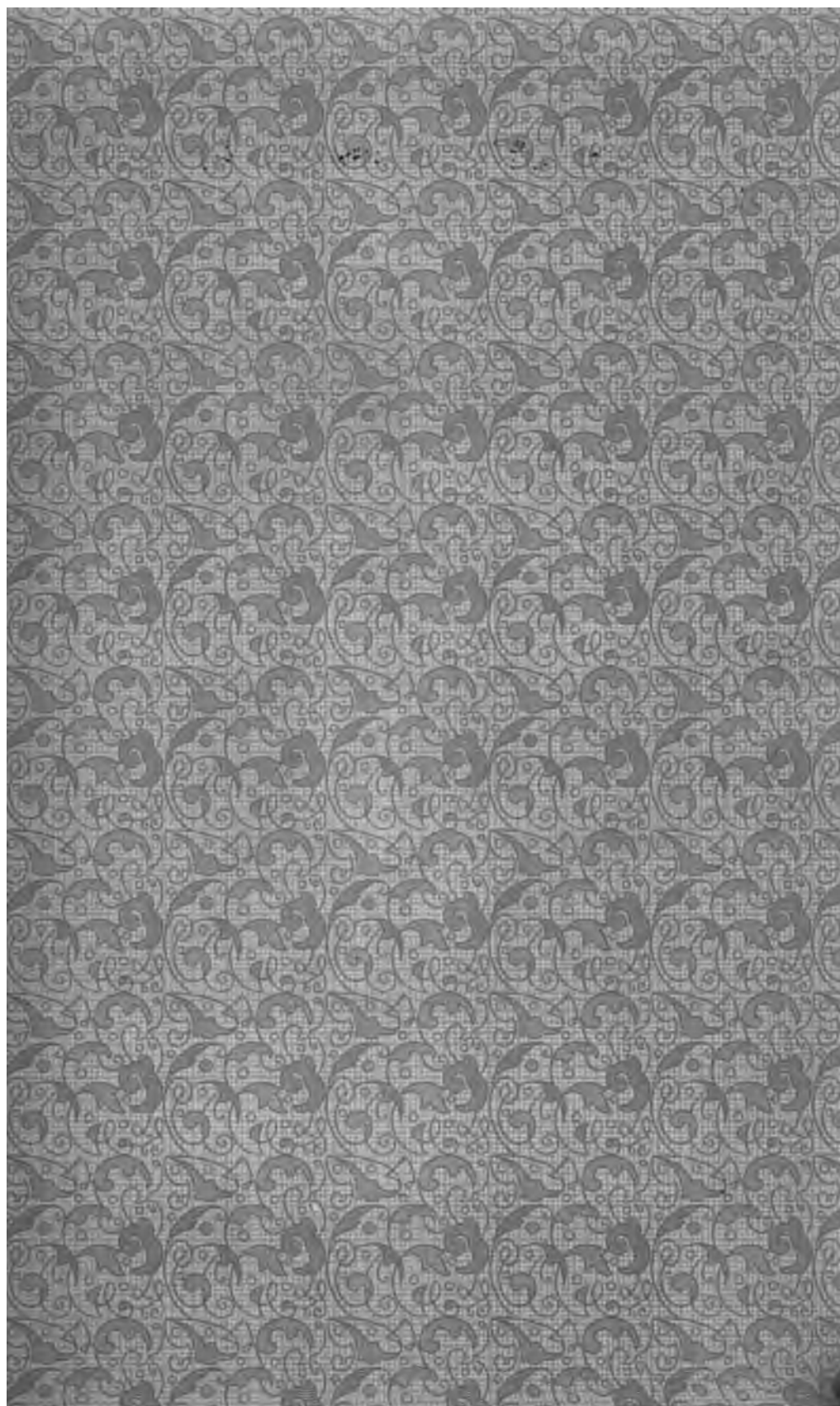
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LELAND STANFORD JUNIOR UNIVERSITY



THE
American Antiquarian

—AND—

Oriental Journal

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VOLUME XXIV

JANUARY-NOVEMBER, 1902.

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TABLE OF CONTENTS.

VOL. XXIV.

JANUARY-FEBRUARY.

Page

FRONTISPIECE: THE PALACES NEAR CAMPECHE.	
THE ANCESTORS OF THE AMERICAN INDIGENES. By Chas. Hallock, M B. S.	3
ETHNIC STYLES OF AMERICAN ARCHITECTURE. By Stephen D. Peet ...	19
THE CULTURAL SIGNIFICANCE OF PRIMITIVE IMPLEMENTS AND WEAPONS. By Alton Howard Thompson, Topeka, Kansas, Part I. Gifts of Nature	35
THE BEARD AS A TEST FOR CLASSIFICATION OF RACES, By C. Staniland Wake.....	43
A PLEA FOR GREATER SIMPLICITY, AND GREATER ACCURACY, IN THE WRITINGS OF THE FUTURE REGARDING THE AMERICAN ABORIGINES. By Dr. Charles E. Slocum, Defiance, Ohio ...	46
EDITORIAL—A PLEA FOR BETTER PIONEER HISTORY. By S. D. Peet	49
ARCHÆOLOGICAL NOTES—	
EXPLORATIONS IN SYRIA	52
EXCAVATION IN CRETE	52
IS STONEHENGE A NEOLITHIC STRUCTURE?	53
PUEBLO RUINS IN KANSAS.....	53
STORY OF THE CORINTHIAN CAPITAL	3
THE SCARABÆUS	54
A PREHISTORIC ART GALLERY OF EXTINCT ANIMALS	55
LITERARY NOTES.....	56
BOOK REVIEWS—	
A Historical Geography of the British Colonies. By C. P. Lucas.	56
The Lesser New Fire Ceremony at Walpi. By J. Walter Fewkes.	57
The Social Life of the Hebrews. Rev. Edward Day	57
Memoranda of the Maya Callendars. By C. P. Bowditch	57
Memoirs of the Peabody Museum of American Archæology and Ethnology. By Teobert Maler.....	58

TABLE OF CONTENTS.

MARCH-APRIL.

	Page
ETHNIC STYLES AMONG AMERICAN TRIBES. By Stephen D. Peet	61
SOME ETHNOLOGICAL OBSERVATIONS IN SOUTH AFRICA. By G. E. Laidlaw	77
CURIOUS AND INTERESTING MARRIAGE CUSTOMS OF SOME OF THE ABORIGINAL TRIBES OF BRITISH COLUMBIA. By Charles Hill-Tout	85
CARRIERS AND AINOS AT HOME. By Rev. A. G. Morice, O.M.G.	88
THE AUSTRALIAN MUSEUM. By Frederick Starr	93
PHILIPPINE STUDIES. By Alexander F. Chamberlain ..	97
THE THOORGA AND OTHER AUSTRALIAN LANGUAGES. By R. H. Mathews, L. S.	101
COMMUNAL HOUSES. By C. Hill-Tout.....	107
EDITORIAL—Human Figures in American and Oriental Art Compared. By Stephen D. Peet.....	106
ARCHÆOLOGICAL NOTES—	
The Hermes Restored ..	125
The Sacs and Foxes.....	125
The Northwest Coast.....	126
Houses Among the Hurons	126
LITERARY NOTES—	
THE AMERICAN ANTIQUARIAN and College Libraries.....	127
Anthropology in Colleges and Universities	127
RECENT DISCOVERIES—	
A Large Collection of Relics in the Reindeer Period	128
Relics from East Africa.	128
In California.....	128
From New Zealand	128
BOOK REVIEWS—	
The Human Ear: Its Identification and Physiognomy. By Miriam Ann Ellis ..	129
L'Animisme Fetchiste des Negres Bahia. Dr. Nina Rodrigues ...	130
Metissage Degenerescence et Crime: Dr. Nina Rodrigues	130
Des Formes de L'Hymen: Dr. Nina Rodrigues.	130
Zuni Folk-Tales: Translated by Frank Hamilton Cushing	130
Transactions of the Canadian Institute: Rev. Father A. G. Morice.	131
Researches in the Usumatsintla Valley. By Teobert Maler	131
Government Museum, Madras: Catalogue of the Pre-Historic Antiquities. By R. Bruce Foote	132

TABLE OF CONTENTS.

3

MAY-JUNE.

	Page
FRONTISPIECE—Ziggurat at Nippur	133
THE RUINED CITIES OF ASIA AND AMERICA. Illustrated.	
By Stephen D. Peet	135
PRIMITIVE KERAMIC ART IN WISCONSIN. Illustrated. By	
Publius V. Lawson	157
THE PHILIPPINE LIBRARY. By Frederick Starr.....	168
CULTURAL DEVELOPMENT OF MAN. By Dr. A. L. Benedict.	173
ANTHROPOLOGICAL NOTES. By A. F. Chamberlain.....	179
ARCHÆOLOGY IN AUSTRALIA. By John Fraser, L.L.D., Sidney.	
STONE CIRCLES IN COLORADO. By A. M. Swan.....	182
ORIGIN OF THE ALPHABET. By Arthur J. Evans	
LAKE DWELLINGS IN BELGIUM. By Alexander F. Chamberlain	184
CONTACT BETWEEN ASIA AND AMERICA. By James Wick-	
erham	187
ANCIENT BOAT FROM THE NILE. Selected	187
THE OLDEST DISCOVERED SPECIMENS OF EGYPTIAN	
JEWELRY	188
EDITORIAL—	
Mythologic Art in Prehistoric and Historic Times. Illustrated	189
The Coming Congress of Americanists	190
EDITORIAL CORRESPONDENCE	191
American Association for the Advancement of Science	191
International Congress of Americanists.....	191
LITERARY NOTES.....	192
BOOK REVIEWS	193
Reproduction of Mexican Codices. By Luke D. Loubat	193
Memoirs of the Peabody Museum of American Archæology and	
The Hieroglyphic Stairway. By George Byron Gordon	194
Memoirs of the Explorations of the Basin of the Mississippi.	
Vol. IV. By J. V. Brower	195
BOOKS RECEIVED.....	196

TABLE OF CONTENTS.

JULY-AUGUST.

	Page
DIFFERENT RACES IN AMERICA. By Stephen D. Peet....	199
APPLICATION OF THE LAW OF VARIATION IN THE EVOLUTION OF MAN. By Charles H. Duncan.....	215
THE ESKIMO DANCE HOUSE. By James Wickersham.....	221
THOMAS JEFFERSON ON PRE-HISTORIC AMERICANS. By Henry Burns Geer.....	224
RELICS OF A BY-GONE RACE.....	228
EARLY AMERICAN ART.....	229
'LITTLE ORPHAN" ISLAND.....	230
RECENT DISCOVERIES IN THE EAST.....	231
PICTOGRAPHS NEAR DORDOGNE.....	231
THE MUMMY OF MERENPTAH.....	231
MIGDOL.....	231
THE MINOTAUR.....	231
JEWELS OF AN EGYPTIAN QUEEN.....	231
RECENT DISCOVERIES IN EGYPT.....	232
AN ANCIENT WOMAN WARRIOR.....	232
THE SAHARA DESERT.....	232
THE HOUSE OF THE DOUBLE AX.....	233
PRE-DYNASTIC PERIOD OF EGYPT.....	233
PRESENT CONDITION OF POMPHIL.....	233
SUBMARINE ROMAN REMAINS OF THE ITALIAN LITTORAL....	234
GEORGE FREDERICK GROTEFEND.....	234
BELL FOUNDING.....	235
A MODERN ROCK-CUT FIGURE.....	235
ANTHROPOLOGICAL NOTES. By Alexander F. Chamberlain.	236
IMPERIALISM AND ARCHÆOLOGY.....	236
SACRED LANGUAGE.....	236
PELASGI.....	237
DEGENERATION.....	237
KEKCHI MAIZE PRODUCTS.....	237
EDITORIAL—	
VILLAGE LIFE AND VILLAGE ARCHITECTURE.....	239
THE ARCHÆOLOGICAL HISTORY OF OHIO.....	255
BOOK REVIEWS.....	258
ARCHÆOLOGICAL HISTORY OF OHIO.....	258
FREE MUSEUM OF SCIENCE AND ART. Bulletins No. 1-2-3-4 Vol. II. Nos. 1-2-3-4. Vol. III. Nos. 1-2-3.....	259-262

TABLE OF CONTENTS.

5

SEPTEMBER-OCTOBER.

	Page
ANCIENT TEMPLE ARCHITECTURE. By Stephen D. Peet..	365
RUINS OF THE MIMBRES VALLEY. By Francis U. Duff	397
ANTHROPOLOGY IN AUSTRALIA. By John Fraser.....	400
EARLIER HOME OF THE BELLA COOLA TRIBE. By Charles Hill-Tout.....	403
THOMAS WILSON, LLD. By Warren K. Moorehead.....	404
PAPERS READ BEFORE THE AMERICAN ASSOCIATION.	
Explorations in 1901, of Arizona. By Dr. W. Hough	408
The late Dr. Thomas Wilson. By W. K. Moorehead	408
Early Migration of Mankind. By G. F. Wright.....	409
Preservation of Museum Specimens. By Dr. Hough..	411
PRIMITIVE MAN AND HIS STONE IMPLEMENTS IN THE NORTH	
AMERICAN LOESS. By Warren Upham.....	413
NOTES ON THE FOSSIL MAN FROM KANSAS. By the Editor.	420
FINDS IN AMERICA.....	421
CREATION LEGENDS IN BABYLONIA.....	421
EDITORIAL NOTES—	
Recent Explorations.....	422
The Campanile Tower.....	423
BOOK REVIEWS—	
The Indians of To-day. By George Bird Grinnell...	424
The International Monthly.....	424
Primitive Semitic Religion To-day.....	424
A New Eskimo Grammar.....	425
National Geographic Magazine—June. The Caribs..	425
Annual Archæological Reports—1901.....	426
Bulletin of the Geographical Society of Philadelphia	426
Memoirs of Explorations—Basin of the Mississippi..	426
Smithsonian Institution. Instructions to Collectors..	426
Preliminary Sketch of the Mojave Indians. By A. J. Kroeber.....	427
Ymer.....	427
SEPTEMBER MAGAZINES RECEIVED—	
The Antiquary, London.....	428
Biblia, Meriden, Connecticut.....	428
Man, for August.....	428

The paging of this number is by mistake one hundred greater than it should be.

NOVEMBER-DECEMBER.

	Page
PYRAMIDS IN AMERICA. By Stephen D. Peet....	427
PRIMITIVE IMPLEMENTS AND WEAPONS By Alton Howard Thompson	452
ARCHÆOLOGY IN THE AMERICAN MUSEUM	454
CAVE PAINTING IN WEST AUSTRALIA. By John Fraser, LL.D.	457
THE COPPER IMPLEMENTS OF WISCONSIN. By Publius V. Lawson	459
ANTHROPOLOGICAL NOTES—	
Alexander F. Chamberlin	475
CORRESPONDENCE—	
By Rev. John Maclean.	476
NEW DISCOVERIES...	477
FOUNTAINS AND AQUEDUCTS, Ancient and Modern	478
DOUBLE HEADED SERPENT, AND THE MIGRATION OF SYMBOLS	482
EDITORIAL—	
MAJOR J. W. POWELL AND HIS WORK...	484
INTERNATIONAL CONGRESS OF AMERICANISTS.	486
EDITORIAL NOTES—	
Virchow; Eternalism; A Library Before Abraham; Joseph Prestwich; Primitive Men; Israel's Religion; Coal	488, 489
BOOK REVIEWS—	
Journal of the Asiatic Society of Bengal; Wigwam Stories. By Mary C. Judd; Homeric Society. By Albert Galloway..	490



BRIDGE WALKWAY AT WICHAMORE VICATIN



COLUMNS AND WALLS AT SKICHMOOK, YUCATAN.

American Antiquarian

VOL. XXIV.

JANUARY AND FEBRUARY, 1902.

No. 1.

THE ANCESTORS OF THE AMERICAN INDIGENES.

BY CHARLES HALLOCK, M. B. S.

By an intelligent adjustment of co-efficients, the author of this paper is convinced that he has been able to solve the racial problem of the Western Hemisphere: not only as respects the origin of the American Indigenes (miscalled Indians), but approximately the antiquity of their progenitors whose ruined and silent cities, like those of Asia Minor, long since passed out of history, and whose massive pyramids, temples and palaces vie with those of the Old World, and are inferentially not only coeval with them but closely related.

The nicety with which the parts fit is proof of the correctness of his thesis, which not only indicates the birthplace of the people from which the early inhabitants of North America sprung, but locates their point of departure (in Central America) and the several divergent routes of exodus therefrom, northward, which eventuated in the distribution of the population over the greater part of the continent. And it is able to trace and establish these designated routes by mural inscriptions, petroglyphs, stone tablets, writings and traditions, the authenticity of which is self-evident and self-contained. The identity of the Indians with their ancient progenitors is further proven by relics, mortuary customs, linguistic similarities, plants and vegetables, and primitive industrial and mechanical arts which have remained constant throughout the ages. And not only is the progress of migration and distribution intelligently traced, but the incidental metamorphoses and vicissitudes, as well as the causes of that degeneration which, in the course of the long period of transformation, ultimately touched the level of savagery in many instances.

The consensus of opinion among advanced ethnologists is that no sufficient reason can be shown for a separate racial classification of the three Americas, and the entire proposition may be summarized in the abstract which follows, wherein the collater has simply gathered and arranged the materials which

have been unearthed by scientists who have been working for years on homogeneous but independent lines. Biblical testimony and modern research are shown to corroborate each other, and their essence, so far as it has been accepted by painstaking scholars, is herewith presented :

Imprimis: In its primordial state the Globe was only in small part tenable. Fertile and forested areas were few and geographically far apart. Interminable ice fields and barren wastes predominated. Oceans covered four-fifths of the surface. Later on, but long anterior to the days of the traditional Adam, there existed (Genesis iv. 16-17) autogenous, independent and contemporaneous groups of men, with their associated flora and fauna which were distributed among the geographical areas: a conservative provision of the Scheme of Creation whereby the species were preserved, so that when cataclysms or other disasters occurred in one division resources for reproduction and perpetuation were available in others. [The desert of Sahara was once fertile and populous. Greenland teemed with luxuriant flora and fauna. Babylon is buried under sands. Scarcely 300 years were required to convert a large portion of Spain, the fairest of the Iberian plains, into an arid wilderness, after the Moors were driven out. The moving sand dunes of our own continent have buried towns and fertile tracts, and forests, in some instances sixty feet deep, as on Roanoke Island, within a comparatively brief space of time.] Each fertile tract was in itself a veritable "Garden of Eden" whose animal and vegetable output in due course of time spread from near by to remoter regions. One of these autogenous nurseries, with its perfected species, was located in Central America,* and was doubtless contemporary with similar nuclei in Asia and Africa, the mural inscriptions and anaglyphs of Uxmall, Palenque, Copan, Chichen-Itza and a score of other places, demonstrating by inference, analogies and graven testimony that they were coeval with Egypt, Chaldea, Phœnicia, Tyre, Palmyra, Carthage and Mycæne, and enjoyed commercial intercourse with them to at least as recent a date as King Solomon's time, when, according to Scripture records, vessels returning from triennial voyages to the uttermost parts of the earth brought cargoes of gold, silver, apes, and peacocks. (Kings: chap. x., verse 22,) Egypt was the cradle of an ancient civilization for ages before the Hebrews went into bondage, while the country traversed by the Isaaelites in their wilderness journeyings was interspersed with the walled cities of many prehistoric kingdoms, tribes and clans, whom they encountered.

During the natural processes of adaptation and develop-

* See "Exiles from Eden," translated by Le Plongeon from tablets of Chichen-Itza.

ment, great climatic changes took place in all parts of the globe, involving corresponding fertility or sterility, with their natural concomitants. When regions were habitable they were inhabited; when they would not support life it departed. So it came to pass, during the second glacial epoch, when the great boreal ice sheet covered one-half of the North American continent, as far south as the present sites of Philadelphia and St. Louis, and the glaciated portions were as untenable and unfit for human occupation as the snow cap of Greenland is today, that aggregations of population clustered around the equatorial zone, because the climatic conditions were congenial. (Note the antipodal as well as the isthmian location of Egypt and Central America, both equidistant from the equator, and one to each hemisphere.) And inasmuch as civilization the world over clings to the temperate climates and thrives there best, we are not surprised to learn that communities far advanced in arts and architecture built and occupied those great cities in Yucatan, Honduras, Guatemala, and other Central American States, whose populations once numbered hundreds of thousands, and whose massive ruins of stone and concrete mark hundreds of sites.† In Yucatan alone, where the highest culture was developed, there were fifty-one cities. The explorations of Stephens, Le Plongeon and others, have opened out the secrets of these mural wastes, and archaeologists have coincidentally been excavating their desert counterparts in the old world to verify their relationship. Anaglyphs of a long forgotten people have been deciphered, and the revelation is like an open book.

An approximate date when this civilization was at the acme of its glory would be about 10,000 years ago, as established by observations upon the recession of the existing glacier fronts, which are known to drop back twelve miles in one hundred years.‡

How many centuries previously civilization had endured is a problem hard to solve, because it is not within mortal ken to know how long the ice sheet remained in bulk before it began to melt faster than it accumulated. But it is obvious that during its continuance its entire area was as much of a *terra incognita* as Greenland is now, though men have always dwelt on the margin of the ice sheet as the Eskimo do at present.

With the gradual withdrawal of the ice sheet the climate

† These cities were not all under one government or federation, for their climax was during the epoch of petty kingdoms contemporary with the Hebrew exodus from Egypt.

‡ Vancouver, the navigator, speaks of his inability to enter Glacier Bay Alaska, in 1763. It was then but an indentation of the coast hardly noticeable, but during the last decade was navigated by large steamers for more than twelve miles inland.

grew proportionately milder, and flora and fauna moved simultaneously northward. Coincidentally, the solar heat at the equator, which had before been tolerable, became oppressive; large areas of agricultural land became dessicated; quarrels and jealousies arose; the overcrowded population grew restless, and an impulse of extradition supervened which has probably had no parallel. Some emigrants went to South America and settled there, carrying their customs, arts, ceremonial rites, hieroglyphs, architecture, etc., and an immense exodus took place into Mexico and Arizona, which ultimately extended westward up the Pacific coast to Alaska. Absence of glaciation on that side of the continental divide made exploration and settlement in that direction easy and attractive, and the grafts so set have kept their civilization better than any other congenital offsets. [At that period the Rocky Mountain chain was not much of a ridge, and a great salt estuary or arm of the sea, larger than Hudson Bay, covered the Great Plains, and washed the margin of the melting ice sheet whose main fluvial outlet became the Mississippi River. Gigantic Saurians sported in the saline waves and mastodons and other grotesque land animals fed on the huge calamites, tree ferns, and rushes which fringed its border. When lakes Erie and Ontario receded 170 feet the big estuary ran dry, and the saurian tribe succumbed from withdrawal of customary food and environment. At that period human beings occupied the southern shores of the estuary, and man and mastodon were contemporary. Palæontologists have discovered, near Kimmswick, Missouri, human remains and flint and iron arrow heads among the well preserved bones and teeth of primitive bisons (*bos Latifrons*) and mastodons which had been driven off a precipice, after the practice maintained until a recent date by modern Indians in pursuit of buffalo. This "find" is in evidence that the period of the battue was while the glacial sheet prevailed near that latitude. The use of stone arrows and other implements in no wise establishes a primitive or savage condition. White men have imitated them for generations, even to this day. Frost easily affects metals, and in frigid regions only flint or ivory will stand for nine months of the year.] Coincidentally a northward migration took place through New Mexico to southeastern Colorado, and another exodus still more direct across the Gulf of Mexico in flotillas from Yucatan to the main land, and thence due northward between the 87th and 97th meridians, extending at last as far up as Lake Superior, the progressive trend being punctuated at succeeding stages by defensive earthworks whose construction was attributed until recently to a hypothetical people termed Mound Builders. Great numbers of emigrants also went to the Antilles, the Bahamas and other neighboring islands, where

colonies had already been planted, and thence to Florida, and from there were disseminated all over the eastern part of the continent,§ as fast as it became habitable. They did not settle due north of the Arkansas because the climate was less propitious and the country bare of watercourses. The principal outpost of their occupation in that direction was twenty miles south of the Big Bend, the stone ruins of which are very striking, even now. There are hundreds of large flat rocks on the bluffs of the Little Arkansas, about four miles west of the Santa Fe crossing, which are covered with hieroglyphics deeply cut, and similar to those along the headwaters of the Gila in Arizona, and prototypes of those at Uxmall and Palenque. They are thirty-four miles from the edge of what was the big estuary—now the grand prairie. Vessels from the Yucatan peninsula, after crossing the Gulf of Mexico, would land at the "Big Bluff," which was the escarpment of the rolling country extending eastward to the settlements. Trade between Yucatan and Cuba was maintained through the ages. Distinct communities like the Colusas, Tequitas and Timacuas, occupied Florida for a time and in turn became extinct. Their mural remains and relics are abundant (Cushing). They and the several millions of islanders whom the Spaniards managed to annihilate four centuries ago, all had the same direct lineage from Central America, except the Caribs, who came from South America later on (Ober).

These initial migrations took place in the early history of the glacial period. In subsequent epochs, when the ice sheet had withdrawn from large areas, as far at least as up to the latitude of the Great Lakes, there were immense influxes of people from Asia *via* Bering Strait and the Kamchatkan Peninsula on the Pacific side, and from northeastern Europe *via* Greenland on the Atlantic side east, (that sub-arctic tract being hospitable then,) and these continued, *equo passu*, as the earth became uncovered, distributing themselves over the country by available watercourses, which were then larger and more numerous than now, until large communities occupied its most attractive uplands, notably the region south of Lakes Erie and Ontario, as is made evident by the abandoned copper mines of Lake Superior and the many mounds and defensive earthworks in Ohio and contiguous territory. The occupants at that period possessed many of the arts and appliances of civilization, for peace

§ Bodies of twelve Indians, killed in battle near Turner's Falls, Mass., in 1704, and buried with their feet resting on a circle five feet in diameter, the heads radiating like spokes of a wheel—recalling the famous Aztec calendar stone—were dug up in 1882.

had reigned continuously for ages among them, and they had remained unmolested until the incursions of barbarian hordes from the northwest and southeast made the construction of military defences a necessity. The date of this invasion can be approximately determined by the beach terraces of the great lakes, the higher of the two being 170 feet above the present lake level, and 30 feet above the level of the intervening land. A conspicuous section of this ancient shore line extends for 78 miles from the Genessee river to Lexington, in New York State. South of it mounds and defensive earthworks exist in great numbers, but there are none on the flood plain between it and the present shore line, nor on the north shores. Large communities also dwelt upon navigable watercourses and estuaries of the North Atlantic ocean, and the historians of the 16th century speak of abundant evidences of a preoccupation numerically large. Governor Winslow, of Massachusetts upon his visit to Massasoit in 1621, found traces of many ancient towns along the rivers, with clearings on both sides. "Thousands of men," he wrote in his report, "have lived there which died in a great plague not long since: and pity it was to see so many goodly fields, and so well seated, without the men to dress the same." *Again*: "As we passed along we observed that there were few places by the river but had been inhabited." So also in the middle west, they dwelt in large villages until they were finally dispossessed and driven out by the whites within the closing decades of the last century.

As regards the immigration from Asia, authentic records still extant extend back into the 6th century as early as the year 544, which is the date of the overthrow of the Tsin dynasty in China, at which time the Nestorian and other Christian colonies in the Celestial Empire were obliterated. A granite memorial of that Nestorian occupation still stands. Chronology is quite explicit as to the occurrences between this date and 1325, when the City of Mexico was founded.

"Of the five tribes which constitute the present Mexican nation, the Toltecs first made their appearance fifty miles to the west of the City of Mexico in 648. They declared themselves repelled from a country lying to the northwest of the river Gila, called by them Huehuetlapallan. This migration commenced in 544, and its progress year by year is described in Mexican paintings. * * About 100 years after the Toltecs had left Huehuetlapallan, the Chichimecs took possession of it and held it 500 years. They came from Amaque Mecan, a country lying far to the north and occupying eighteen months in migration. After five centuries they evacuated and joined the Toltecs in Mexico in 1170. The Nahuatlacs made their first appearance from the north in 1196.

The Aztecs, the immediate progenitors of the Mexicans, dwelt in a country called Azatlan, to the north of the California Gulf, in 1160, probably near the 56th parallel, where the natives show a predilection for hieroglyphic paintings. After journeying fifty-six years—divided into three grand periods—the Aztecs arrived at Zumpanco, in the Valley of Mexico, in 1216. The first stage of this migration was to the south of the Rio Nabajoa, one of the branches of the Colorado, in 35°; the second to the north of the Rio Gila, in 33° 30', where the ruins called Las Casas Grandes by the Spaniards, were discovered in 1773.* The third station was in lat. 30° 30', near Yanos, 350 miles southeast of Las Casas Grandes. In 1245 they arrived Chapultepec, within two miles of the future site of Mexico, and in 1325 they built a great temple which was the foundation of the City of Mexico and the beginning of the dynasty of Mexican Kings. It also ended the Aztec migration. This temple was of wood, and was subsequently replaced by stone.

It is believed that the progenitors of these ancestors of the Mexicans were an Asiatic colony from Corea, which was at that time tributary to the Chinese Empire, a fact which accounts for coincidence of dates in the first half of the 6th century, and this opinion is confirmed by Chinese manuscripts as well as by striking similarities of appearance, language and customs, and a proficiency in the arts and architecture. Their writing was in hieroglyphics exclusively, and this medium of communication is spread all over the continent. History shows that the Coreans migrated to escape tyranny, undertaking a sea voyage of nine weeks to the northeast. No matter who first peopled Central America, the Coreans certainly were in communication with America as far back as the second year of the dynasty of Tsin, Emperor of China, who declared war against Corea. Migrants were able to maintain the high civilization of their forbears as long as their basic relation and environment remained unchanged, a postulate which is abundantly attested by archaeological evidence, as well as by the enduring testimony of the petroglyphs. But finally came those stupendous terrestrial dislocations, upheavals, emergencies, drouths, denudations, and associated dynamic phenomena, which punctuated the lapse of geological time and changed the contour of the continent. By the same great cataclysm

* NOTE BY THE AUTHOR.—It has taken 2,000 to destroy Babylon the Great, whose most mighty and conspicuous remnant at the present day is the ruin known as Birs Nimroud, which is of much the same proportion and size, and in much the same condition now as the Casa Grande, climates being similar. Logically, the Casa Grande country and its people were in the acme of their glory 2,000 years ago. At that time the whole region swarmed with population,

which broke up the "foundations of the great deep," according to the Scripture, and inundated so large a part of the globe and its antedeluvian fauna and flora, the fructifying rivers of Central America were engulfed, and the acequias, aqueducts and irrigating canals were destroyed or rendered useless. Some disjointed records of this overwhelming catastrophe are inscribed upon pyramids, temple walls, monoliths, and porticos of those massive ruins which attest to their extinguished greatness, while oral traditions, next in historical value to the libraries which Cortez and his fanatical priests destroyed, have been transmitted down the centuries, even to southwestern Indians of the present day. Drouth, famine, malignant diseases, persistent internecine wars, and ultimate depopulation supervened, and after persistent efforts to maintain themselves on the home sites, the discomfited survivors scattered, even to far off Alaska, and up the eastern slope of the continental ridge to the mouth of the Mackenzie river, leaving traces of their successive occupations all along the Pacific coast and the mid-continental route, not only in memorials of massive masonry and exquisite pottery, but in linguistic similarities, religious practices, mortuary rites, superstitions, social habits, oral traditions, and physical resemblances of a marked character. For many centuries large communities tarried in Mexico, New Mexico and Arizona, sections of which were populous up to the arrival of Coronado in 1540, but finally aridity of the soil, caused in large part by forest denudation, frequent tidal waves, the deflection of surface waters into subterranean rock fissures, the merciless raids of the Spaniards and internecine wars, scattered them over the lava beds and alkaline wastes of sage brush and cactus, to eke out a precarious livelihood with their starvling flocks. The remnants ultimately betook themselves to the cliffs and mesas which they fortified and attempted to subsist on crops which they forced from scantily irrigated gardens on the arid plains below. This for a distressful period, and then northward again to more peaceful and fertile localities in eastern Colorado, where melting snows from the uplifted continental divide afforded perennial moisture. Here they maintained a long protracted status as agriculturists and shepherds, establishing thrifty towns and villages, of which a few remain to this day as "pueblos." Records of their vicissitudes and dire extremity are pecked upon many a neighboring rock—of the continued attacks and defences, and how the cliff dwellers were finally cut off by their enemies, and how few escaped.

Memorabilia of permanent occupancy in bas relief, sculpture and statues, occur everywhere among the ruins of the

exhumed cities of Yucatan, and are repeated all over Central America and parts of South America, while pictographs and rock inscriptions of later periods mark the exodus and advances of the emigrants along the trails which diverge from the point of departure through Mexico and Arizona, and thence northwestward up the Pacific, or due north to Colorado, and thence eastward along the Arkansas river across the great plains, or northeasterly across the Rio Grande through Southern Texas to Arkansas. The hieroglyphs include outlines of animals, clan marks, totems, secret society insignia, challenges, defiances, taunts (since practiced by all Indian tribes), cautions against ambuscades and natural obstacles, directions to water holes, camping grounds and rendezvous, as well as mention of skirmishes, forced marches, misadventures and special events, practices which were in vogue in Palestine and Egypt in Biblical times.† On one rock in Rowe Canon, Arizona, is a petroglyph representing emigrants driving their flocks before them. It is noteworthy that many of the glyphs indicate starvation. Cypher characters were much in vogue. The older glyphs are the most geometrical and are often symbolical. Many have a religious significance. Later ones represent natural objects. Leopards, serpents, crocodiles, elephants, fishes, ravens, macaws and vultures appear everywhere. The last three were sacred birds there, and are so esteemed in Alaska today. In Montana the Crow Indians (Apsarikas,) retain the raven as their tribal totem. Taken as a whole, pictographs (which, by the way, are scattered all over the continent to the number of several thousand) are the reflections of the old-time hieroglyphs found on the Sinai Peninsula as long ago as the wilderness journey of the Israelites, and antedating it no one knows how long. These rock pictures and mural etchings gradually gave place to alphabets which were invented, but in that period this expression of language constituted the universal medium of intercourse throughout the world on both hemispheres. It was not confined to rock faces and fixed walls, but was traced on portable tablets of stone and metal, and on papyrus, bark and parchment. The Central Americans and Mexicans used sheets of paper made by macerating the leaves of the century plant, just as the Egyptians used papyrus, beating out the fiber and sizing with a white varnish. Each volume or book was a long sheet folded backward and forward like a screen or map, and bound by attaching boards to the outer folds. Both sides of the paper were used. Many books were made of

† [See Old Testament. *Prime, Warburton, et al.*]

it, and of these the British Museum, the Vatican at Rome and the Trocadero at Paris, contain four specimens. By a strange chance a fifth specimen, six by ten inches, was discovered near Fort Fairfield, Iowa, in 1897, while excavating for the city water works, and is now in the Ohio State Archæological museum at Andover. Undoubtedly a full history of events was of record up to the coming of Cortez, who is said to have destroyed more valuable records of an antedeluvian civilization than were consumed in the Alexandrian Library, of which many were probably duplicates.

The advent of the Spaniards and their ruthless quest for gold broke into the bucolic life of the Pueblos. Many were exterminated, while others, harassed and impoverished, abandoned agriculture in despair and took to the chase for a livelihood. From that to semi-savagery the lapse was easy; a condition which was aggravated by the religious superstitions which they retained, involving human sacrifice, self-torture, immolation of war prisoners and sundry barbarous ceremonies which date back to earliest times, and obtain even now in isolated parts of North America. The sun dance of the Plains Indians is a relic of the sun worship of Chichen-Itza and Peru, with its attendant cruelties. All the Indian tribes burned their captives on occasion—a survival of ancient rites.

The introduction of horses by Coronado* at this juncture was a godsend to the afflicted people, for it not only enabled them to chase the big game of the Rocky Mountain foothills, but it made long journeys possible. It enabled them to follow the erratic movements of the buffalo into the Great Plains, whose interior until then had been unoccupied by men. The Aztecs and "pueblos" had no big working dogs in those days—no dogs at all excepting the hairless Chihuahua dogs, which oftener went into the pot than into harness. Lack of transportation had been an impassable barrier to travel across the prairies, as well as to the movement of large forces; but with horses a man could subsist off the country as well as carry supplies. In prairie parlance, he was "footloose" and independent. To be put afoot, away from water and the means of pursuing game, was death: a proverb current among plainsmen, Indians, and trappers up to the middle of the 19th century. The surest way to cripple an enemy was to steal his pack

* Wherever pictographs of the horse appear the representations must have been done subsequent to the advent of Coronado, or the conquistadores of Florida. There are no horse portraits in Arizona and vicinity, nor up the Pacific coast, but they are frequent in Texas and in the trans-Mississippi region. The domestic horse (not *Ephippus*, the diminutive, quaternary animal which was indigenous,) was introduced into Florida from Santo Domingo by the Spaniards early in the 15th century, as well as into South America, where it spread in fifteen years as far south as Patagonia.

horses and saddle horses. So valuable did horses become that during the subsequent three centuries horse-stealing was a universal industry, and a man's wealth was estimated by the number of his ponies. Very soon after the introduction of the domestic horse, emigrants began to cross the Rio Grande into southwestern Texas, making their way eventually into Arkansas, while other parties from Colorado followed the Arkansas river through Kansas into Missouri.

In Missouri and Arkansas the excavated remains of houses formed of upright posts with wattles interwoven to form the walls, are of the same pattern as the jacals of Mexico, Yucatan, Guatemala and Honduras, as well as of southeastern Alaska, similarity of construction being good proof that they were built by cognate people. That the Comanches are their degenerated kinsfolk is proved by their tribal totems and symbols, which are similar to those pecked into the rocks at Eagle Pass on the Rio Grande, and one has only to descend into the river bottoms at low water to see the native women at this day washing and beating their clothes upon the rocks just as they do in Central America, and on the Ganges in Asia.

Untold and uncalculated years it took for the Central American migration to reach the western verge of the Great Plains, which had emerged and grown to grass during the interval since it was the quarternary floor of the sea. For nearly four centuries their polyglot descendants, who were dubbed aborigines by European explorers, have been an ethnological puzzle to the world; but time seems to have solved the problem. The hypothesis of the reversion is easy. Their progenitors, like all pioneers, unquestionably took with them all necessary "store clothes," tools, seeds, mechanical appliances, and domestic utensils; but after they were isolated from the parent stock and base of supplies, they learned to substitute makeshifts for whatever was worn out or lost. Dresses of skins, furs, and plaited grasses replaced their home garments, and implements of stone, horn, bone, shell and ivory, took the place of their original tools of iron, bronze and copper. Some of the more intelligent and energetic discovered mines of various ores, and worked them in a rude fashion for awhile, like those at Lake Superior, but the industry was finally abandoned because it was easier and cheaper to use what was handiest. Metal ornaments, pottery, baskets, footgear, and woven fabrics were retained the longest, because they were indispensable. The manufacture of these was an art that could not be lost. Reversion is not necessarily a slow process. It depends largely upon the environment. Intercourse brightens intellect. Isolation clogs it, and will sometimes banish it. There are today among the sea islands of South Carolina the grandchildren of ante-bellum negroes whose inane articulations are unintelligible to any but

their own kin—a lapse of less than half a century. Those of our so-called aborigines who occupy the eastern part of the continent have been classed, taxonomically, as Algonguins; those of the mid-continental district between the Gulf coast and Lake Superior, as Appalachians. Collectively, they may be treated of as Forest Indians. The larger portion of them came in the course of years to follow the retreating buffalo *westward* from Ohio, Virginia and Illinois to the verge of the Great Plains, and there they encountered a wild and nomadic people of many tribes and dialects like themselves, and similar in features, habits, characteristics and superstitions, who had followed the buffalo *eastward* across the plains from Colorado and Texas! But neither knew that they had a common ancestry.

The migrations of the American Bisons in their relation to the antecedents and distribution of the aboriginal population is of absorbing interest, because they furnish the key to one important section of the ethnic problem. Although these primitive cattle (*bos latifrons*) at one time covered two-fifths (?) of the continent, according to credible data, including forest, plain and mountain park, it was primarily a woods ranger, inhabiting the forested regions during the period when the great plains were submerged. Later on this lacustrine expanse was replaced by grass prairie,† to which the animals finally resorted for improved forage as well as to escape pursuit from the huntsmen on either side. There they were comparatively unmolested until the horse came. Historically, the first organized buffalo hunts were instituted in the southwest by refugees from Mexico, as related by Castaneda, the annalist of the Coronado expedition in 1540. Immense hunting parties of 1,000 or more, including women and children, with provisions for months, would travel an "eight days' journey" (some fifty miles or so) into the plains, and bring back robes, pemmican and meat, just as was done three centuries later in the antipodal land of the Dakotas. These finally cut loose from civilization altogether as soon as supplied with horses, and became nomads, living in the saddle and spreading northward and eastward as inducements offered, until they finally overran the entire grass region up to the border of Manitoba, and east to the Mississippi river. In course of time they came to be known colloquially as *Horse Indians*. [Mexican hieroglyphs appear on the Mouse River in Manitoba.]

The collision of these nomadic horse Indians with the more

† Prairies in the early stages of formation may now be seen and studied on the borders of Albemarle Sound, in North Carolina, where the same physiological processes are taking place today which occurred when the great plains were reclaimed from the ocean.

sedentary forest tribes, who clustered in villages and had no horses, and have not had to this day, and the continuous struggle for territorial possession and hunting prerogatives which followed, account in large part for the suggestive zone of mounds, already mentioned, which spans the width of ten meridians and extends from the Gulf of Mexico to Lake Superior. Outside of this zone there are no similar mounds east of the Rio Grande.† The art of construction was brought from Mexico and Florida by the descendants of the ancients who built the pyramids in Egypt and Central America, and in Mexico. Pyramidal forms and animal mounds prove this assertion. For three hundred and fifty years this broad territorial strip was disputed ground, the principal seat of the struggle being in Ohio, where there is every evidence of pitched battles having been fought in front of intrenchments, and in whose vicinity there are great tumuli where hosts of the slain were buried, some of their bones being found with flint and stone arrow heads sticking in them. These midland mounds have been geographically assorted into three groups, the first extending from the sources of the Allegheny to the waters of the Missouri-Mississippi, the second occupying the Mississippi valley, vaguely so defined, and the third stretching from South Carolina to Texas. The most northwestern are on the river bluff at St. Paul, Minn. None are found on the plains. The forest Indians never invaded the plains until they were banished there by the whites in the 19th century. Distributively the mounds show quite exactly the area of territory fought over, their sinuous or wavering lines or series indicating the varying fortunes of the combatants. Circumvallations of earth in the shape of circles, ellipses, polygons and rectangular parallelograms, often inclose from twenty to forty acres, and display much military engineering skill. Mounds are of diverse sizes and shapes from five to thirty feet high, and were used for burial and sacrificial purposes, for dykes, as sites for temples and dwellings, as refuges from inundations, as amphitheaters for ball games, and for ornamental purposes, as in public parks and gardens of the present day. Many in the semblance of elephants, leopards, turtles, rats, snakes, deer and the like, were copied from the Aztec and Toltec gardens, and from others extant in the Zuni and Mohave country. They were reproduced just as we copy patterns from the old world. On Vancouver Island is the reproduction in earth of a string of grampuses (a "study from nature") pursued by a canoe, whose prow is of the present Haidah type so common on the coast, and not unlike some South Sea Island types. Those mounds which were used for

† As a matter of fact, the whole world's population from earliest record have been mound builders.

defensive purposes were usually palisaded, as is proved by burnt and decayed portions of stockades which are often exhumed. Many are associated with cemented cisterns, crematories and ovens, having fireplaces underneath. *They are the work of both combatants*, but the art was learned centuries before in the south and southwest. Perforated mussel shells, conches, copper helmets, mummy cases, passport sticks, pottery and vases of scoria and terra cotta, implements of stone and bronze, stone jars, obsidian knives, gems exquisitely wrought, amulets of gold, bone fleshers for dressing skins, and copper pipe bowls decorated with human heads of a type like those of modern Indians, identify their original possessors as well as their congenital predecessors, from whom they acquired the art. (Mrs. Kunzie, of Umatilla, Oregon, has gathered in Klickitat county in the State of Washington, a museum of Aztec relics embracing obsidian knives of the most beautiful workmanship, obsidian arrows, a warclub of bronze, exquisitely wrought stone gods, ornate gems, and, what is most suggestive, a carved stone metate or corn mill.)

When the plainsmen first appeared, the foresters were disposed to be friendly, but as soon as they encroached too far they stood them off, Algonquins and Appalachians making common cause against their enemies. Finally, at the end of three and a half centuries, they were driven back to their old stamping ground, the prairies, permanently repulsed, the last battle of the interminable series having been fought in 1857 between the Sioux and the Chippewas (representative bands) on the terraced shore of the glacial lake Agassiz, in Minnesota. A description of this battle, by the aged chief Osh Wash, a survivor of the fight, is of especial value as showing the strategy and methods of defence practiced by the mound builders and the plan of their fortifications.

This venerable Indian was on his way to attend the annual pow-wow at Turtle Mountain in commemoration of the event, which took place on the Sand Ridge (mound) between the stage half-way house and the Two Rivers Crossing, in Rosseau county, the battle ground being plainly marked to this day by the remains of breastworks behind which these hereditary enemies waged a week's fight of cunning and skill, coupled at times with desperate hand-to-hand conflicts. It was in this fight that Chief Osh Wash lost his scalp, as the large circle of hairless skin on the top of his cranium gives ample evidence. The Sioux war party invaded the hunting grounds of the Chippewas, who inhabited the shores of the Lake of the Woods on the American side. The latter had been apprised of the projected raid and selected a location on the natural ridge, which afforded the only natural road of ingress and egress, being nar-

row with impassable muskets on either side. Then they threw up breastworks on the open ground at a point which enabled them to guard against an attack in their rear. When the approach of the Sioux was made known, the Chippewas laid in ambush farther west on the east bank of Two Rivers, and when most of the Sioux had crossed over they were suddenly attacked and several Sioux were killed and a number wounded. Then the Chippewas gradually fell back, and a running fight was kept up until they reached their breastwork fortress. The Sioux made an attack that night upon the entrenched enemy, but were driven back, the loss of life being heavy on both sides. The Sioux occupied the next three nights in erecting counter breastworks about 150 yards from the entrenched Chippewas, a work which was attended with the loss of several lives. Under the protection of their trench the Sioux erected a second breastwork fifty yards nearer, and then dug a tunnel up to the breastwork of the Chippewas. The top of the ground being a tough grass sod, underlaid by gravel and sand, the task of digging a tunnel was not difficult. On the night of the seventh day the Sioux made a sudden but not unexpected attack upon the Chippewas, and the hand-to-hand conflict was fierce, bloody and decisive. The decimated ranks of the Sioux, and their lack of provisions, gave their enemies a slight advantage. The Sioux were driven back with a loss of over half their number, and the Chippewas followed up their success by a relentless pursuit until the last of the Sioux braves escaped across Two Rivers. This memorable battle the Sioux never afterwards attempted to avenge.

Many such by-gone events are memorialized by rock inscriptions all over the country, of which several thousand have been located and enumerated; and the natives often gather at one or other of these stations, just as our own people assemble at Plymouth Rock, Ticonderoga, or at more recently erected monoliths at Gettysburg, Lookout Mountain, and other battlefields of our late war. Records are also kept on painted elk and buffalo robes and rolls of bark.

Every new archæological discovery adds to the analogues which go to make up testimony to establish the more than hypothetical origin of our American Aborigines, and the close relations between their ancestors of Central America and the peoples of Egypt and Asia. Flattening of the cranium is common to Peru, Bolivia, Jamaica and Montana. The islanders of Jamaica wore feather mantles like the Mexicans, and helmets of feathers like the war bonnets of the plains Indians. Their pottery was similar in shape and pattern. Caribs wore lip ornaments (labrets) like the Alaskans. The custom of abandoning a house when an inmate died

was the same in Central America as among many plains Indians. The chipping of flint arrow heads was an art transmitted from antedeluvian lapidaries, who cut exquisite gems. The Mandan bull boats of rawhide and wattles were copies of old world coracles.

But tribes, like families, easily cultivate animosity. Differences in intelligence, habits and tastes stimulate social estrangement, though they do not establish physiological distinctions. Complexion, features, size and muscular development, are due to climate and foreign admixtures. Natives of Cook's Inlet resemble the Athabascans. Haidahs and Aztecs, both use masks and wadded armor like the Japanese and Egyptians, and they decorate the interiors of their houses with symbols and hieroglyphs. Navajo and Thlinket blankets are of equal quality and texture. Hakluyt says of the people whom he discovered, that they "are white even as our men are, saving such as are conversant with the sun." The Fillipino is much the same in color as the North American Indian, and also has the same straight black hair, high cheek bones, and thin beard. The Mayas, inhabiting the Sierra Nevada mountains in the lower part of Sonora, Mexico, have fair skins, blue eyes, and light hair. The Crows of Montana have very light complexions. The Croatan Indians of North Carolina present a very striking phase of a race infusion which took place from Sir Walter Raleigh's colony in 1587, which is comparatively recent time. There are a great many similitudes besides those of physiognomy to help determine identity. For example, family descent in many of the Alaska tribes is reckoned through the mother, and the grafts on the totem poles are carved accordingly. The same custom is in vogue among our red Indians and is of very ancient origin. Alaskans, Indians and Mexicans all build dwellings without chimneys, the same as in Asia and Egypt. They all have their shamans, magicians, medicine men and priests, and their religious superstitions and beliefs are much the same.

ETHNIC STYLES IN AMERICAN ARCHITECTURE.

BY STEPHEN D. PEET.

The prevalence of an Ethnic style of architecture among the early historic races has been recognized by all, and the names which have been given to the different styles are familiar. The question before us is as to the manner in which these various styles arose and the way in which they came to be so generally adopted and so well established; in other words, what were the beginnings of the architectural styles.

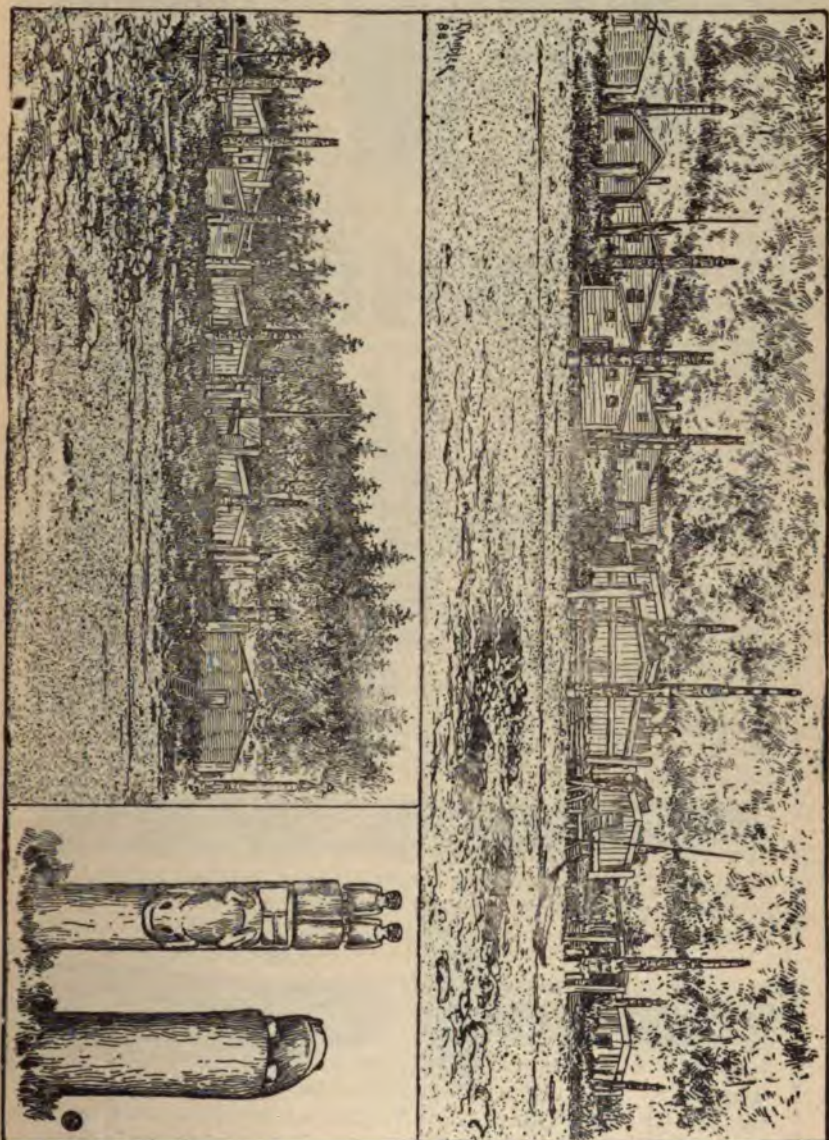
It is, however, a question which we do not expect fully to answer, but merely to throw out a few hints, and especially hints which have been received from the study of the various styles of construction and ornamentation which formerly existed on the American continent.

Every one knows that the Egyptians, at an early date, adopted a style of architecture which they transmitted and which is to this day distinctive and is called Egyptian style. The same is true of the Assyrians, the Greeks, the Romans and the Goths, all of whose styles continue to the present time and are easily recognized and distinguished. The same is also true, to a certain extent, of the Chinese, the Hindoos, the Tartars or Turks, and Arabs, for all of these nations of the east impressed themselves upon their architectural works and have transmitted their ideas and methods of construction through all the generations. We do not claim for America that there was any such general national style as existed in the old world, for there was no one nation, the continent being too large and the geographical districts too diverse to admit of this, but we do claim that there was on this continent a large number of tribes or stocks, each of which possessed a style peculiar to itself, the elements of which can be easily analyzed and accounted for. These elements, in a general way, may be classified under the heads of the material that was used, the method of construction which was common, the general style of ornamentation which prevailed, and the form, shape and plan of arranging the houses which were peculiar to the different tribes, for in these same simple and rude tribal methods of expressing their thoughts and tastes and religious ideas, we may find the germs from which all the great national styles and orders have grown, and for this reason they are worthy of close study.

We do not claim for this continent any of the so-called

orders, for these were totally unknown here, though the distinction between style and order should be drawn, for orders were introduced by the Greek tribes, i. e., the Doric from the Dorians, the Ionic from the Ionians, and the Corinthian from Corinth, but these orders were not known or practiced by the other nations of the east until a very late period, and were never practiced by the native races of America. There were in America styles which were confined to tribes, just as there were in Greece, orders which belonged to and bore the name of the Greek tribes, the number of styles here in America being equal to the number of tribes or collection of tribes, even as the number of orders in Greece were equal to the number of nations or tribes in Greece. Nor do we claim for America that there was one general style or order, for this would imply that there was an American nation, whereas there was here only a number of tribes, though every tribe had its own method of constructing the houses they lived in, its own method of arranging those houses in a village, and its own style of decorating the houses, the style being derived from the mythology which prevailed. We may say further that the tribes which were situated in certain large geographical districts were so influenced by their surroundings that it was not so much an individual tribe as a collection of tribes which impressed themselves upon the architecture, and the style which prevails in any one district is not so much tribal as it is geographical, and characteristic of the locality rather than of the people. There was, to be sure a habit of borrowing from one another which prevailed among the tribes which dwelt near together, which strengthened and intensified this tendency to merge the tribal into the geographical style, thus making a sort of middle ground between the tribal and national, but with enough diversity for us to recognize the elements which were blended together and decide as to what was the specific type which each tribe had adopted for itself, making the classification what may be called ethnic or tribal styles. We may well take the geographical districts and speak of the peculiarities which were characteristic of the collective tribes rather than the single tribe.

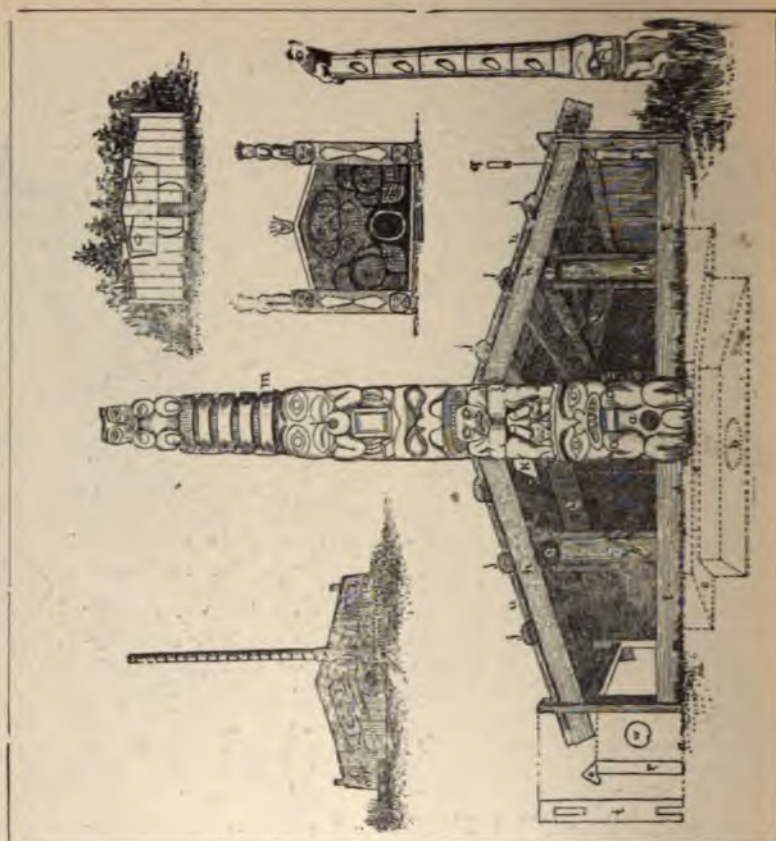
The following is the list of tribes which we may say in a collected capacity have shown a style of house construction and style of ornamentation which were characteristic and which in a general way may exhibit the ethnic traits. Considered geographically, they may be said to begin at the far north and to make two distinct lines, one on the west and the other on the east. The Alaskans occupying one district had one general style of architecture. The Thlinkets, who dwelt on the northwest coasts where forests abounded and where the sea furnished a great variety of food, had another style and used wood as material, while the Pueblos, who dwelt in the interior



TOTEM POLES AND HOUSES ON NORTHWEST COAST.



TOTEM POLES.



HOUSES ON THE NORTHWEST COAST.

among the cliffs of Arizona and New Mexico, had an entirely different style, stone being the material used, the terraced house being the typical form. Tribes, who dwelt in Mexico and Central America, had a style which was somewhat similar and used the same material—stone—though their ornamentation was entirely different. Thus we find along the Pacific coast five general divisions or geographical districts over which definite and distinct styles of structures were distributed and can be easily recognized. A similar division can be recognized along the Atlantic coast.

The Esquimaux first, at the extreme north; the Canadian tribes second; the wild tribes which were scattered along the Great Lakes third; those on the Ohio River a fourth, and the tribes situated along the Gulf States a fifth. Ten distinct styles of constructing and ornamenting their houses may thus be seen in North America, all of which were different from those which existed among the Peruvians of South America and the tribes east and south of Peru.

As to the manner in which these different styles arose, there may be a difference of opinion, yet there is no doubt that much was owing to environment, for the method of construction would naturally depend on the material which was the most abundant. The ornamenting would depend largely upon the mythology which prevailed. The arrangement of the houses in the villages would also depend upon the circumstances, for those who were situated along the seacoast would naturally make their houses front the sea, but those who were situated in the deep interior, where enemies were numerous and means of subsistence scant, would naturally live together and make their houses their fortress as well as the home of the entire tribe. On the other hand, those tribes who dwelt in the rich valley of the Mississippi would naturally make earth walls for their defense and gather their villages within the walls, while those living on the flood plains of the south would build pyramid mounds and resort to these in time of great freshets, the necessities of the case and influence of environment being sufficient to account for the different kinds of villages and for the different methods of defense.

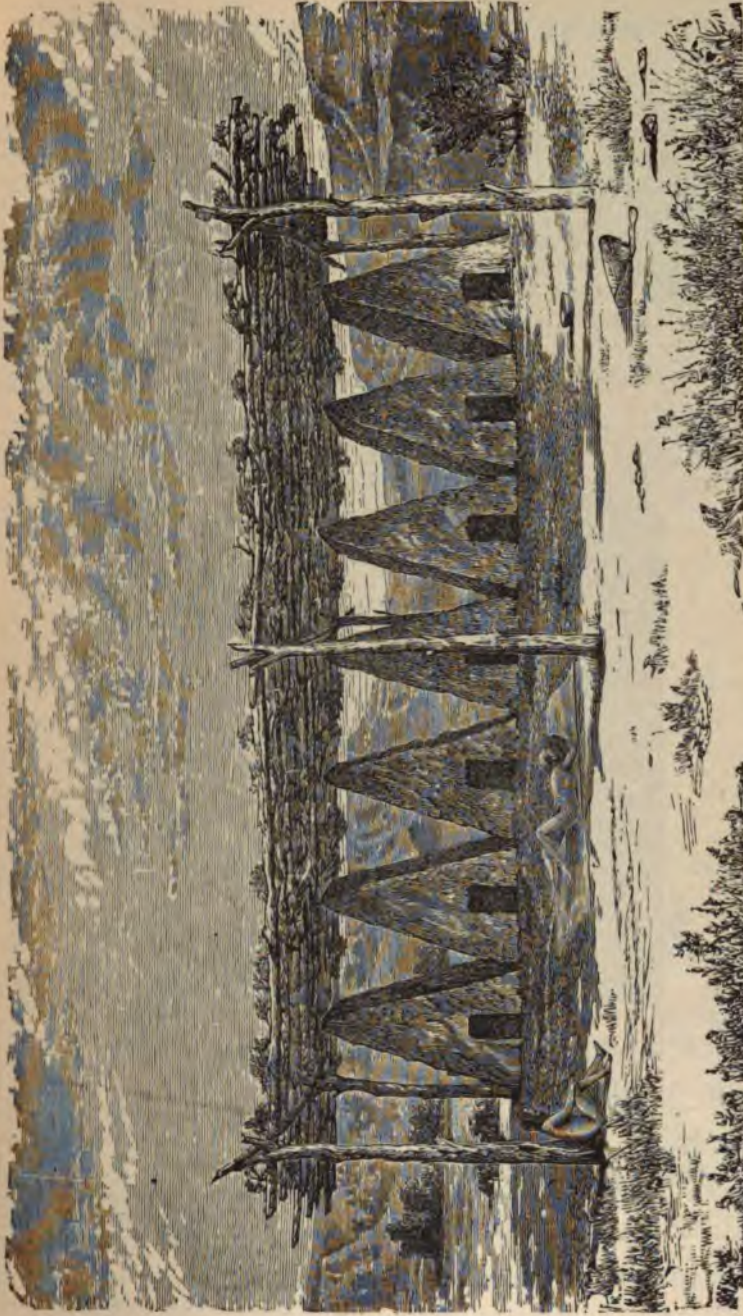
In this respect the architecture of America differs from that of any other country. Here the districts which are bounded by certain geographical and climatic lines, are as distinct from one another as if they were upon different continents. The style of building, as well as of ornamenting, are also peculiar to each district and rarely go beyond certain territorial boundaries. A wide region intervenes between these districts where no particular style is recognized, but in other countries there is no such limitation.

The thought which is forced upon us by the works which

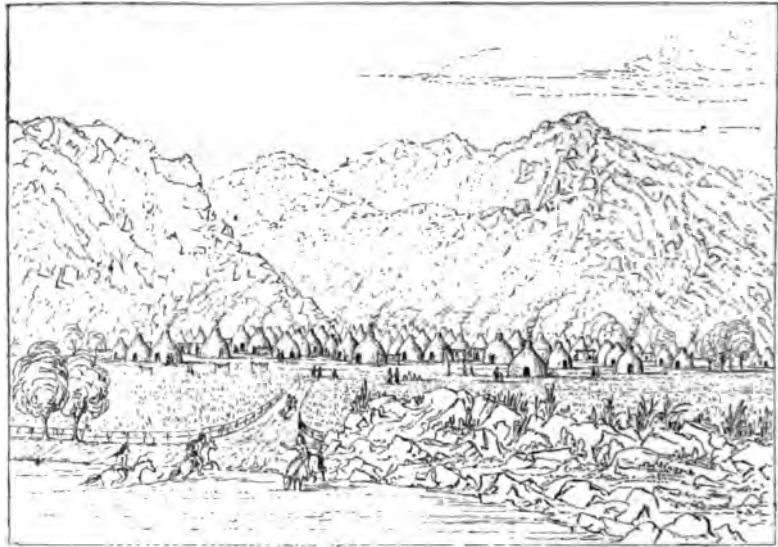
appear on this continent, is that society here had not reached that stage where the sense of proportion and beauty had come into full exercise, and yet there was an influence which came from mythology and a certain unconscious taste which was engendered by it, which gave a peculiar character to the works and structures which were erected by the people of the same general locality or geographical district. This character we may ascribe to the people as an inheritance, and say that it has come down from an ancestral religion which embodied itself in the ornamentation. The styles were in this sense all traditional. The compelling idea was derived from the religious beliefs and mythologies which prevailed, though the material used, the purpose of the building, the proportions required, were dependent upon other causes than those which affected the ornamentation. In other words, the religion and mythology of the different tribes affected the ornamentation, but employment, means of subsistence, climate and other physical causes, affected the construction. There was no one style of architecture in America, but as many styles as there were systems of mythology, for the ornamentation was always borrowed from the mythology which prevailed in the region. Illustrations of this are numerous, for we find on the northwest coast ornaments in which the figures of the creatures of sea and forest and certain strange monsters are conspicuous. In the prairie region of the West we see the tents ornamented with birds, plants and animals peculiar to that region. In the Gulf States there were formerly carved figures with the human form in grotesque attitudes, serpents, idols which combined the heads of different animals, and a great variety of nondescript creatures, all carved out of wood, while in Mexico and Central America we see a great variety of figures carved upon the facades of the palaces, the serpent being the most conspicuous but human figures and faces are very prominent, all of which represented the mythologies and forms of religion which prevailed there.

Illustrations of these points may be found among the living tribes, for each tribe presents a different architectural style. To illustrate: The round house of the Eskimos, the long house of the Iroquois, and the square house or the houses around the square of the Mobilians, are all indicative of different modes of government and different customs and conditions.

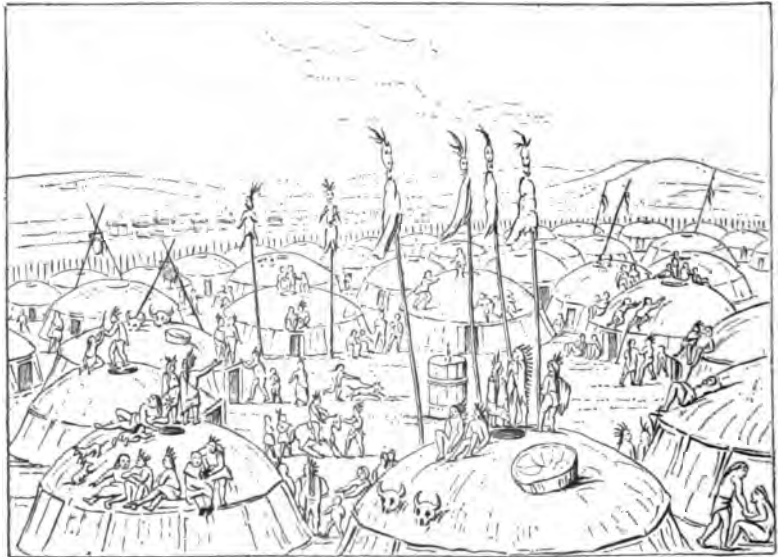
We take then the tribes situated along the Pacific, especially those of the northwest coast. Mr. H. H. Bancroft has described these. He divided them into several classes, as follows: 1. Hyperboreans; 2. Columbians, Californians; 3. New Mexicans; 4. wild tribes of Mexico; 5. wild tribes of Central America. He has given descriptions of the peculiarities of each. From his



TEPEES OF THE CALIFORNIA INDIANS.



HOUSES OF THE COMANCHES.



HOUSES OF THE MANDANS.

descriptions, we learn about these tribes and their architecture.

Here we would call attention to the contrast between the architecture of the southern tribes and that of the northern tribes. These tribes have been considered as belonging to the same race and as occupying the same social status, manifesting the same stage of progress, but when we study their architecture we find a great contrast, for it resembles that of the civilized tribes of the southwest far more than that of the uncivilized tribes of the northeast, showing that it had been borrowed from or had been influenced by the people of the southwest, and had perpetuated that influence for many generations.



THE CONICAL HOUSE OF THE WICHITAS.

The following were the methods of constructing and ornamenting houses among the northern tribes:

The Dakotas constructed theirs in the form of conical tents, out of poles, covered them with buffalo skins, and ornamented the sides with the clan-totems or with the dream-gods or some other figures suggestive of their mythology.

The Comanches constructed theirs out of poles, but thatched the outside with reeds and grass, in such a shape that they resembled so many stacks of hay.

The Mandans constructed theirs out of heavy posts with

cross timbers, and covered the whole with sod and placed their totem poles in front of the houses.

The Ojibwas constructed theirs out of poles and bark but in an oblong shape, with the ends upright and a door at each end. The Iroquois built theirs also with a frame work of poles and a covering of bark in an oblong shape, but with a long passage way running lengthwise of the hut, and places for different fires in the passageway. The interior was divided into apartments for the different families. (See cut.)

The Powhattans built theirs in about the same way as the Iroquois, but the Seminoles constructed theirs put of posts which were set upright in the ground and placed in a circular shape, with a conical roof made out of rafters which were thatched with reeds and grasses.

These northern tribes made no distinction between the houses of the chiefs and those of the common people, for they

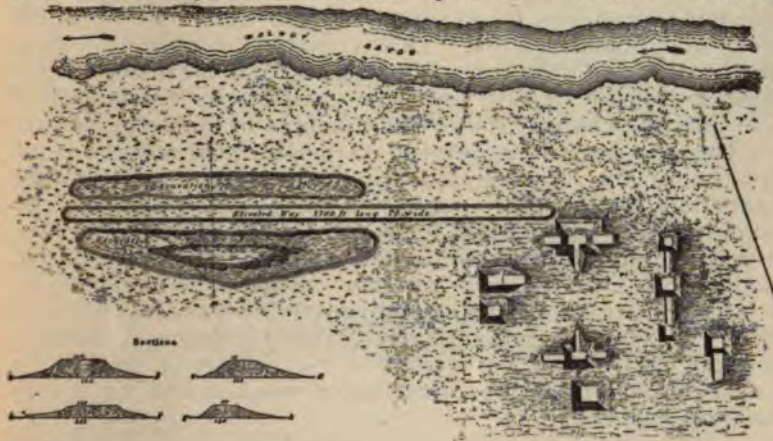


LONG HOUSE OF THE IROQUOIS.

were all of the same style and appearance, and were on a common level and were generally placed in a circle about an open area, sometimes with a stockade around them to protect the village. The only structures which were separate from the villages were the lookouts on the hill or the burial places near by.

When, however, we come to the Southern Indians of the Muskogee stock, such as the Creeks, Cherokees, Choctaws and Chickasaws, we find an entirely different system. These tribes dwelt in villages, but they were villages which resembled in a rude way the cities which were occupied by the Aztecs, Toltecs and various tribes of Central America. Among the points of resemblance, the most important one is, that the ruling classes and officials, such as the chiefs and their families, lived sepa-

rate from the common people and built their houses on the summits of the pyramids. The priests, or medicine men, also had their temples or rotundas upon the summit of conical



ANCIENT VILLAGE SITE AT WALNUT BAYOU.

mounds, the rotunda being used also for councils as well as for religious assemblies. Another peculiarity was that their so-called *dead houses*, or houses in which the bodies of the dead



ANCIENT TOLTEC CITY AT TEOTIHUACAN.

were placed, were full of treasures and contained many carved images which stood in a threatening attitude and were objects of terror to the common people. Still another point of resemblance was, that the ceremony of reproducing the sacred fire

was practiced among these people—a ceremony which resembled that which occurred among the Aztecs once in every fifty years, at which time there were many human sacrifices, and the fire was reproduced by whirling the fire generator upon the body of a human victim. This strange ceremony involved the breaking of old pottery vessels and the cleansing of the houses, the use of new vessels, as well as the distribution of fire from the central altar to the fireplaces of the entire people,

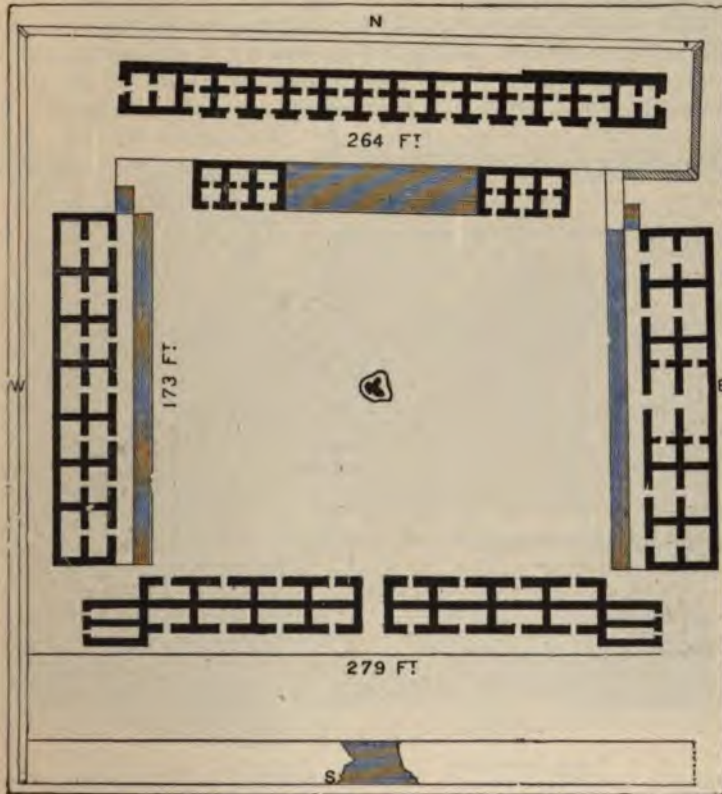
The most interesting point of resemblance between the architecture of the Muskogees and of the Aztecs and Toltecs, is found in the temples or so-called rotundas, or places of assembly. The rotundas of the southern tribes were, to be sure, constructed out of wood and were rude in their appearance,, and yet when we come to consider their shape and general style of construction, the symbolism which was embodied in their ornaments, carved figures, also the general arrangement of the different parts and the use of them, especially in connection with religious ceremonies, we shall find many very striking analogies.

These rude and primitive temples, which were called rotundas, with their covering of bark and their circle of seats or sofas on which the inmates lounged, with the fire in the center, were indeed very inferior to the massive stone structures which were wrought with such care and contained so many religious symbols, and yet we may perceive a resemblance between every part, for both represented apparently the great temple of the universe with its circular horizon and the dome of the sky surmounting it, the sacred fire being in the center beneath the dome and the lightnings playing in the form of serpents between the earth and sky, while the sun with its changes shone in from the four quarters. The symbolism which is contained in these great houses and rotundas of the Southern Indians is certainly very significant, especially considering the fact that they so closely resembled that which prevailed among the so-called civilized people of Mexico and Central America, for it shows that they had contact with one another and may have belonged to the same stock, and originally migrated from the same center. There was, to be sure, as we have said, a variation in the style of building between these tribes, but it was a variation which was more noticeable in the houses of the common people than in the houses of the rulers or in the rotundas. Bartram describes these as being the same among the Cherokees, Choctaws and Chickasaws.

The feature which furnishes the most striking resemblance between the works of the southern Indians and those of the Mexican tribes, and at the same time shows the greatest contrast to the earthworks of the northern Indians, is the pyramid. The shape of the pyramids may be seen by examining the cuts,

one of which represents the pyramidal mounds which still stand at Walnut Bayou, near the Mississippi River; and the other, the series of pyramids which are still found at Teotihuacan, in Mexico.

The pyramidal mounds mark the site of an ancient village of the southern mound builders, a village in which the houses of the chiefs were placed above those of the common people, all of them arranged in a quadrangular form, but with stair-

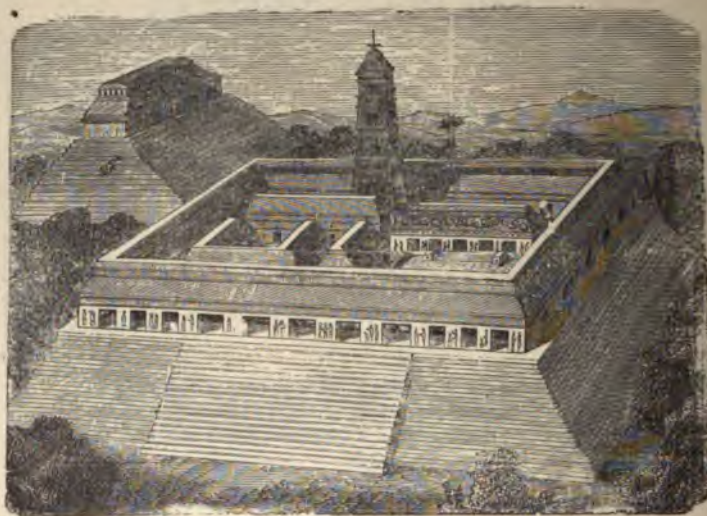


GROUND PLAN OF THE NUNNERY AT COPAN.

ways leading from them to the open area in the center, while a long wall stretches away from the group on the side of the stream or bayou, thus furnishing a landing place for the people in time of high water. The truncated pyramids at Teotihuacan, on the other hand, mark the site of an ancient, prehistoric city, which was situated in a great plain. The houses of the different classes in this city, however, were arranged as were those

of the village. They were all placed on the summit of the pyramids, but in quadrangles, all of them fronting the courts, which were enclosed, while a wide road, called the "Pathway of the Dead," led from the central temple to the gateway in the distance. The contrast between the village of the mound builders and the city of the pyramid builders seems to be great, yet the foundations on which the two widely separated peoples placed their temples and the houses of the ruling classes are very similar.

This resemblance between the works of the southern mound builders and of the pyramid builders of the southwest, can hardly be accounted for on the ground of ethnic relationship, inasmuch as the people at present speak different languages. Still there are traditions among the Muskogees to the effect that their ancestors migrated from the west and southwest,



THE PALACE AT PALENQUE.

from the mountain of fire, and entered the region of the Gulf States many generations ago. That there was a resemblance in the arrangement of the apartments of the great house of the Muskogees and the apartments of the palace of the Mayas, may be seen from the cuts, which represent the ground plan of the palace called the Nunnery, at Uxmal, and the restoration of the palace of Palenque. Bancroft has described the Nunnery as follows:

"This is perhaps the most wonderful edifice or collection of edifices in Yucatan, if not the finest specimen of aboriginal sculpture and architecture in America. The supporting mound is, in general terms, 350 feet

square and 19 feet high, its sides very nearly facing the cardinal points. The southern or front slope of the mound is about 70 feet wide and rises in three grades or terraces. There are some traces of a wide central stairway, leading up to the second terrace. On the platform stand four of the typical Yucatan edifices, built around a courtyard, with openings between them and the corners. The situation of the four structures forming the quadrangle, and the division of each into apartments, is shown in the accompanying plan.

The resemblance extends to other things besides the shape, and relative situation of the buildings, for the social organization and customs were quite similar. Bartram says:

"The mounds and cubical yards seem to have been



HUT AND MANITOU FACE ON THE FACADE.*

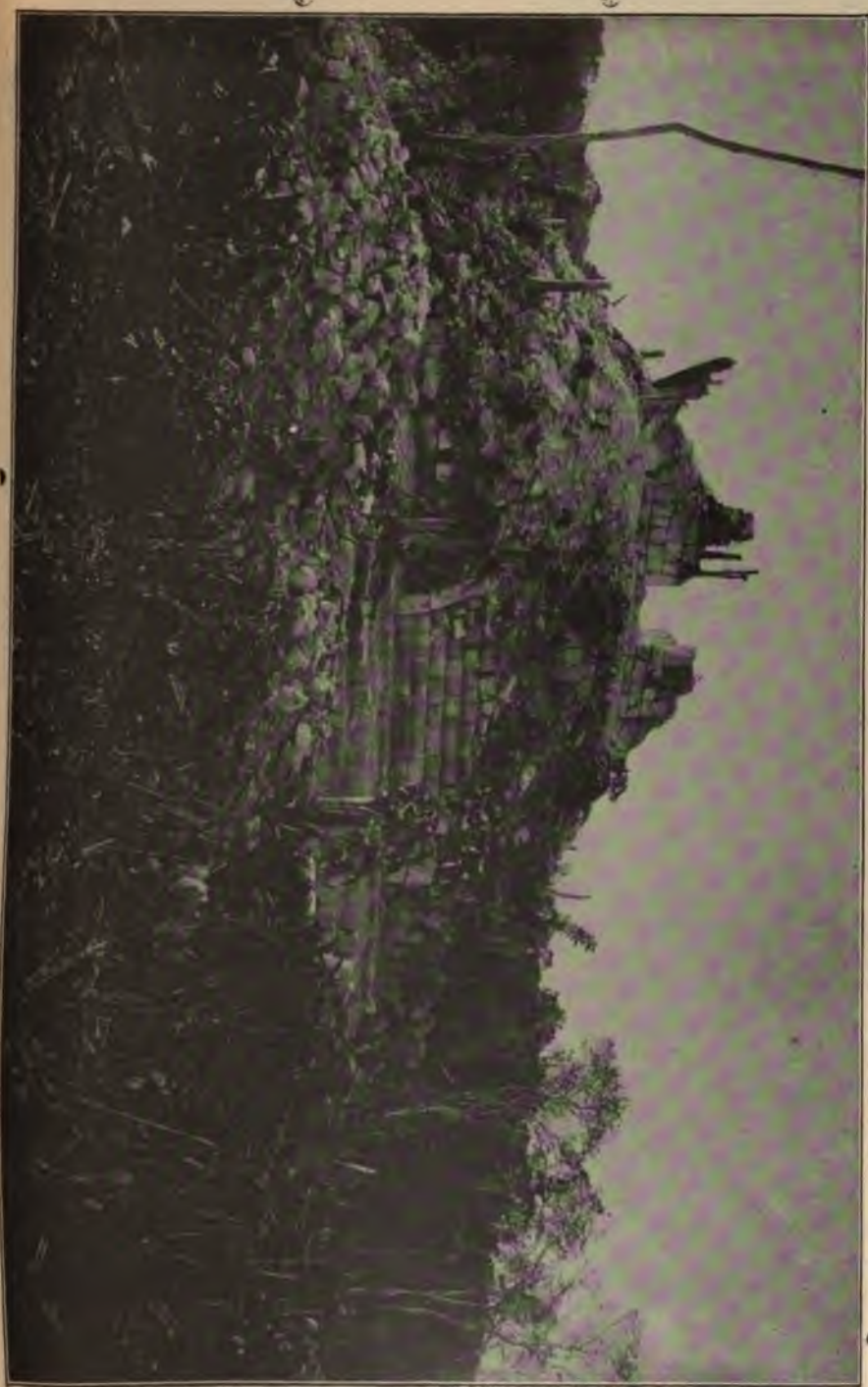
raised in part for ornament and recreation, and likewise to serve some other public purpose, since they were always so situated as to command the most extensive prospect over the town and country adjacent. The tetragon terraces seemed to be the foundation of a fortress, and perhaps the great pyramidal mounds served the purpose of lookout towers and high places for sacrifice. The

*Over the doorways of the southern court facades there is a representation of an aboriginal hut, with the statue of the divinity seated within the hut, and a strange outre looking ornament, called the "Manitou face," above the hut, the diamond lattice-work and vertical columns being sculptured in stone on either side of the hut.

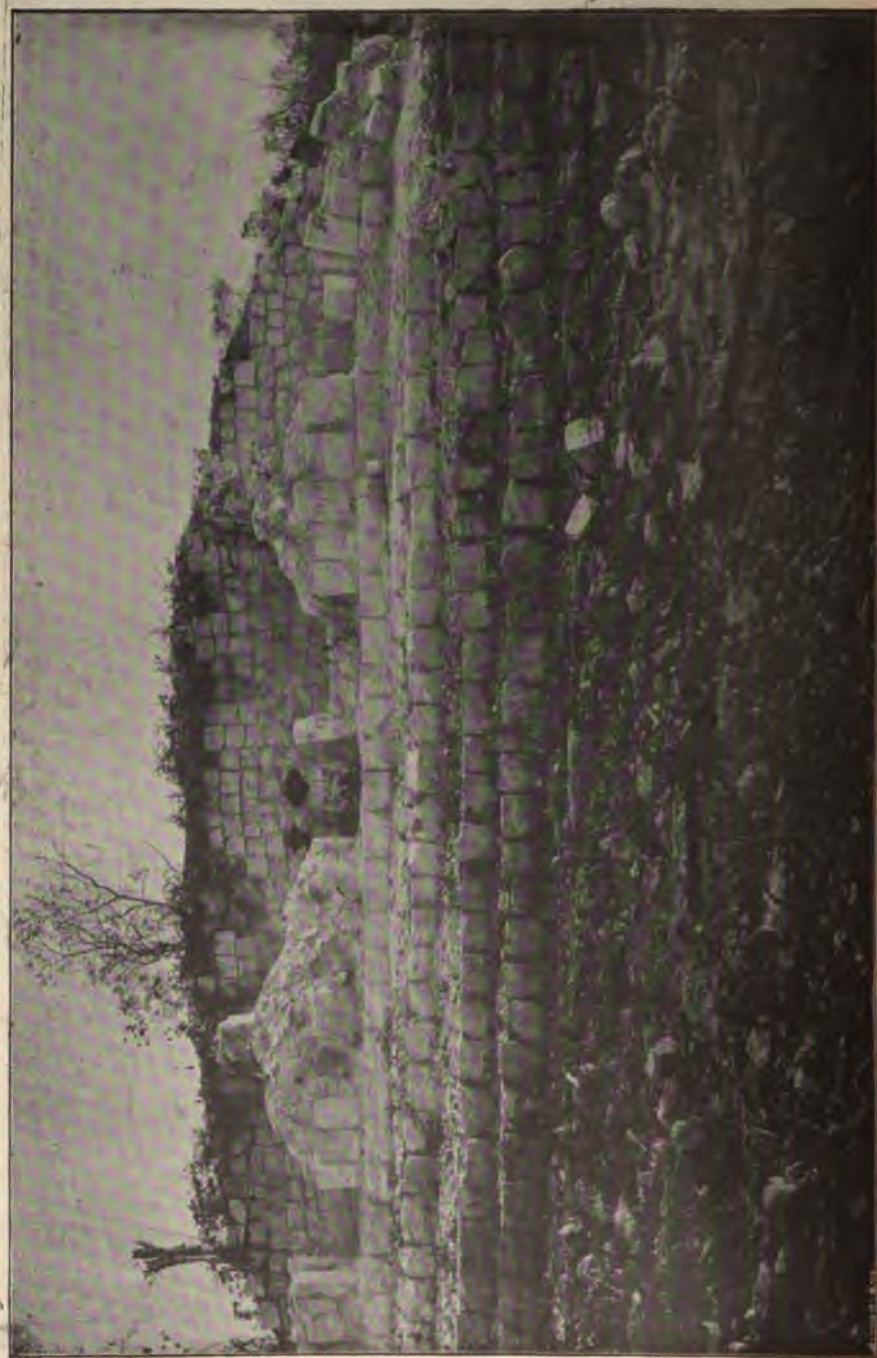
sunken area was the place where they burnt and tortured the captives, and was surrounded by a bank—sometimes two of them, one behind and above the other,—which were used as seats to accommodate the spectators at such tragical scenes. The high pyramidal mounds are to be seen with spacious and extensive avenues leading from them to an artificial lake, or pond of water. Obelisks, or pillars of wood, were placed in the center of the areas, about forty feet in height and two or three feet in diameter, gradually tapering in the midst of an oblong square. The pillars and walls of the houses of the square are decorated with various paintings and sculptures, with men in a variety of attitudes, having the head of some kind of an animal, as those of a duck, turkey, bear, fox, wolf or deer; and the pillars in front of the council house, were formed in the likeness of serpents."

There was not only a rotunda and a public square, answering to the temple and the palace of the more civilized tribes; but there were also priests and kings, which answered to the ruling classes. "The chief, or king, was elected by a council, but was regarded with great respect. His appearance is altogether mysterious; as a magnificent deity, he rises over them as the sun rises to bless the earth; he is universally acknowledged to be the greatest person among them, and is loved, esteemed and revered. Their Mico seems to them the representative of Providence, or the Great Spirit. He has the power of calling a council to deliberate on peace or war, and presides daily in the councils, either at the rotunda or public square, and decides upon all complaints and differences. He receives the visits of strangers, gives audience to ambassadors, and also disposes of the public granary."

"There is, in every town or tribe, a high priest, who presides in spiritual affairs, and is a person of consequence. He maintains and exercises a great influence in the state, particularly in military affairs. The senate never determines on an expedition against their enemy without his counsel and assistance. His influence is so great as to turn back an army when within a day's journey of their enemy."



STAIRWAY AND RUINED TEMPLE AT ...



STAIRWAY AND WALL, RUINED NO. 3, AT SKICMMOOE.

THE CULTURAL SIGNIFICANCE OF PRIMITIVE IMPLEMENTS AND WEAPONS.

BY ALTON HOWARD THOMPSON, TOPEKA, KANSAS.

PART I.—THE GIFTS OF NATURE.

Nature is both prodigal and niggardly in her dealings with man. Prodigal in furnishing for his use many simple things that are necessary for the maintenance of his existence, and niggardly and reluctant in surrendering the more secret materials and forces that have contributed so much to the wonderful advancement of civilized man. Primitive man utilized the simple things that nature furnished ready to his hand, and they were sufficient for his wants, while civilized man, by his higher intellectual powers and scientific knowledge, wrings from her reluctant hand the means for producing the wonders of this marvelous age. But from her great storehouse nature supplies both savage and civilized man with the indispensable means of gratifying their requirements. Her manifold products are his resources, and her mysterious forces are harnessed to do his will. Nature is as a slave to civilized man, but to primitive man she was a benefactor: Without the simple resources she placed in his unskilled hands life would have been impossible, and the entire race would have perished from the face of the earth. It would have been a catastrophe akin to that which overtook whole groups of animals in past geological ages. The primeval life of the human race must, therefore, be considered first in the light of what nature provided ready made for practical use, which was of vital consequence in his struggle for existence against antagonistic conditions. These simple things placed the balance of power in his hands, and he lived. Without them he would have perished, and the earth would have remained the wilderness of animal and plant life that it was before the advent of man.

We must contemplate first the capacities of that primeval troglodyte, that man-ape, that *Pithecanthropus*, who was utterly incapable of creating implements and weapons from the materials around him. He was capable only of using in a simple, simian way, the gifts of nature as they came from her hands, without any artificial modification whatever. Kindly nature gave him these resources to supplement the waning powers of his natural organs, which were being rapidly modified in the process of his psychic evolution. Having lost valuable weapons in the reduction of his teeth and claws, and not

being possessed of the agility of the carnivora nor the speed of the ungulates, and by gradually adopting a terrestrial mode of life, and losing that arboreal ability which was the refuge of his simian ancestors, he must needs adopt external aids to enable him to survive amid the hostile conditions in which he found himself. The first extra-animal thought movement in his brain substance saved him, for it conferred a superiority and power over his natural enemies. It enabled him to select from the natural resources around him, efficient means for preserving his existence. No other animal ever attained this psychic power. Increasing brain power gave him additional dexterity in the use of nature's gifts, and from thence the battle was won and the race was saved. What the primeval man-ape was losing in physical organization, as compared with other animals, he more than equalized in the development of ability in utilizing the materials that nature supplied ready to his hands. From that point the departure of pithecanthropic man from his simian ancestors began.

To this primeval man nature was kind and beneficent, and nursed and nurtured him to the full development of the maturity of the race in his civilized descendant. From a mere animal she enabled him to develop into the god-like being who dominates the earth, but who seems to forget that he owes to her motherly care the fact that he survived all, and a little gratitude would not seem to be misplaced.

Among the important gifts with which nature aided struggling primeval man, may be noted first those which were furnished by the vegetable kingdom. Like his near relatives, the quadrumana, pithecanthropic man was probably arboreal in his habits, or partially so at least. Many of man's rudimentary structures point to the fact of such a primitive existence. The apes of today furnish examples of the transitional stage, such as that when primeval man gradually became a terrestrial animal in the process of his evolution. This primitive arboreal life first taught him the use of such products of the vegetable kingdom—the limbs, fruits, etc., of trees—which might be crudely employed as tools and weapons without modification. These were his missiles and clubs ready made to his hand. The development of the grasping powers of the hand checked the growth and caused the reduction of the jaws and teeth as prehensile and fighting organs. The hands were evolved by climbing and an accidentally broken limb left in the grasp would suggest its use as a missile or a club. This would be the natural, automatic action as observed in the monkeys. The club, therefore, either for striking or throwing, was a natural weapon. Nature kindly placed this most effective and typical weapon in the hands of primeval man at the very first and

most critical stage of his existence. His survival as a species probably depended more upon his discovery of the club and its use, at this stage of his existence, than upon any other agency. It gave him a new resource and placed the balance of power in his hands. It enabled him to dominate over other animals, and we probably owe our preservation as a species to the discovery of the club and its subsequent modifications. When we consider the reduction of the jaws and teeth as weapons in man, and recognize that without such external resources



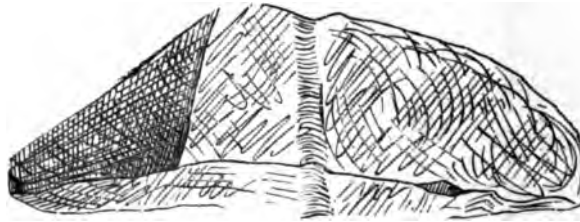
THROWING STICKS.

to supplement his waning physical powers he would probably have succumbed in the struggle for existence, we must admit the importance of the timely discovery. The first pithecanthropus who broke off a limb and used it for a missile or a club, was the genius who saved the race from extinction. With this weapon he became a formidable enemy and more than a match for the destructive animals which menaced him.

The evolution of the club down to our times, with all its modifications, is a most interesting history and shows the event-

ful role this great weapon has played in the development of the race. Conversely, the uses of the club developed initiative powers which led to greater brain and mental growth and this to further invention and advancement for the benefit of the race, according to the precepts of the advocates of manual training.

Next to the club came the stick for throwing, which would early suggest itself by accidental discovery in the first place, in the first struggles with wild beasts and wilder men. From this was evolved the boomerang, the knob-kerrie and other throwing sticks which are constructed on scientific principles that are surprising among the very primitive peoples where they are found. Primitive man would also soon discover the difference between a sharp stick and a blunt one. With a sharp stick he could better pierce animals to kill them, and dig in the ground to reach roots and grubs. With a very slight advance in intelligence he learned to sharpen the stick, but that important step placed him beyond the stage of even the



PRIMITIVE HAMMER.

level of the man-apes and he became a man. The very first step in the direction of the artificial modification of natural products indicated his complete emergence from the animal stage of life. With still further advancement he hardened the point of the stick in the fire, and later attached to it still harder points of stone or bone. From this simple weapon was developed the spear and the arrow and their relatives, but all were developed from the sharp stick found ready to his hand. In this category belongs also the sharp thorn, whose piercing powers would soon be discovered and utilized. From this useful implement was later developed the awl, the needle and the pin. The thorn was a primitive tool furnished directly from the hand of nature that was very effective.

Nuts, fruits and seeds could also be employed as missiles as well as food; and other vegetable products were also utilized for practical purposes as resources to aid in the struggle for existence.

In the mineral kingdom we again find Nature's kindly provision most fruitful. Stones of various forms and densities

were furnished ready to the hand of primitive man, which could be used for pounding or for missiles. With the stone as a hammer he reduced refractory food substances, such as nuts and bones, and thus secured food. As his teeth and jaws had been so much reduced the stone hammer came as a saving resource. The stone also served an important purpose as a missile to throw at enemies or animals for defence or to kill them as food. These ready-made weapons, he necessarily adopted at a very early stage, as we know of the quadrumana throwing stones as missiles. The use of missiles with them, however, is merely a "bluff" to frighten enemies away. When man attained the stage of modifying and shaping stones, to make them more effective as implements and weapons, he began to sustain life more easily and even to acquire some luxuries. When we consider the multifarious forms of stone implements and



HAMMERS AND AXES (PREHISTORIC).

weapons, and their innumerable uses, we must acknowledge a debt of gratitude to Old Mother Nature for her beneficence, in placing such a very useful material in the hands of primitive man. Without the indispensable mineral substances he could have progressed but little beyond the merest savagery. If the vegetable kingdom supplied the first resources for the preservation of life at the first emergence from the animal stage, then did the mineral kingdom supply the means for the next step, the advancement to the stage of improved savagery.

The stone as a hammer developed great possibilities in the process of its evolution from the mere natural pounding implement. With the birth of inventive and mechanical powers, it was early modified to meet various purposes by chipping and grinding, into many and varied forms to serve the demands of

life. The hammer is still important as a tool in reducing substances that contribute to the wants of man, but with all of its elaborations, its relationship to the primitive pounding stone can be readily traced. As Taylor states, (*Early Hist. of Mankind*, p. 192,) "Mere natural stones, picked up and used without any artificial shaping at all, are implements of a very low order," and yet from this lowly origin all hammering implements were derived. The offices of the pounding stone in cracking nuts, breaking bones, crushing shell fish, etc., quite early revealed new food resources, and thereby extended the possibilities of life and of survival. These possibilities stimulated invention also, and led to the attachment of a handle to

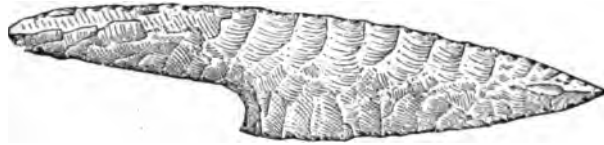


KNIVES OF FLINT.

a well adapted stone, and thus to other methods of increasing effectiveness. As a missile the stone did not undergo as great an evolution as it did as a hammer in early savage life, but in modern life the missile has become by far the most important and effective weapon.

Another most important and useful tool and weapon, the knife, was the gift of the mineral kingdom. A flint chip picked up on a hillside where an accidentally broken rock had produced it, was probably the first knife. Another accident disclosed how it could be made, and from thence its evolution was assured. The discovery of the cutting flint was a great boon to primeval man. It opened up a vast field of resources, not

only of means for procuring necessities, but for comforts and luxuries as well. He could skin animals to make clothing, cut up flesh for food, and do many other things that were not possible before the discovery of this useful tool. As his inventive powers developed, many modifications of the knife arose. These modifications, however, arose at a later period and indicated a psychic advance considerably beyond that primitive stage in which the unmodified products of Nature were first employed. With these alone he accomplished a great step in making available the animal life around him as a resource for food. Without the flint knife he could do but little in the reduction of coarse flesh for food, to say nothing of securing pelts for clothing. Here again the resources of Nature supplemented the diminishing powers of the jaws and teeth. Unlike the carnivora, he was not armed to procure and reduce flesh for his food, but the knife came in to supply this deficiency and give him command of a new source of food supply. It is indeed probable that while originally a vegetable feeder, like most of the quadrumana, yet the discovery of the knife was the means of extending his diet and increasing his



STONE KNIFE.

nourishment, so that the stronger food stimulated all of his faculties and contributed to the development of his increasing intellectual powers. Without the knife he might have remained a pithecanthropic man yet—a simian vegetarian. With extended diet and better nourishment, he acquired increased powers and became the animal of psychic supremacy in the world.

While the animal world, after the vegetable, contributed greatly to the maintenance and survival of primeval man, it comes next after the mineral kingdom in its ability to furnish ready-made materials which could be used for tools, such as bones, teeth, horn, shell, etc. These were great gifts from Nature, and they supplied some valuable tools and weapons ready to his hand. In this kingdom she again manifested her kindness to her struggling prodigy by supplying aids to him. Doubtless some peoples in primitive times (as the Eskimo did down to our day), depended entirely upon the resources of the animal world for their weapons, tools and utensils, as well as for food and clothing. Indeed this is more than probable, for very early man in glacial times was a creature of the cold.

Without animal life in cold climates life would be impossible—as with the Eskimo before the advent of the European—for animals supplied everything necessary for the maintenance of life.

Bone was one of the most useful materials to primitive man, and is yet to savages. It furnished ready weapons and tools, which were crude but effective, and it lent itself readily to modification. Thus a long bone was a ready club; a rib was a



ANCIENT AXES.

knife; a scapula was a ready spade or hoe; a split bone was a dagger or spear head, and so on.

Animal teeth furnished ready and most efficient weapons. Being designed by nature for piercing and cutting, primitive man soon learned to use them for such purposes in his hands. Within a very limited field uses were found for everything available. Later on, with the evolution of the mental powers



EARLY HISTORIC AXE.

and manual skill, many things were made from bone and teeth, both useful and ornamental. Horns, hoofs and other animal products, also furnished useful adjuncts as tools and weapons, which were later modified for various purposes.

The shells of mollusks also supplied useful implements for various purposes. The mussel shell was the first spoon and

furnished the model for the modern spoon. It could also be used for cutting and scraping. Being found ready to his hand, shells were most convenient and useful articles to primitive man. The natural beauty of coloring in the shell led to its employment as an ornament, and thus early contributed to the awakening of the æsthetic instinct.

And thus it was, that from her varied resources, beneficent Nature presented such things ready made to the hand of primeval, pithecanthropic man, which were most necessary for the maintenance of life in his first struggles for existence as he emerged from the animal stage. He became adapted to his environments, of course, but without nature's aids to supplement his changing natural powers, he could not have survived at all. From the tropics to the arctic zone, nature provided in each region that which man seemed to require for the battle of life. She nursed him until he became her greatest creation, and finally he has become so all-powerful that he has not only conquered all other animals, but has almost conquered nature herself. For, as Mr. Chas. Morris says, (Man and His Ancestors, p. 64): "When once primitive man began to add to his natural powers those of surrounding nature by the use of artificial weapons, the first step in a new and illimitable range of evolution was taken. From that day to this man has been occupied in unfolding this method and has advanced enormously beyond his primal state. A crude and simple use of weapons gave him in time supremacy over the lower animals. An advanced use of tools and weapons has given him, in a measure, supremacy over nature herself."

(TO BE CONTINUED.)

THE BEARD AS A TEST FOR CLASSIFICATION OF RACES.

BY C. STANILAND WAKE.

[Revue d' Anthropologie, 1880, pp. 54-77.]

A consideration of the beard as a race character renders it evident that the division of mankind into bearded and non-bearded races, would not agree with the classification proposed and developed by Dr. Frederic Mueller, in his *Ethnographie universelle*, on the basis of hair character. According to Dr. Mueller's system, races are all either woolly-haired (*wollhaarig*), or straight-haired (*schlichthaarig*). The first are subdivided into, (1) peoples with tufted hair (*büschelhaarig*), as the Hottentots and the Papuas; (2) fleecy hair (*fleisshaarig*), as the Negros of Africa and the Cafres. The races with smooth hair are

subdivided into, (1) peoples with straight hair (*straafhaarig*), comprising the Australians, the Hyperboreans, that is to say, the Jakoutes, the Tchouktschis, the Kamtschadales, the Ainos, the Ostiaks, the Eskimo, the Aleuts, the Americans, the Malays (including the Polynesians and the Melanesians), and the Mongolians—that is to say, the Ouralo-Altaics, the Japanese, the Coreans, the Chinese, the Tibetans, the Himalayans and Indo Chinese; (2) the races with curly hair (*lockenhaarig*), comprising the Dravidians and the Singhalese, the Nubians (including the Foulah and the Mediterranean races—that is to say, the Caucasians, the Khamo-Semitic and the Indo-Germanic peoples and the Basques.

If we group these races, however, according to the abundance or the rarity of their beard, we shall have a different classification, as shown by the following table:

ABUNDANT BEARD.

Woolly hair, in tufts.....	Papuas
Smooth and straight hair.....	Australians
	Polynesians
	Melanesians
	Ainos
Smooth and curly hair.....	Dravidians
	Singalese
	Mediterranean races

SCANTY BEARD.

Woolly hair, in tufts.....	Hottentots
	Bosjesmans
Woolly hair, fleecy.....	African Negroes
	Cafres
Smooth and straight hair.....	Other Hyperboreans
	Americans
	Other Malays
	Mongols
Smooth and curly hair... ..	Foulahs, Nubians
	Kolarians

It follows from this classification that there does not exist, at present, any special and general connection between the nature of the hair and the development of the beard. The two varieties of smooth hair, straight and curly, are associated as well with thick beards as with scanty beards. We find woolly hair among non-bearded peoples as with bearded peoples. The only exception is the fleecy variety, which is represented merely among non-bearded peoples, and may be due to an infusion of Asiatic blood. The absence of such an infusion may perhaps account for the fact that the Foulah-Nubian peoples, who belong to the section of races having smooth, curly hair, have the beard better furnished than their neighbors with woolly hair. The last group with curly hair, among the unbearded races, comprises the Kolarians, whose hair and the conformation of the skull, judging of it by their dolichocephaly, appear

to connect them with the natives of India rather than with the Mongols, whom they are supposed to be allied to by language.

The only form of hair of the woolly type included in both the bearded and non-bearded groups, is the tufted variety of the Papuas and the races of Southern Africa. All these races belong to the dolichocephalic section of the human species. As to the Hottentots, there is not yet sufficient reason for separating them from other African races. Dr. Barnard Davis is in agreement with M. Gratiolet in grouping together the Hottentots and the Cafres of South Africa as occipital races, their dolichocephaly being occipital. The small skull, beautiful and symmetric, of the Bosjesmans, which Dr. Davis considers as "a complete refutation of the hypothesis of the unity of the human race, as ordinarily understood, as well as the hypothesis of evolution," would seem to prove at least that they do not occupy their primitive country. Their tufted hair, similar to the woolly hair of the Papuas, can be the result of a mixture of races, an explanation which is probably more plausible than that which would attribute the particular character of the hair of the Papuas to the employment of artificial means of coloring.

In thus excluding the two varieties of the woolly haired type, there is left only the type with smooth hair. In this the variety with straight hair is met with as well among the bearded as among the non-bearded races; but the curly-haired variety belongs exclusively to the bearded race, if we exclude the Foulah-Nubians and the Kolarians. We thus arrive at the conclusion that the bearded type belongs especially to the division of humanity having smooth hair, this form of hair being found equally with the bearded races situated at the lowest stages of civilization, and (as a group) associated in the most intimate manner, by position, with the non-bearded races. Curly hair would appear to specially characterize the bearded races, the most advanced in the path of civilization. The considerable development of the hair on the face, which is attained by individuals of these races, and the great length which the hair of the head often attains among the peoples almost beardless, would lead us to believe that there exists a connection between the development of the pilous system of the head and that of other parts of the body.

In conclusion, I would remark that the comparison here made between the development of the beard among different races and the nature of their hair, would seem to prove that that the hair of primitive man was smooth and straight. If this conclusion is just, we shall be disposed to believe that the woolly form of hair is due to the influence of secondary causes, an opinion which is confirmed by the small number of races with woolly hair which exist on the globe and by the particular characteristics presented by the countries which they inhabit.

A PLEA FOR GREATER SIMPLICITY, AND GREATER ACCURACY, IN THE WRITINGS OF THE FUTURE REGARDING THE AMERICAN ABORIGINES.

BY DR. CHARLES E. SLOCUM, DEFIANCE, OHIO.

The number of men and women who have written of the American Aborigines with more or less of fullness, and with more or less of accuracy, is large, and it soon becomes evident to even the casual reader of their writings, that there is too much of ambiguity and repetition, including worn-out theories, too much of fiction and morbid sentiment, and altogether too much of complexity in the treatment of the unsolved problems as to the characters which should be ascribed to these people.

The number is few who do not continue a prolix and faulty nomenclature.

The term "Indian" should have been discontinued long ago, and while a few writers have recognized this truism, they have been unfortunate in their choice of a designating word to take its place, thus adding to the complexity.

The designation, "American Race," is objectionable for several reasons, among which are the well-supported belief that they are not a separate race, the probability of their soon ceasing to exist as a separate or distinctive people, etc.

It is also insufficient and inappropriate to style these people the "Red Race." Color is a relative feature, and it is but one of several features, when it is of value in describing race characteristics. A visit to the upper classes in the Carlisle school shows its inappropriateness. In this connection it may well be stated, that the repetition of the term "the whites," to designate those of the Caucasian race, is a vulgarism to be avoided.

The appellation, "Amerind," is the most inexcusable of all, and is likely to be confined to a few persons of the present generation. It possesses nothing to commend it, and it should not be repeated. An explanation of this bastard term must needs accompany it, and its use would also perpetuate the misnomer, "Indian."

The designation, Aborigines, is both appropriate and expressive. This ancient term is all-sufficient in its different forms. It is self-explanatory, and the future will commend its exclusive general use to designate, generally, the earliest historical peoples of all countries, which can readily be distin-

guished by adding the name of the locality or country where found, the tribal name, or the characteristic.

An appeal is made to the able Director and Corps of the Bureau of American Ethnology, to the honored Secretary of the Smithsonian Institution, and to the authorities of museums generally, to expunge the term "Indian" from all their labels and their future Reports, and to employ that of Aborigine instead. It is pleasing to note how little change such action would necessitate.

The first Europeans found the Aborigines—in the northern part of America particularly—a very simple people, in language, in names, in desires and aspirations. The competing Europeans, English and French particularly, sought to classify them, to amplify them in every sense for effect, to dominate, to apportion coats of arms to, and in every way to magnify the importance of minor distinctions. The simple Aborigines were transformed by association, and amalgamation, with these peoples from civilized countries, and the influences emanating from them, by possession of their metal knives, tomahawks, firearms, improved methods of making fire and clothing, by the mental stimulus of contact and admixture of blood, as well as by their brandy and rum—complexities multiplied! And these complexities, these engraftings from other peoples, have been presented to us in great amount by writers, often with much fiction of their own, as native emanations from the Aborigines. We read speeches attributed to them, that, notwithstanding their great poverty of language and their "untutored minds," vie with the most carefully prepared addresses of cultured orators! Here is a halo of sentiment and garnishment by the able "pale face" interpreter, ably assisted by the fertile book-writer. As late as the year 1796 Count de Volney, a French traveler and writer who traveled through the Maumee and Wabash country, could not find a correct literal interpreter of the Miami tongue. And still, notwithstanding the ignorance of the language and meanings of the Aborigines, we are desired to read their alleged "myths" set forth in all the flush and finish of the "dime novel!" We read of alleged legends embracing the creation of the earth, if not the universe, as coming from persons and tribes who were ignorant of the story of the times of their grandfathers!

Doubtless every tribe of Aborigines had its romancers; They gathered some knowledge of the language of the nationality with which they associated, and they imbibed something of the fabulous stories often told to them. Peculiar conceptions were obtained by them also from the efforts of the European religious teachers. As the hunting grounds became narrowed, and it was no longer necessary to skirmish against adverse conditions for food, on account of the liberalities of a

paternal government, it was not strange that they followed, though at a distance, their more cultured neighbors and visitors into the habit of day-dreaming.

It is now, at this late date, impossible to analyze, separate and trace to their source the conceptions, beliefs and expressions of our existing aboriginal descendants—to attempt to weigh the influences, remote and direct, of ten or twelve generations of Europeans, of six or more nationalities. Much good may result from such efforts, however, if intelligently conducted with the methods of modern science; but only additional confusion and harm can result from the coining of inappropriate and inexpressive terms, and the ill-advised increase and continuance of complexities.

Editorial.

A PLEA FOR BETTER PIONEER HISTORY.

During the Centennial, in 1876, especial interest was awakened in American history, and a new impetus was given to the writing and publishing of it. The movement took on a shape which was of doubtful character, as an immense number of "county histories" were prepared, and the farmers and other people who were men of means, had the opportunity of having their names, portraits, and pictures of their farms and houses, go into those books, which now constitute the lumber piles in our public libraries. History was written in the interest of adventurers, who sought to make money out of the vanity of ambitious men. The country was flooded, and there was no ark of refuge to which a modest man could escape. The Ararat of solid worth was a lofty peak which arose above this misty sea, and, fortunately, it became a starting point for the peopling of the continent, by those who were worthy of confidence and respect, and so the foundations of society have been well laid.

Within a few years history has assumed a new phase. It appears now under the guise of novel writing; but some of them are novels, which exalt the deeds which brought disgrace upon honorable names, and shocked the moral sense of the entire people. Others tear away all barriers and break through the reserve, which in their own day our best men possessed, and we have become familiar with love stories which are purely imaginative and are commonplace. Just now the tendency is to take up the story of the Indians, both those which were formerly situated in the Connecticut valley, and those who se re-

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cently removed from the valley of the Mississippi. The dark deeds and cruelties of the first are dwelt upon, while the sufferings and wrongs of the last are paraded with great force.

Parkman has presented the white man's side of the story, and, so far as that goes, his works are reliable and graphic. The history of the French and Indian war, the war of the Revolution, that of 1812, and the Blackhawk war in 1832, have been written from the white man's side. But the Indian and his rights and grievances have hardly been recognized. It is as easy nowadays to create a sensation out of sympathy with the Indians, as it was a few years ago, to create it out of fear. The old motto was: "The only good Indian is the dead Indian;" the present motto is: "The only good Indian is the Indian who has lost his identity, and has no longer a tribal boundary or treaty to secure him from the aggressions of the whites." The struggles have ceased to be the struggles of war, but they have begun to be the struggles which are peaceful, but disastrous to the poor Indian. As an individual, the Indian has no chance. It is a survival of the fittest, under new environments over which he has no control. The Blackhawk war was the last struggle which the Indian made east of the Mississippi River. Sensations are produced in our lecture halls by pictures of Indians, and our historical societies are open to those who awaken sympathies for those Indians who suffered so much during that war. Blackhawk is counted a great hero and warrior, and his adherence to the English is excused while the first families of Illinois and Wisconsin are ridiculed over the shoulders of the "squatters," who pressed so closely upon the borders and came first in contact with the Indians. These first families laid the foundations of society, and they do well, who build upon those foundations. There is no need of tearing up the stones and throwing them at those whose names are so well known. Governors, congressmen, the best generals that we have had, and the best president that we ever had, had to do with the Blackhawk war. They were not responsible for the bargain by which the best of lands in Illinois and Wisconsin were sold to the government, nor were they responsible for the panic that came upon the "squatters" when Blackhawk returned to his ancient village, near the mouth of the Rock River. Blackhawk himself was to blame for the calamities which came upon his people. He did not receive sympathy from either the Pottowattomies, who were located near Chicago, nor the Winnebagoes, who were the aborigines of Wisconsin, nor from the Foxes, whose village was on the Des Moines, in Iowa. Blackhawk violated his own written agreement, and returned to the land which had been sold to the government by his own people and the Foxes. He began a hopeless contest for the re-possession of the land which he had forsaken. He was not a war-

rior, and never fought a real battle, but was engaged in several skirmishes with the whites. He was quite unlike Pontiac, who rallied all the tribes of the Middle West in their great conflict with the whites.

The majority of the families which settled in Illinois and Wisconsin, before the Blackhawk war, were totally unlike the adventurous and rough bands of whites who were roaming through the forests of Ohio during Pontiac's time, as any one may see who reads Parkman's valuable history. These early settlers began to build up villages and cities, which are now the largest and most attractive in the country; and they impressed their influence upon their descendants strongly. We, in fact, owe to them a debt of gratitude which we can never repay. Their names are held sacred in the memory of those who followed them, and should be regarded as worthy of honorable mention by the historians of our day.

There are many localities which are memorable because of their connection with the "Blackhawk War." They are likely to be visited by summer tourists, but the historian should sift the evidence and fix upon the exact spot where Blackhawk's village was situated, also upon the spot where he was taken captive, and all other localities which were made memorable by the war. In this the archæologist and the historian may well go hand in hand; but while identifying these localities, it is well to perpetuate the memory of those who did so much for laying the foundation of society, and, if possible, preserve the buildings in which they made their homes and make a note of the lives which they lived. The pioneer history of the Middle West is as important as that of the Indians, and should be written up correctly. The history of the French explorers and the early French settlements has been written carefully, but that of the pioneers has never received the attention it deserves. We plead for more interest in this, and especially for a more diligent collection of the material, which is likely to be lost.



OLD FORT AT ROCK ISLAND.



BLACKHAWK.

ARCHÆOLOGICAL NOTES.

EXPLORATIONS IN SYRIA.

On January 16th, 1901, Mr. Howard Crosby Butler delivered a lecture at the Free Museum of Science and Art, University of Pennsylvania, upon "The Deserted Cities of North-Central Syria." The American expedition, of which Mr. Butler was a member, found no excavation necessary, since the ruins lie on the bare slopes and desert planes of the mountainous district. None of the thirty-three cities discovered, are older than the first century B. C. The steady decrease in moisture seems to have practically depopulated the section, culminating shortly before the rise of Islam. Everywhere wine presses and signs of former cultivation abound. Roman roads, perfect as if yet frequented by the traffic of the empire; curtain walls pierced by superb arches, still true despite the loss of the retaining weight; public baths; flat houses five stories in height; bazaars and dwellings which would be habitable to-day were the rotted timber roofs replaced; tombs with sculptures both in relief and in the round; temples dedicated to the hybrid worship of the great Zeus and the local deity; baptistries and churches whose strong architecture stands aloof from the decadent parasitism of the Roman basilica. Such are a few of the notable conquests of the expedition. With a praiseworthy consideration for the difficulties of the future antiquary, the builders have inscribed and dated right and left. The publication of the results of the exploration will be of great value for the solution of more than one knotty problem, and must be awaited with considerable interest.

H. N. W.

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EXCAVATION IN CRETE.

On the wild and little visited island of Crete two of the most valuable and interesting archæological discoveries of modern times have recently been made. These are the finding of the birth cave of Zeus, a spot described in both Greek and Roman classics, and the discovery of the famous palace of King Minos, with its mysterious labyrinth and chambers, on the ancient site of Knossos. These two discoveries are the outcome of the work of the British archæologists, D. G. Hogarth, who found and explored the ancient cave, and Arthur J. Evans, director of the British school at Athens, to whose researches the world is indebted for the excavations that have brought to light the palace of Minos. Both discoveries were made in the interior of Crete, and from them it would appear that this island was the birthplace and cradle of Greek civilization and culture.

In the ancient Greek mythology the god Zeus was the son of Kronos king of heaven, and was born in a cave on a high hill on the island of Crete. Because of a prophecy that the child should cast him from his throne, Kronos sought to kill his son, and it was because of this that the mother, Rhea, fled to Greece and there reared the child, before whom Kronos was forced to bow. The cave came to be regarded as a holy place by the Greeks. Minos, the lawgiver of Greece, was the son of Zeus, and every nine years he repaired to the cave, there to receive the inspired laws for the guidance of the land. The recent discoveries would seem to prove that the legendary Zeus and Minos of the ancients rested on a basis of reality and that there was a history side to them.

For many years Greek officials and wild hillmen, intolerant of strangers, have prevented any explorations of the inner part of Crete, and it is

only recently, therefore, that there has been any archæological research there. Reports reached the outer world that shepherds, tending their flocks in the vicinity of the rocky hill known as Dicta, had found strange objects of bronze and other metals near the mouth of a cavern. Some of these objects found their way in time to the hands of archæologists, and so manifestly were they votive offerings of very ancient design that they indicated plainly a locality rich in interest. When Crete was liberated the interior of the island was open to visitors, and the British government, securing a concession to explore this cave, put Mr. Hogarth in charge of the operations. At the opening of the year he established a camp of Cretan workmen at the foot of the hill and began the work. Soon, a zigzag mule track was made up the 500-foot slope of rock which led to the entrance of the cave. It took four days to blast away the immense boulders that blocked the entrance to the cave, exposing the black mouth of the great orifice, which Mr. Hogarth describes as follows:

"The great cave is double. There is a shallow hall to the right and an abysmal chasm to the left, the last not unworthy of a place among the famous limestone grottoes of the world. The rock at first breaks down sheer, but, as the light grows dim, takes an outward slope and so falls steeply for 200 feet into a inky darkness. An icy pool spreads from your feet about the bases of fantastic stalactite columns, on into the heart of the hill. Hall opens from hall, with fretted roofs and black, unruffled floors. Fit scene enough for Minos' mysterious colloquy with his father, Zeus."

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IS STONEHENGE A NEOLITHIC STRUCTURE?

A striking discovery has been made during excavations which were necessary to raise one of the monoliths in the famous prehistoric group at Stonehenge, in Wiltshire, into an upright position, says the New York Sun. The men engaged in the work have found numerous neolithic implements, which had evidently been used in cutting and squaring the stones, and, when blunted, had been turned into the bedding on which the stones are supported. The discovery is held to prove that the unique monument of Stonehenge is anterior to the Bronze age and that the structure still visible was certainly built before 1500 B. C.

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PUEBLO RUINS IN KANSAS.

For the past fifteen years or more the existence of Pueblo ruins have been known to the people of the vicinity. They are situated in the Northern part of Scott county in the valley of a creek which flows into the Smoky Hill River. No stream in the western part of the State affords more favorable conditions for irrigation.

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THE STORY OF THE CORINTHIAN CAPITAL.

Dr. Quinn, the well known antiquarian, tells in Harper's for November a charming legend of the origin of the design of the capital which characterizes the Corinthian pillar:

"In the winter a young girl had died in Corinth," he says. "Sometime afterward her maid gathered together various trinkets and playthings which the girl had loved, and brought them to the girl's grave. There she placed them in a basket near the monument, and placed a large square tile on the basket to, prevent the wind from overturning it. It happened that under the basket was a root of an acanthus plant. When spring came the acanthus sprouted; but its shoots were not able to pierce the basket, and accordingly they grew around it, having the basket in their midst. Such of the long leaves as grew up against the four protruding cor-

ners of the tile on the top of the basket curled around under these corners and formed pretty volutes. Kallimachos, the sculptor, walking that way one day, saw this, and immediately conceived the notion that the form of the basket with the plaque on top of it, and surrounded by the leaves and stalks of acanthus, would be a comely heading for columns in architecture. He from this idea formed the beautiful Corinthian style of capital. Such at least is the story as the architect Vitruvius told it 1900 years ago."

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THE SCARABÆUS

In the insect world, the insect regarded by the old Egyptians as sacred above all others, was the beetle. The beetle came to be held in such exalted esteem on account of that which it symbolized, and what it symbolized was based upon its own characteristics and habits. The natural Egyptian beetle, still surviving, is large, black, horned and winged. When the female beetle comes to the period of hatching, it will form a ball, considerably larger than itself, out of Nile clay and refuse. Having formed the ball it will roll it for long distances to some secluded place, frequently and most appropriately to some ancient tomb or temple. Having done so, the beetle then enters and incloses, literally burying itself in the ball. There it deposits its eggs and remains there until the eggs are hatched. It is entombed. The beetle does not die and does not come out of this, its tomb until it comes out with its young. Having observed these habits of the beetle, the old Egyptian fitly chose it as the symbol of life, immortality and resurrection. The beetle lying so long in this ball, entombed, as if dead and in its grave, and then suddenly, at the appointed time, bursting forth from it, most naturally and aptly symbolized resurrection from the dead. And the beetle not dying in this ball, but coming forth living and with its living young, not dying until it had perpetuated its life in its young, that symbolized life, continuity of life without a break and without cessation—eternal life. Such was the symbolism of the beetle, and hence selected and held sacred.

On account of this its symbolism, and also because of convenience in size and form, the beetle was chosen as the model for the stone of the seal ring. A piece of stone, limestone or any one of the stones above mentioned, was taken and carved for the purpose. The upper portion and the sides were carved to resemble the beetle precisely. The under part was cut flat and smooth and on this surface was carved (in hieroglyphics) the name or inscription desired. Through this carved beetle a hole was drilled lengthwise, so that it could be mounted into a ring having a revolving stone, or strung in forming necklaces and bracelets. The original and principal use to which this carved sacred beetle was put was the seal, oftentimes mounted into a seal ring. On the underside was carved the name or official title, or both, of the reigning Pharaoh or of his subordinate officials. Subsequently the beetle came to be adopted and applied very generally, as they are found containing the names and titles also of deities, priests, prophets, notables, symbolisms, inscriptions from the Book of the Dead, etc. The name generally applied to these carved, sacred beetles, is scarabæus (plural scarabæi), which is simply the Latin name for beetle.

The above is quoted from the *Los Angeles (Cal.) Gazette*, which claims that the scarabæus of Joseph is in that city. Doubtful.

The inscription on the Joseph Scarabæus, to which reference is here made, is as follows:

The inscription is the official life of Joseph as Prime Minister of Egypt, and precisely as that title is given in the book of Genesis—a fact that at once both confirms the biblical record and also identifies the scarabæus or seal. Joseph's full official title as Premier, and according to the Bible, was, "Father to Pharaoh, lord of all his house and ruler throughout all the land of Egypt."

A PREHISTORIC ART GALLERY OF EXTINCT ANIMALS.

A remarkable collection of prehistoric drawings or rock engravings, representing animals, has been discovered on the walls of a cavern in Combarelles, Dordogne, France, by Dr. Capitan. Other caverns in this region have yielded similar finds, but this is of unusual richness. The engravings cover both sides of a rocky passage for nearly 300 feet. Says a contributor to *La Nature* (Paris, October 5), in a description of this prehistoric art gallery:

"Messrs. Capitan and Breuil have examined one by one all these figures, some of incredible clearness formed of deeply incised lines, others of lighter marking but easily followed. Some are graved on the living rock, while others—and this is quite novel—are quite covered with a stalagmitic deposit that fills the lines and forms a sort of glaze over the drawing. Sometimes the stalagmite is thicker and hides the lines. The authors have recognized 100 absolutely clear figures, without counting innumerable marks, parts of animals, and uninterpretable combinations of lines. Probably other figures will be found among these.

"These 100 figures include 64 entire animals and 45 heads. Among the former the drawing is of varied merit, but many are of a perfection of design so great that it is easy at once to recognize the animal represented.

"The authors have indicated only absolute identifications. Thus they report 10 unidentified animals; 23 horses, some of them admirably drawn, . . . and others differing from our modern horse by the curved neck with straight mane and by the low-growing tufted tails; 3 oxen . . . with long horns; 2 unmistakable buffaloes; 3 reindeer, finely drawn with all the details of the horns; and finally—the most curious discovery of all—14 representations of mammoths, so clearly drawn that there can be no doubt about them. . . . The long hair marked on the rock by numerous striations, the high forehead with its median concavity, the long-curved tusks, the great trunk, either pendant or curved to the rear, the typical feet—all are rendered with an extreme care that will allow a separate study of numerous points of detail. . . .

"Such are the figures, whose great antiquity can not be doubted—the evident work of artists reproducing, with perfect fidelity and astonishing technical skill, the animals that they saw. It may be understood that, apart from its archaeological value, this discovery may give, with detailed study of the figures, precious information about a number of the animals then living, which naturally could not be obtained alone from the study of their bones."—*Translation made for The Literary Digest.*



LITERARY NOTES.

THE OPEN COURT for December has an article on "Taeping Rebellion in China, 1856," from S. Wells Williams' report. The illustrations represent the observatory and the wonderful astronomical instruments which formerly existed there, but were looted during the late rebellion. It contains also a short article by the editor on the "Deluge Legends of American Indians."

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THE BIBLICAL WORLD for December has an interesting article on "The Route of the Exodus from Egypt," by Prof. G. L. Robinson, Ph. D. Well illustrated from photographs taken on the spot.

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THE ERA (Philadelphia) for December contains an article on 'Unexplored Alaska ;' also one on "Whittier's Birthplace and the Houses in Which he Lived ;" also a picture of the "Snow-Bound." "The Coronation Chair at Westminster," and the "Ancient Cross at Glen-da Lough, Ireland," are also illustrated by "cuts." The magazine has a good deal on Archæology, and is furnished at a very low price—ten cents a number.

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THE INTERNATIONAL MONTHLY for December has an article on "The Middle West," by Frederick J. Turner, and one on "The Christian and Infidel in the Holy Land," by Dana Carleton Monroe. Also "A Review of the American Dictionary of Architecture," by Montgomery Schuyler

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THE TRAINMAN'S JOURNAL for November has an interesting article on "The Cliff Dwellers," with ten views of the cliff dwellers' palace in Colorado, some of them different from any that have been taken before.

BOOK REVIEWS.

A HISTORICAL GEOGRAPHY OF THE BRITISH COLONIES. Vol. V. By C. P. Lucas, C. B., of Baliol College, Oxford, and the Colonial Office. London Canada, Part I. (New France), with four Maps. Published in uniform binding with the previous volumes of the series. Oxford, at the Clarendon Press, MDCCCXI.

The series of books on "The Historical Geography of the British Colonies" is very valuable, but those devoted to the British Colonies in America are more interesting than the others—at least they are to American readers. The author speaks first of the colonization in prehistoric times, and refers to the fact that there was a civilization to be found on the western side of the Andes and on both sides of the Pacific Ocean, but there was a higher civilization upon the eastern side of Asia and Africa. The main course of European civilization has, on the other hand, been in the opposite direction. Its center gradually shifted from Asia Minor and Phœnicia to Greece; from Greece to Rome and the shores of the Mediterranean; from Rome to the shores of the Atlantic; finally, from the east side of the Atlantic to the western. The West Indies and Central America were easier to reach, and more attractive when reached, than were the provinces of New England and the Canadian possessions. For a century after the

discovery of Central and South America, which were organized into Spanish provinces, the extreme north was left to Basque, Breton and English fishermen. The central provinces gave gold and silver, and the adventurers from Europe hurried in and stayed; but the fishers of New Foundland saw men come and go, and the agricultural resources of Virginia and New England were left undeveloped. The only reason for adventurers to traverse the northern regions was that they lay between Europe and the wonderful land of Cathay, about which Marco Polo had written.

Lord Raleigh was a true Englishman and favored colonization, though Samuel Champlain, as a Frenchman, spent the most of his time in exploring the region north of the great lakes. The Dutch and Danes settled mainly along the Atlantic coast, south of the mouth of the Hudson. But the Jesuits established their missions in New York and in the Canadas. The change from the French to the English did not occur until the French and Indian war of 1750, and, for this reason, the eastern province is still filled with French population, which still clings to its own language.

The volume abounds with excellent descriptions, and is valuable on account of the broad range of view which is taken by the author. The "History of Canada," which is distinctively British, is delayed until the second part, and we await that with some impatience, for it treats upon a subject which is quite unfamiliar to the majority of American readers.

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THE LESSER NEW FIRE CEREMONY AT WALPI. The Owakulti Altar at Sichomovi, Pueblo. By J. Walter Fewkes.

Dr. Fewkes is still continuing his study of the altars and religious ceremonies and festivals of the Pueblo tribes, especially the Hopis, at Walpi. One of the pamphlets describes the fire ceremony quite minutely, and gives the symbolic significance. The other describes the sacred objects which have occult powers, including the tiponis or (badges) effigies (idols), and medicine bowls. These are made very clear, and the pamphlets are very instructive. They are well illustrated.

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THE SOCIAL LIFE OF THE HEBREWS. By the Rev. Edward Day; New York, Charles Scribner's Sons, 1901.

The keynote of this book is taken from the clan life, the best example of which is found among the American aborigines. The main thought is that the clan existed before the family, and that the social organization in primitive times among the Semites was founded upon the clan. Matriarchy changed to patriarchy at an early date, which was the system which prevailed between the time of Abraham, and the return from Egypt. The influence of individuals was felt during the time of the Judges, as Samson owed his power to his strength, Gideon to his valor, Jephtha to his impetuous character, Saul to his height and manly appearance, David to his symmetrical and noble character. In those early days property was mainly in flocks and herds rather than landed estate. The unsettled condition of the Danites is referred to as proving that clan life was prominent. The five Danites were representatives of the different sects of the clan. Morality was largely a thing of the clan. An offence against an individual, whether male or female, in any clan was avenged by the whole clan, as is shown in the case of the Levite and the concubine. The churlish Nabal was also the head of a clan, and resembled a modern Sheik among the Arabs.

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MEMORANDA ON THE MAYA CALENDARS, USED IN THE BOOKS OF CHILAN BALAM. Was the Beginning Day of the Maya Month numbered Zero (or twenty) or One? A Method which may have been Used by the Mayas in Calculating Time. Notes on the Report of Teobert Maler, in Memoirs of the Peabody Museum. By Charles Bowditch.

It is fortunate that a man of erudition, and of ample means, has taken

up the study of the Calendar System of Mayas, for every one on the continent, who has been, heretofore, at work on it, has dropped the study. Among these may be mentioned, Dr. Cyrus Thomas, Mr. Lewis W. Guncel, and Mr. Saville. Mr. Bowditch has furnished the means for exploration, which has enabled the Peabody Museum to send Mr. Teobert Maler to Central America, and the result is, that one of the most remarkable "finds" has been made. This find consists of fifteen or twenty stelæ, which contain sculptured human figures, with a large number of hieroglyphs, which perhaps were designed to explain the names and dates. Mr. Bowditch has also given close study to the glyphs upon the stelæ, and thinks that they refer to calendar dates; perhaps the dates of the birth, initiation, chieftaincy and history of the person whose figure is sculptured on the stelæ. This is made probable from the fact that each stelæ is, in itself, a pictograph, as the attitudes of the different persons sculptured on the stone, tell a story which may at least be guessed at by the ordinary observer.

It is to be hoped that the work will go on, until the mystery with which this subject is shrouded, shall be cleared up, and the figures, whose attitudes are so natural, be in a sense brought to life.

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MEMOIRS OF THE PEABODY MUSEUM OF AMERICAN ARCHÆOLOGY AND ETHNOLOGY. Harvard University. Vol. II. No. 1. Researches in the Central Portion of the Usumatsintla Valley. Report of Exploration for the Museum. 1898 1900. By Teobert Maler. Cambridge, 1901.

This volume contains 75 pages of Letter Press, a Map, and 33 heliotype plates, a few of which represent the scenery and the natives of the region; but the majority portray the ancient altars, shrines, statues and stelæ which were found by the explorer. No "find" has been equal to this since those made by M. Habel, and perhaps not since J. L. Stephens discovered the remarkable statues and palaces at Copan. No one can see these figures without realizing something of the barbaric magnificence which existed. The costumes of the kings, queens and priests were very gorgeous. It is impossible to realize the variety of the personal decoration and ornaments of these statues, which represent divinities or heroes, or to understand the significance of their different attitudes. Of one thing we are certain: the splendor of the palaces and temples have been underestimated by many modern archaeologists, and were not exaggerated by the Spanish historians, as many have supposed, for the very symbols which are contained in these sculptures, show that Egyptians and Babylonians of the early dynasties, had their counterparts in America, except as one studies the specimens of art preserved in their statues.

One of the most important objects discovered was a circular sacrificial stone with an elaborate bas relief on the upper surface, supported by three square pillars, each having ten glyphs on its front face; this was called the altar. Near this several stelæ were discovered. The following is a description of them:

"The preserved relief represents the front view of a male figure, with an oval, beardless face carved in very high relief. Upon the brow is placed the serpent's head, the upper row of teeth forming a diadem. Above the serpent's head is the turban, from the center of which rises the ornamented feather holder and the plumes of the feathers proceeding from it fall to the right and left. The god is clothed in a tunic reaching to his feet, ornamented with delicately incised Maltese crosses and finished at the neck by a cape of scales. In his right hand the god holds feathers, and his left lies on the medallion of the cape.

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ETHNIC STYLES AMONG AMERICAN TRIBES.

BY STEPHEN D. PEET

The similarity between the house construction and ornamentation of the southern tribes and that of the tribes in Mexico and Central America is noticeable but is difficult to account for, except on the supposition that there was a contract between the two people and that the same general system of government and distinction of classes existed in the two regions. We present here two cuts representing columns at Tulan in Mexico and at Chicheu-Itsa-Guatemuala. The first was a simple shaft ornamented with feathers, the base representing a serpent's head. The second has a capitol which is ornamented with human figures but supports an entablature and heavy cornice. These present the same conception which was recognized by Bartram in the houses of the Muskogees, especially those which were occupied by the ruling classes. They show how the ethnic style of one country was introduced into another, but upon the whole, confirm the position taken.

This custom of placing the houses of the ruling classes on the summit of truncated pyramids, and around public square or courts, is distinctive of a state of society in which the many are controlled by a few. Such a state does not often exist among the hunters and savages, but generally appears among the agriculturists; though, on the northwest coast, the fishermen who were gathered in permanent villages, exhibit these different grades and ranks. The Southern or Muskogee tribes were the earliest, or the most primitive, to show this condition, but the tribes of the southwest carried it to great extremes.

III. Another illustration of the prevalence of ethnic styles can be found in the various structures which formerly existed on the great plateau of the west, where the form of house construction is entirely different from that found anywhere else, and where also the style of house ornamentation is in the greatest contrast. This was, as every one knows, the home

of the Pueblos and the Cliff-Dwellers, but it is also a locality where a peculiar ethnic type of architecture is to be seen. The question is, How did this arise? Was it owing to the influence of environment, or did it arise from the social organization, combined with the mythology which had been inherited from an unknown ancestry. These people have long dwelt in the arid regions of the west, isolated and separated from the rest of the world, but they have developed in their isolation a mode of construction which is peculiar to the region, and totally unknown anywhere else in the world. They do not present any very high stage of architecture, nor any very advanced stage of art, but their method of constructing their houses and their style of decorating their interiors as well as their



SNAKE COLUMN.



COLUMN AT CHICHEN-ITZA.

style of ornamenting their pottery and works of art, are very unique.

The snake dances of the Moquis, the sand paintings of the Navajos, and the house decoration and personal ornamentation of the Zunis, are well known, still there were so many architectural features contained in those ruined villages, which constituted the abodes of the strange people called Cliff-dwellers, that there is a demand for a close study of their works. In the cliffs there were towers for defense; estufas for religious assemblies; many storied houses for the dwelling places of the people; balconies for their loitering place; behind the houses were courts in which the children might play, and open places where

pottery was manufactured and where looms were set up; and farther back, under the cliffs, was the burying place for their dead, while hidden away in the niches of the rocks were the storehouses where they placed their grain; and above all were the loophole forts, from which the warriors shot their arrows into the bands of wild Indians, who were lurking in the valleys, and were constantly attacking them in their chosen places of refuge. When we consider all the dangers, and the difficulties with which they contended, we conclude that they did not fall far short of many of the cultivated races of the earth, even in the departments of art and architecture. It is especially worthy of notice, that all the buildings which have been discovered,



CLIFF PALACE AT MANCOS CANON.*

whether in the high mesas and open places of the Pueblo country, or in the deep cañons and remote recesses in which the Cliff-dwellers made their refuge, that there was one particular type, or style, which they wrought out for themselves, without aid or suggestion from any source, except that which came from the study of their natural surroundings and the exercise of their own powers. It seems certain, to us, that if any people deserve the credit for having developed an ethnic type of architecture and art, these comparatively uncultured and strange people, whom we call the Cliff-dwellers, are the most deserving.

There is very little ornamentation to be seen in the buildings of the Cliff-dwellers or Pueblos. A simple dado around the inner rooms, and the use of different colored plaster, constituted about all of the ornamentation that was used. When, however, we come to the religious ceremonies and observan-

* The Cliff Palace contained a tower for defense at one end, estufas in the middle, a line of three-story houses in the front, and an open court in the rear, the whole overshadowed by the shelving rock but protected by the steep cliff below.

ces, we find an immense amount of ornamentation; all of it grotesque, outre and bizarre. So whimsical is the costume of



A PUEBLO ALTAR.

—Dr. Washington Matthews, Mr. F. H. Cushing, J. Walter Fewkes, and others.

Dr. Fewkes classifies the altars under two groups: those arranged on the floor of the kiva, and those forming the uprights of a vertical frame-work. The former include the following objects: tiponis, effigies or idols, and medicine bowls. The tiponis are the badges of the religious fraternities, and constitute the "palladium" of the clan. They are totemic in character, but also contain symbols of food, and of seed, which constitute the sustenance of the agricultural people. Generally, an ear of corn, with appropriate wrappings and feathers, is very conspicuous. The idols represent the sky and earth gods, and are male and female. Every clan had a great sky-god, and an earth-god or goddess, the former being the father, and the latter the mother of all the minor gods. The medicine bowl and other objects, are generally placed in front of the altar, on a low pile of sand, upon which are drawn six or eight lines of sacred meal, representing the six directions. On each of these lines of meal is an ear of corn, of the color cor-



MASKED DANCERS.

FOOTNOTE.—Lieut. Simpson has described, in his report, the painting upon the walls of an estufa, at Jemez, and gave three or four plates. In one of these there are two deer, gracefully depicted, painted in blue; in another, there are several birds painted in blue and brown, while shields are painted in red, green and white. In another, a large squash-vine is painted in blue, with a dark back ground; and, in another, there are several foxes painted in blue, two or three deer painted in red and white, all against a dark back ground.—See REPORTS OF SEC. OF WAR, July 24th, 1850.

responding to the directions or points of the compass—north, yellow; west, blue or green; south, red; east, white; above, black; below, speckled. Alternating with these ears of corn, are effigies of birds and butterflies, also painted with different colors—yellow, blue, red, white, black, variegated. A very common symbol is the one which represents the rain-cloud (Omawuh), an arch symbolizing the cloud; perpendicular lines representing the falling rain; zigzag markings representing the lightning

There are often paintings and engravings upon the rocks, which show the artistic taste of the Cliff-dwellers. In these paintings, the figure of a hand is very conspicuous. Some of their house paintings contain the traditions, and an account of



VIEW OF MOQUI PUEBLOS.

the wanderings of the people, and furnish legendary evidence of the combination of several tribes in one great village. They furnish the only clue to the history.

The work upon "The Cliff-Dwellers," which has already been published, illustrates this point, and it does not need to be dwelt upon here; but there are a few facts which should be brought out, and set in a new light. It is acknowledged by all, that the pattern which was adopted by the Pueblos in building their "great houses," was borrowed from the shape of the mesas on which they built them; the terraces with which they abounded, being close imitations of the terraces which were seen in the cliffs. It is also acknowledged that the pattern which the cliff-dwellers followed in constructing their kivas, or religious assembly places, they took from the primitive hut

which constituted their primeval abode. This hut was evidently constructed out of wood, and was supported by posts; and was entered from the top, just as the huts of the California Indians are today. But along with this primeval pattern, there were introduced elements which, to them, became the symbols of the great house, whose roof consisted of the dome of the sky, whose floor was the surface of the earth, and whose supports or posts consisted of the six great pillars which their mythology taught them, were the supports of the sky. Still further, they made the opening in the floor of the kivas, which they called the "sipapuh," to represent the "place of emergence," through which their ancestors, according to their inherited mythology, came up through the different caves in which they had formerly dwelt. The roof of the cave was symbolized by the roof of the kiva; the sides of the cave, by the walls



SCENERY IN THE PUEBLO REGION.

of the kivas; and the opening through which they reached the upper surface, by the "sipapuh" in the floor of the kiva. We have, then, a double symbolism in this simple structure which was used as the assembly place of the secret societies, and the council house of the clan chiefs, as well as the sleeping place for the men of the entire village, the world above

and the world below being both symbolized.

There was a grandeur in the scenery about them, and an influence coming to them, from the shadowy cliffs below, which evidently impressed their senses and filled their souls with a reverence for the unseen divinities. One cannot look upon these many storied houses, kivas and courts, built upon the ledge of the rock, and covered with the overhanging cliff which formed the only roof of the houses, without thinking of the shadow of fear which constantly haunted them, and realizing that they were, after all, like fugitives who were fleeing from a cruel and relentless enemy.

The ethnic style was drawn from the cliffs and mesas, but the form of construction was gained from their necessities as well as from the unconscious influence of the surroundings. The architecture of the Pueblos and Cliff-Dwellers is very instructive in this respect; it shows that the material which was used was owing to the abundance of stone; the manner of constructing their houses and terraces was copied after the cliffs

and mesas; the manner of arranging the houses and rooms was such that a dead wall would always be presented to those who, whether friendly or hostile, approached the village; but the manner of the arranging of the rooms of the houses, one above the other, placing the storerooms in the lower stories and the rooms of the chiefs on the upper stories, was owing to the communistic system which prevailed among them. The originality of this style of architecture came, in reality, from the teachings of nature combined with a unique system of society which prevailed among them. There may be certain analogies between these so-called communistic houses, which were built after the honeycomb pattern, to the so-called palaces which prevailed among the nations of the southwest, in Mexico and Central America; but the differences are so many more than the resemblances, that we are forced to believe that there could have been no connection between them when they were first erected, and no borrowing from one another at any time. The ethnic type was one which originated in the very locality in which it appears.

These Pueblos, when seen from a distance, on the summit of the mesas, appear like ancient castles, but as we come nearer we find that they are not castles at all, for there are no iron-bound gates, no grated windows, and no dark passages, which suggest tragic stories or romantic adventures; and yet they are castles, for they were, at one time, the places of refuge to a people who were constantly beset by enemies, and who had to protect themselves from the midnight attacks of the foe who lurked in the shadows of the forest, or in the secret places among the rocks. Inside of these castles the scene was very peaceful, for here dwelt the different clans and families of a tribe, the families having all things in common, and sharing the different apartments; the village cacique, who occupied the upper apartment, being like a father to the household; and the village officers, who superintended the work and directed the employments, being like elder brothers of the family.

This pueblo territory, which was fringed on its borders by the strange abodes of the Cliff-dwellers, presents, as we have said, a very peculiar form of house construction, and a peculiar style of ornamentation. But there were districts surrounding it, in which we find a style of constructing houses very different in all its features, the difference being due to the ethnic taste of a people who belonged to another stock, or race. We have not the space here to dwell upon these differences, and shall only refer to the few illustrations which are furnished herewith. It will be noticed that, upon the Gila River, which flows around the southern and western borders of the Pueblo territory, there are certain great structures, in rectangular forms, which resemble massive temples more than they do fortresses, though they are called castles. Another distinct type is also presented, in

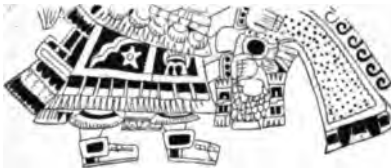
THE AMERICAN ANTIQUARIAN.

the province of Sonora, the first having received from the Spanish the name of Casa Grande, the other the name of Casas Grandes, the singular and the plural, suggesting the main difference between them. Still farther south, amid the mountains of Sonora, are deep valleys, on the sides of which are hidden a number of houses, which are quite different from those before described. The style of the storehouses and the shape of the abodes present features which are not seen anywhere else.



TOLTEC ALTAR AT TEOTIHUACAN.

IV. The best illustrations of the ethnic types of architecture, are found among the so-called civilized races of the southwest. These races were divided, as every one knows, into two or three great stocks, of which the Nahuas and Mayas are the chief, though the Aztecs and Toltecs are among the latest representatives. The general opinion is, that there were only two styles of architecture to be found in this entire region—one of them represented by the various cities of Mexico; the other, by the cities farther south, in Yucatan, Guatemala and Honduras; but recent explorations are showing that there was here a great variety in the method of construction, as well as in styles of ornamentation, as each tribe, or collection of tribes, had a style



TOLTEC COSTUMES.

peculiar to itself, exactly as did those on the northwest coast, and in the Mississippi valley. This will be seen by comparing the ruins at Xochicalco, near the City of Mexico, with those at Mitla; and again, by comparing those at Mitla with the ruins at Papantla and Mayapan, all of them situated in provinces of Mexico. And these, in turn, should be compared with the ruins at Palenque, Uxmal and Chichen-Itza, which were cities situated in Honduras and Guatemala. There are also ruined cities in Yucatan, Salvador and Nicaragua, which differ from all the others before mentioned. Here, also, the strangest idols, and nondescript animal figures, are found north of that line.

1 Now, it is noticeable that among the Aztecs and other tribes of Mexico and Central America, there are many of those

mythologic figures which are made up of a variety of human faces and forms, mingled with figures of the serpent and other nondescript creatures, all of which are sculptured on the facades of the palaces, the statues of the kings and queens being placed in the courts in front of the palaces, with altars near them. The statues represented, not merely the form and features of the king or queen, but even the ornaments with which they were adorned while living, and various parts of the gorgeous apparel and headdresses which they wore, all boldly represented in the figures, which are carved with the utmost skill and accuracy into the stone pillars. The ornamentation of the facades and the portrait columns are also finished in the highest style of aboriginal art.

The ancient inhabitants of Mexico had methods of orna-



FIGURES PAINTED ON INTERIOR WALLS.

menting their houses which are worthy of study. There are many ancient ruins in this region, whose facades present a great variety of sculptured figures. Some of them present the shapes of serpents and nondescript animals, which were the products of their mythology. The ancient palace at Xochicalco, is especially noted for its sculptures. This has been described by various explorers, the latest being Mr. M. H. Saville. There are also ancient ruins at Teotihuacan, which contain houses with large and elaborate suites of apartments, all of them well built and highly ornamented. Prof. Starr has described one of these houses, as follows:

"The walls were covered with elaborate paintings, representing human beings, in fine garments and gorgeous headdresses. The colors used are green, red, pink, orange and brown. The most important figure may be seen in the cut; here we have a warrior, carrying a shield and weapons, terminating at the lower ends with balls, painted green; the shafts painted

green and pink; the shield, green and yellow; the right hand grasps a curious dagger, painted yellow, and held vertically. On the head the warrior wears large ear ornaments and a headdress, ending in a great crest of feathers, the central parts of which are painted green. The most elaborate paintings are on the southern wall of this room; two figures are represented, very similar in all respects. They face an altar which stands between them; the altar consists of a base in rose and red, with a streak of yellow; the upper part is an ornamental disc of pink, red, white and yellow, the whole design bordered at the sides with ornamental bands. Of the standing figures, the faces, hands and legs are painted yellow; the headdresses of feathers are large, and in white or pale pink. A great coil of yellow proceeds from the mouth of each, with nodes on the coils; these probably represented speech. On the left hand is clasped a pendant object, which may represent offerings, painted in pink, white and red."



CORNER AT LABNA.

V. We see in these paintings a style of decoration which was common among the Toltecs, for they are found at Teotihuacan which is supposed to have been an ancient Toltec city. There was however another style which prevailed farther south in the region of Guatemala, Honduras and Yucatan and was common among all the Maya tribes. It consisted not so much in the decorating of the interior as in the ornamenting of the exteriors by sculptured figures in stone. Illustrations of the first are found in the ruined cities of Uxmal, Chichen-Itza, Kabah, Labna Zayi and of the latter mainly at Palenque. There are also in these cities many architectural features which are worthy of notice as nearly all of the buildings are finished with heavy cornices, wide entablatures, columns which are placed in clusters at the corners of the buildings, the sides of the doors, and often-times between the door-ways. The most of them are without capital or bases but are ornamented with



CLIFF DWELLINGS IN SONORA.



CLIFF PALACE IN MANCOS CANON, COLORADO.



FACADE OF THE NUNNERY AT CHICHEN-ITZA.



GENERAL VIEW OF PALACES AT UXMAL.

bands at the centre and some of them with a sculptured base and top. These columns are found mainly in the palaces and form an interesting feature in the facades of these great buildings which were placed in a quadrangular form and sometimes placed on terraces which arose one above the other and were furnished with a high tower which made them appear very imposing.

The palaces also have their facades decorated with a complicated series of carving which are difficult to describe. The most singular object is that which has been called the elephant's trunk, though it more resembles an ornament which is common in Japan. Illustrations are numerous. Here, in



FACADE OF PALACE AT KABAH.

one place, at Chichen-Itza, a temple—with its front a mass of intricate carving, placed high upon a terraced mound—overlooked the entire collection of dwellings. Along each front of this high mound, extended the undulating body of a huge serpent, carved out of blocks of stone. High upon the platform of the temple rested the tail, while the gigantic head, with jaws wide open and forked tongue extended, lay menacingly upon the level plain at the base of the mound. At one side, an immense terrace supported a massive structure, over three hundred feet long, of many turns and angles. It was a gigantic mosaic of marble and limestone. The rooms were narrow and windowless, but the entire front was covered with richly carved stonework,

—The difference between the decorations at Labna and Kabah are very marked. At Labna there is a serpent effigy, with open jaws and a human face in the jaws, projecting beyond the cornice, and forming a part of the characteristic hook, while behind the jaw, and above and below the serpent, are scrolls, palm leaves, Greek fret, rosettes, and other ornaments, while below the cornice are banded columns, and open doorways with pier and lintel. On the other hand, at Kabah there are fragments of the usual hooks, but the figures between them form a complicated network which resembles the pattern, which is often used in the drapery of the better classes, though the figures may have been designed for symbols.

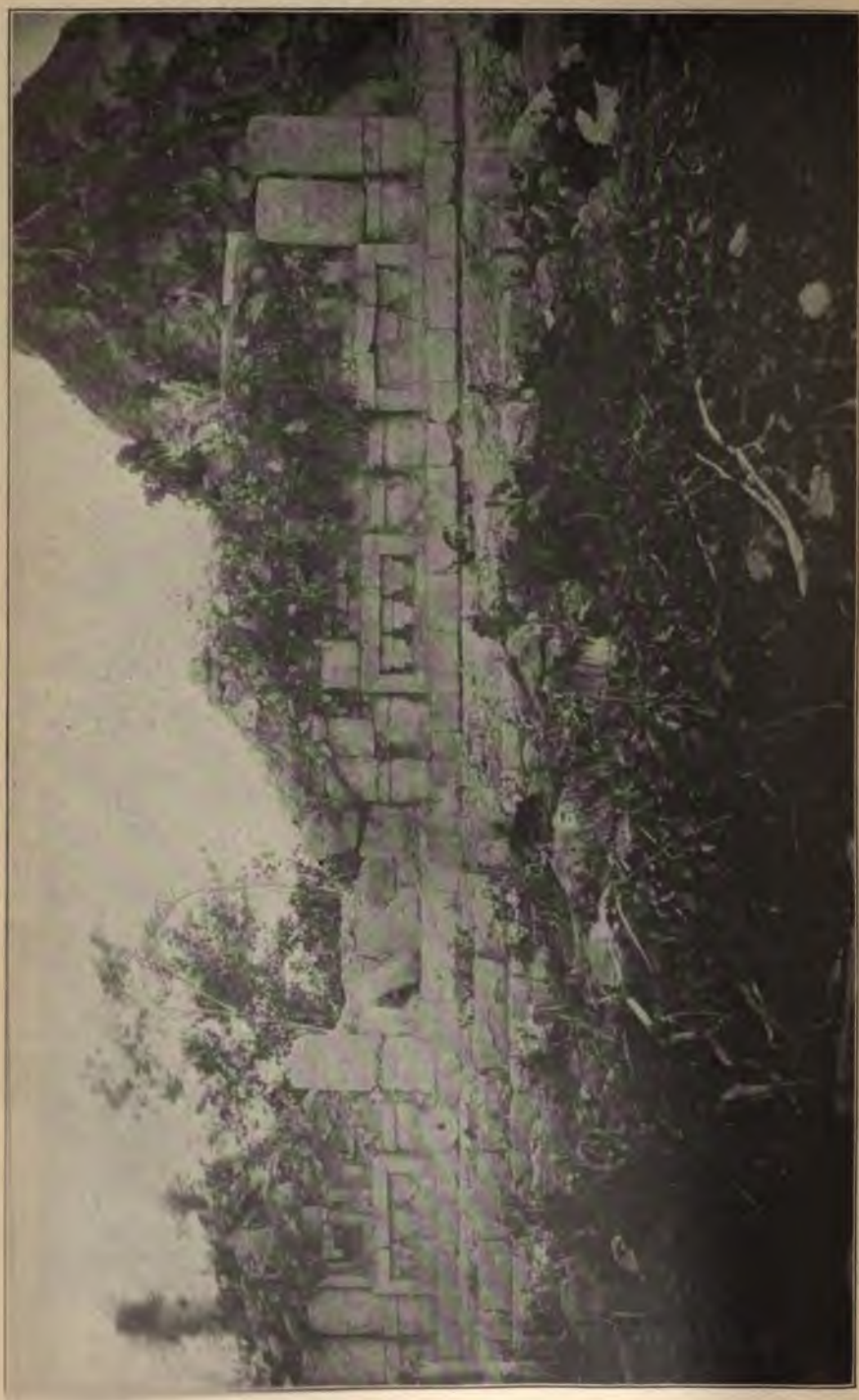
over which was placed a thin coat of hard stucco, glistening white and shining like silver. The flat roof was covered with the same material, and from the eaves projected gargoyles of grotesque type.

The hook at Kabah, extends out from the corner of the building, making a unique feature to the architectural decoration, and one that is characteristic of this region. There is also at Labna, in Yucatan, a mound forty-five feet high, which supports a building 20x30 feet, on which is a row of death's heads, two lines of human figures in high relief, an immense human figure, seated, also a ball or globe supported by a man kneeling on one knee, and by another man standing at its side. All the figures are painted in bright colors, and present the most curious and extraordinary appearance. Near by is a terrace 400 feet long and 150 feet wide, which supports a building of two receding stories, with a front of 282 feet. This front is elaborately sculptured, and presents three distinct styles in as many portions of the wall. At the corner is the open mouth of an alligator, from which looks out a human face; back of this corner are scrolls and palm leaves, and decorations resembling the *Roman key*; and below it, the series of columns clustered together, with bands around the center and at the bottom; the doorways were divided by a heavy column, with a square block for a capitol, with two lintels resting upon the block for support.

The palaces at Xkichmook, about fifty miles east of Campeche, have been explored by Edward H. Thompson, for the Field Columbian Museum. Of these, two of the edifices are represented in the plates, which have been kindly loaned. The palace appears to be the result of successive periods of growth; all of the chambers are finished in the usual style; the roof is vaulted with the Maya arch; there is a tower in the center, with a wide staircase in front of it; the cornice on the tower and on the palace proper, correspond in style. There are the remains of columns in the facade, and shorter columns in the entablature. Another palace, resembling this, has also many columns, but they are of a different type, and show a variation in style.



RUINED PALACE AT XKICHMOOK—THE NORTHWEST.



FACADE WITH COLUMNS, EDIFICE NO. 5, AT XKICHMOOK, YUCATAN.

SOME ETHNOLOGICAL OBSERVATIONS IN SOUTH AFRICA.

BY G. E. LAIDLAW.

During my period of service in South Africa, 1900 and 1901, I was enabled to make but few ethnological notes, on account of the rigor and exigencies of the campaign. Spending some five weeks in Cape Town, I was enabled to view the heterogeneous mass of different colored peoples, that probably, at the present time, has but few equals in other cities, certainly not in western cities: all sorts and conditions of crosses, between different negroid stocks and various races of whites, together with pure negroes, Malays, Javanese, Hindoos, Chinese, Mohammedans, Arabs, Syrians, Armenians, and other eastern peoples, in their respective costumes, make up a kaleidoscope of local color never to be forgotten. What the product of these in the future will be, as well as the best means of handling the immense native population up country in the interior, is a question that can only be surmised at present. Thus South Africa, the fountain head of the negro, will have a more intricate negro problem than the United States, inasmuch as she is controlled by several European peoples, while the negroes in the United States are under only one supremacy. At Durban, in the Natal colony on the east coast, which is in close proximity to the Zulu country I could not but be struck with the much finer physical development of the natives, who are principally Zulus, their territory extending up towards the northern interior of Natal. The Japanese 'rickshaw has lately been introduced into Durban and other towns, and the 'rickshaw men are, as a rule, Zulus. These most athletic young men, of a magnificent physical race, leave their native kraals and come down to the coast towns to be 'rickshaw runners. They generally last but few months; becoming very heated with their work, they plunge into cold water, and thus contract pneumonia, and other lung troubles, which shortly carries them off, for when ill they become very despondent, and do not respond quickly to medical treatment, if, indeed, they get it instead of their own witch doctors. It is a pity, too, for this class of men are very original and unique. They usually wear a headdress representing some animal or bird, and frequently manage to perform some antics or actions of the creatures that they represent, during their work, giving imitative bellows, snorts, squeals and screams, to sympathetic patrons. Another noticeable fact amongst the Zulus in Durban and other towns, and not noticeable outside of Zulu territory, is, that when engaged in any outside work, either collectively or individually, they always sang some chant or song, which, on inquiry, proved to be addressed to the work which was about to be performed. When in gangs, one man took the lead whilst the rest joined

in repeating the words of the leader. These songs are always in native tongue, and practically are the same either in unloading a ship at the docks or railway trucks up country. I recollect one energetic individual, working by himself, repairing a trek road, singing in a deprecatory tone. His song, on being interpreted, resolved itself into information which he was imparting to the stone, about what was going to be done to it. This, I understand is the base of all their work-songs; they address their work, or the object to be worked upon, as being animate, and inform it what is going to be the immediate future proceedings. I failed to elicit if they believed that these, supposedly to them, animate objects, could understand what was being addressed to them.

The Zulus are, mentally, morally and physically, the superior native people of South Africa. They have an exceedingly high standard of morality, and the virtue of the women being a well known fact. Until recently, the lapse from the path of virtue was punishable by death to both parties, administered by command of the chief, and was carried into effect by the use of the *assègai*; even to quite lately, poison was used for the same cause. This code of morality does not include the absolute purchase of a woman out and out; said purchase being transacted between the purchaser and the girl's parents or natural guardians, and being recognized as a legal form of marriage, the female taking her wifely place in the domicile of the purchaser. Before the Zulus came under British rule, women taken in war, or in raids on other tribes, were used as concubines. Amongst wealthier individuals, possessing several wives, separate huts were allowed to each wife, but all the huts were contained in one kraal. The children of concubines had no hereditary right to property or chieftaincies.

Living in a well-favored country, and formerly possessing large herds of cattle, sheep and goats, and the earth yielding abundance of mealies, pumpkins, and other vegetable food, for the mere scratching of the surface; it is no wonder that the Zulus developed their fine physical strength and superb carriage. Their physical characteristics are tallness, breadth and squareness of shoulders, coupled with the straightest of backs, and high arched chests well carried forward; their limbs are massive, with well-shaped hands and ordinary sized feet. Though stout people, extreme fatness is only observable among the women, which is counted a sign of beauty. To produce this state, a diet largely composed of mealie pap and milk is resorted to; the men not drinking milk, saying that it is only fit for women and children.

The universal habit of wearing bracelets on their legs above the calves, presumably has a tendency, as they believe, to develop the calves to an abnormal extent. These woven wire article—either of brass, iron or copper wire—are worn on the arms at the wrist and above the elbow, and on the legs at the ankles

and below the knee, and are often put on when the wearer is young, and accordingly, as that person increases in growth, these become permanently fixed and can only be removed by cutting. It is no unusual sight to see a Zulu—or other natives, for that matter, as the custom is universal—having three or four dozen of these articles on his limbs. These wristlets, armlets, anklets or bracelets, are woven out of very fine wire by the natives themselves, and have a thickness from an ordinary straw to a lead pencil in size, and are valued at from three pence to a shilling. The other portions of native dress used in ordinary wear, are sandals, made of sun-dried hide, with a loop to go over the big toe (these sandals are not extensively worn), and the "moocha," which is a girdle, with a small apron of about six by nine inches, made of skins of small monkeys and other small animals, hanging in front, and a tuft of tails of small animals hanging behind; this is worn by males. The females now wear short petticoats of cloth, except in remote kraals, where their ancient dress is in vogue, namely: a skin petticoat or apron. Skin karosses are used at night to sleep in, and on wet, cold days. The traders' gaily colored "Kaffir blanket" is now taking the place of the kaross. In extreme hot weather, clothing is discarded almost altogether, the younger children of both sexes wearing nothing at all, excepting for ornament.

In preparing for a public "beer drink," or dance, or other native festival, both sexes deck themselves out with as much native finery as they can obtain: men with feathers in their hair, and tufts of feathers and hair tied on to their arms above the elbows, and legs below the knee; a great deal of bead work, in the way of necklaces, belts and collars, is worn by both sexes.

It is, indeed, extremely rare to find any naturally deformed individuals among the Zulus or kindred tribes.

The word "native," in this article, means a negro. The same word in South Africa, as is used by newspapers, business men and others, means a Hindoo or an East Indian. All negroes in S. Africa, with the exception, perhaps, of the almost extinct dwarf bushmen, are called Kaffirs by the Boers and colonials. The hybrid negro at the Cape rejoices in the cognomen of "Cape boy."

"Kitchen Dutch" is the language generally used when addressing negro servants and work people. This bears the same relation to high Dutch, that the French Canadian "habitant patois" does to Parisian French. Kaffirs that come in contact with whites, in the way of employment and business, are ever so much more docile, willing, polite and obedient, than the North American negro. No doubt, from being near their primitive source, they have stronger animal passions, as is usual with more primitive peoples, than their American relations, and do not possess the same facilities for education, business

chances, independent work and political advancement. They have been brought to this state by submissive docility, by loss of territory, and a long continued and frequent use of the "sjambok" and rifle.

The Boer method of negro employment is based on the maximum of service and the minimum of pay. A Boer farmer does not do manual labor himself; he has Kaffirs. These Kaffirs are permitted to settle on his farm in kraals, for each hut of which they must pay £1 per annum taxes to the government. They are allowed a mealie patch sufficient for their needs, and a few sheep or goats; they render service, such as herders, farm laborers and household servants, at a low wage, thirty shillings per month being a high wage for contract labor on roads, railways, and teamsters in the public service. It is said that sometimes, after several years' service, a Kaffir will have to content himself with an ox from his Boer "baas."

Independent Kaffir chiefs, or head men of large kraals, have to furnish so much labor on the government roads, according to their district—labor to be performed when called upon.

Natives living on unsurveyed lands in the Transvaal, still have to pay the £1 tax per hut, but can practically have as many goats, sheep or other stock as they wish, and are thus practically independent of work, though large numbers of them work in the mines at Kimberly, Johannesburg, Klerksdorp, Jaegersfontein, and other places. The ordinary negroes will work very faithfully, but are slavish. The Zulus make by far the best personal and domestic servants, being reliable and truthful, priding themselves on their honesty, morality and fidelity, but cannot be forced to work; in this, they resemble the American Indian.

The Kraal Kaffirs, or "Red Kaffirs," are those who have not come under the influence of civilization. They live practically their old wild life, with slight modification, due to their present environment—such as decrease of game food supply, and not being permitted to indulge in petty tribal wars, or carry modern arms. The Swazies and Basutos are exceptions to the latter condition. Their immoral dances and "beer drinks" are also put down, the war dance being the only one allowed.

The "beer drink" is sometimes indulged in, when an occasion arises when they can do so without interference from those in authority. It consists of an invitation from one kraal to another to drink beer. The beer is made from mealies or Kaffir corn, a very small grained corn, (different from the large kernels of the mealies, which resembles our ordinary Indian corn or the common maize) the process of manufacture being simple. The grain, a little on the green side preferable, is crushed on a flat mealing stone,—similar to a Mexican "metate"—by another smooth rounded stone, generally ovoid in shape, and of a size large enough to be held conveniently in both

hands. The mass of crushed grain is put into large earthenware pots, covered with water and allowed to ferment; then it is strained; then it has an appearance and taste of buttermilk, and an individual has to consume a large quantity before intoxication ensues. These beer drinks end in an orgie in which both sexes take part, in dances and songs, immoral and otherwise, and boastful speeches.

The "red Kaffir" corresponds to the "blanket Indian" of America. Between the "red Kaffir" and the negro who is civilized and settled down on his farm, or to a trade, such as smith or carpenter, there exists another class, semi-civilized, who live in kraals when not employed, and who only work to gain enough to support them for some months in idleness and ease, decked out with tawdry finery and cast-off European clothes. This class finds employment as navvies on railway lines, and roads, also in the mines, and on large stock farms, and as drivers on trekking outfits.

The civilized negro possesses a status similar to the civilized Indian in America, with the exception of much less union in marriage with the whites than falls to the lot of the Indian. Indeed, marriage between white and negro, or those having negro blood in them to any extent, is seldom heard of in South Africa.

Numbers of Zulus and Kaffirs are enlisted in police forces. The Natal Government employ a large force of Zulus to police their own country; these are attached to, and act in conjunction with the Natal Government police on the border, and, being officered by white men, do very efficient service in controlling their own people. In towns, native policemen are also used, and are found to be very effective in quelling disturbances and suppressing minor crimes among the colored population. They do not arrest white men for perpetrating crime; that is left to the white policemen; but they may be used in tracing up crimes and misdemeanors committed by whites, and also as guides.

As the South African negro has an inordinate love for liquor or intoxicants, equalling if not surpassing that of the Red Indian, the authorities do not permit the selling of those commodities to the same, the penalty being imprisonment or a heavy fine.

Uncivilized or semi-civilized negroes have no voice in political matters in British territory, and no negro had a vote in the Boer country.

I was not able to ascertain definitely the original aboriginal religion. They believed to an extremely large extent in spirits, fetishes, and the supernatural powers of "witch doctors," and were consequently very superstitious. Missions have been established for such a length of time, and numbers of missionaries have frequented the country, so that the pure, untarnished native religion no longer exists in the territories referred to, except in rare cases. Referring to the effect of missions on

the native population, it is a noteworthy fact, that while the moral Zulu women, especially the younger ones, stalk about the precincts of their native kraals in Mother Eve's costume, they have no sense of shame, and after a sojourn at a mission become aware of that fact; and also, it is said, become cognizant of the possibilities of immorality. They seldom, if ever, return to their tribe, preferring to live where they can obtain employment; if they return, they rarely go back to their primitive dress, using the costume of their white sisters. On account of the Zulus possessing a superior character to the rest of the South African tribes, they are spoken of as "the gentlemen of South Africa."

Kaffirs and Zulus always make up a name for a white man, from some personal attribute or characteristic, and use these names among themselves, when speaking about or referring to the man in question.

LOCALITIES OF TRIBES.

Zulus, or, more correctly, Ama-Zulus, occupy the northern and western portion of Natal, touching the Drakensberg range of mountains, which forms the western boundary between Natal and the Transvaal. Their influence formerly extended many miles in every direction, even up to the northern part of Transvaal many miles distant; especially so in the Crocodile Valley, in the Leydenberg mountains, where the remains of many large kraals—said to have been demolished in Chaka's time—can be found on almost every strategic point. These former domiciles belonged to the now nearly extinct Malpōks, a physically smaller race of people, said to be very treacherous and revengeful. These latter people are allied to the Sekekunis, who take their name from a chief, and who live in the vicinity of the Limpopo River. The Malpōks extended north as far as the Sabi River, which is south of the Limpopo, and flows east.

On the east side of the Transvaal is Swazi land, occupied, as the name infers, by the Swazies, who are an offshoot of the Zulus, resembling them in many ways, both in speech and customs, with but slight modifications. This tribe was founded some generations ago by a powerful chief, who refused to obey, or failed to carry out, some of Chaka's orders, fled north with many of his followers, and set up a kingdom of his own by conquering and absorbing the weaker tribes that occupied this territory. He gradually became very powerful, and this nation today is one of the very few that remain intact. The Swazies are slightly physically smaller than the Zulus, owing to the absorption of people of less stature.

The Shangaans, who are north of the Swazies, in Portuguese territory, are slavish, treacherous and licentious, and have the name of profiting out of their women's virtue.

Swazies and Zulus are of the same Bantu stock, which embraces the Matabeles, Mashonas, and other tribes in Rhodesia.

Quite frequently decidedly Hebraic features occur among the Zulus, and they are said to practice circumcision. South and east of Zululand, at some distance away, in a very mountainous district to the east of the Orange River colony—formerly the Orange Free State—and directly east of the Orange River, is Basutoland, where live the Basutos and Sosutos, possessing all the characteristics of mountaineers—brave, free and independent. This country is a Protectorate of Great Britain.

East and south of Basutoland, reaching north up to Natal, is the territory formerly occupied by the Kaffirs (Caffres), formerly called Caffraria, who were little if any inferior to the Zulus, but have long been in subjection to the British.

The major portion of the Orange Free State was occupied by the Baralongs, a physically inferior race, inhabiting the Karoo and Kalahari deserts. The most notable physical character of this people is a protuberant stomach, produced by the vicissitudes of life in stony deserts. West of these again, live the Griquas, who are a much lighter complexioned people. South to Capetown, the country was occupied by dwarfish Hot-tentots, among whom, in isolated cases, dwelt the still more dwarfish and almost extinct Bushmen (Boer Boschjemen). I have only seen one hybrid specimen of this people, and he was a small, wizened-up piece of humanity, which might well be called a man-monkey.

As to be expected, all these tribes are virtually the same people, existing under the same conditions, with the same food and climate. Thus, their modes of life, their tribal government, their social and sacred usages, their manners of war and hunting, and their cultivation of the ground, together with their implements, ornaments and weapons, vary but little.

Starting first with their kraals, we find that the beehive shape is maintained throughout the country, only changing when in long and close contact with civilized communities; then it is often changed for the square or oblong house, containing one or more compartments, and still having the small walled pens or courtyards attached, as is common with the remoter kraals. These beehive huts consist of a circular wall of about four feet in height, and up to twenty feet in diameter, covered with a conical roof of thatch of reeds or bamboos. The material of the walls may be of stone or sun-dried clay, and each hut has a small enclosure, courtyard or pen, attached to it, with stone or mud walls of a height up to six feet. In places where bamboo can be obtained, they are used for walls of enclosures, sun shelters, watch towers in their mealie patches, and even for the walls of huts. A group of huts together will each have its courtyard, and these are in such a position as to be on the further side of the huts from the center of kraal, their walls forming a barrier or protection. These courtyards are paved with clay, pounded hard, and the stone of hut and enclosure walls are set in clay for mortar.

Adobe clay walls for huts and other purposes, are not rare. In every large kraal or group of huts, there is one hut set aside for a communal storehouse, in charge of an appointed person, where supplies of grain, food, weapons, and property of absent persons are kept. Beehive huts have small wooden doors, fastened with a thong, and hinges of rawhide; no windows. The floor is of clay, pounded hard, and tempered in cases with bullocks' blood. The occupants, as a rule, keep these huts very clean, and they are swept out regularly. In inclement weather, the fire is built in the center of the floor, the smoke escaping through the roof, the fireplace being simply several loose stones rolled together. There are never any shelves or other conveniences in these huts; beds are rolled up and placed at the foot of the wall; household utensils ditto, and smaller articles being kept on the top of the wall, as the roof projects over, or else suspended from the framework of the roof. The bamboo sun shelters, above referred to, may be either an extension of the roof around the hut, like a veranda roof, or a separate structure, like a shed roof supported on posts. These shelters are more prevalent in the Northern Transvaal than elsewhere. The square or oblong hut, occurring in the most civilized communities, are constructed of sun-dried adobe clay or stone, with a thatched roof. Those that are communal, or containing several compartments, have a door to each compartment and several small window places, the floors being of the usual pounded clay sort.

The large extensive ruins in the Leydenberg district, before referred to, seemed to have possessed a system of terraces. They abound in pottery fragments, not unlike in material the pottery from village sites here, but without any incised ornamentation. In some cases, descendants of survivors live on or in the vicinity of these ruins. I am not aware of any systematic excavations being carried on in these places, but was informed that several attempts had been made, and abandoned on account of lack of material recovered, which consisted mainly of mealing stones.

The word "kraal," is applied indiscriminately to single huts, groups of huts, and enclosures for live stock. The cultivated ground is immediately in the vicinity of kraals, and cultivation is carried on by means of large, heavy, mattock-shaped iron hoes, wielded by the women. Mealies, Kaffir corn, pumpkins, and tobacco are the principal crops raised. The watch-towers, built for overlooking these fields, are constructed of bamboo, if obtainable; if not, of any other small trees. They are simply small shelter huts, raised on four posts, in which persons are stationed at night to watch the crops, and give alarm on approach of destructive animals.

CURIOUS AND INTERESTING MARRIAGE CUSTOMS OF SOME OF THE ABORIGINAL TRIBES OF BRITISH COLUMBIA.

BY CHARLES HILL-TOUT.

[Hon Secretary Ethnological Survey of Canada.]

The following account of the marriage customs of the Yale tribe of the Salish stock of British Columbia, was given to the writer by Chief Mischelle, of Lytton, whose father was a Yale Indian. These customs have been much modified of late years. Some of the Indians are now married after the manner of the whites, by the priest or minister; some few retain the old customs, and others unite the church service with the customs of their forefathers, and thus go through what is practically a double marriage.

Formerly, when a young man wished to marry a girl, he went to the house of her father at daybreak, and squatted down just inside the door, with his blanket so wrapped about him that only his face was visible. When the father rose he perceived the young man there, but passed by without taking any notice of his presence. All the other members of the household did the same. They prepared the morning meal, sat down to it, and still continued to ignore the young man's presence, who, as soon as the meal was finished, quietly left the house without speaking. The members of the girl's family make no comment upon the occurrence. The following morning, the young man enters the house and squats down again by the door. After breakfast he departs, still without speaking. After his departure, on this second occasion, the father of the girl calls the family and relations together, and discusses with them the eligibility of the suitor. If acceptable to the family, when he presents himself next morning he is invited to breakfast, and knows thereby that his suit is accepted. After the meal is over, without in any way referring to the object of his visit, he leaves the house, and in the course of a day or two sends a message to the girl's father, saying that he intends paying him a formal visit. The girl's people make preparations to receive him, and the friends who accompany him. Accordingly, at the time appointed, in company with his friends, who all, as well as himself, bring gifts and food to the girl's father, he makes his formal call, and presents the gifts of himself and friends. When these have been received they sit down to a feast, to which all the friends and relatives of both parties have been invited. After the feast is over, the bridegroom takes his bride and departs with her to his own house. When two or three weeks have intervened, the wife's relatives send word that they are coming to pay the young couple a visit of ceremony. The

young wife forthwith prepares a feast for them, and all the young man's friends and relatives turn up again, together with those of the wife. Presents, of value equal to those given by the bridegroom and his friends, are now presented to him by the wife's father and friends, after which they all sit down to the feast prepared for the occasion. When this is over, the marriage is supposed to be consummated, and the two are regarded thereafter as man and wife in the eyes of the whole community.

But, on the other hand, should the suitor not be agreeable to the girl's parents, the eldest male member of the girl's family is appointed to acquaint the youth, on his third visit, that his advances are not acceptable to the family, and that he had better discontinue his visits. On the third morning, therefore, when the young man presents himself and squats down in the customary place, the old man chosen for the office of intermediary, goes over and informs him that the decision of the family is against him, and that he had better seek a wife elsewhere. If the young man's affections have not been very deeply engaged, he will accept his dismissal and trouble them no more; but if, on the contrary, he has set his heart on getting this particular girl for his wife, he will now go to the forest and cut down a quantity of firewood. He chooses for this the best alder-wood he can find, as this is more highly esteemed than other kinds among the Indians, on account of its emitting no sparks when burning. This he will take to the house of the girl's father next morning at daybreak, and start a fire for the inmates. If the girl's parents are serious in their rejection of him as their daughter's husband, they will take both fire and wood and throw them out of the house. The youth is in nowise daunted by this, and repeats his action on the following morning, when they again reject his services, and cast out the wood and fire as before. But, during the day, seeing his determination to get the girl for his wife, her people call another family council, at which the father points out to those assembled, the young man's perseverance and earnestness, and asks for their advice under the circumstances. They all answer that he must do what he thinks right and fitting. If the objection to the young man's suit has come, perchance, from the mother of the girl—as it frequently does if she thinks the youth will not make a good food supplier for her daughter—the father asks her what she now thinks about the matter. She will probably reply, that if they refuse any longer to accede to the young man's wishes, they will give him pain, and so withdraws her opposition. The girl is then, for the first time in the ceremony, consulted in the matter; but as her desires are mostly what her parents wish, she rarely dissents from the arrangement. The matter thus being satisfactorily settled, the next morning, when the persevering youth presents himself with his wood, and builds a fire, some of the elder members of the

family come and sit round and warm their hands over it. By this action, the youth knows that his suit is at last accepted, and that his perseverance is not to go unrewarded. He presently joins them at the morning meal, and the conclusion of the affair from that moment follows the course already described, where the suitor was at the outset accepted,

The following customs were formerly practiced by the Squomish—another division of the same stock. The account was given to the writer by one of their own chiefs. In this tribe, when a young man took a fancy to a young woman for a wife, the custom was for him to go to the house of the girl's parents, and squat down with his blanket wrapped about him, just inside the door. Here he was supposed to remain for four days and nights, without eating or drinking. During this period, no one of the girl's family take the slightest notice of him. The only difference his presence makes in the house, is to cause the parents to keep a bright fire burning all night. This is done that they may readily perceive that he takes no advantage of his proximity to the girl to make love to her, or to otherwise molest her during the night. On the fourth day, if the suitor is acceptable to the parents, the mother of the girl asks some neighbor to acquaint the youth that they are willing to accept him as their son-in-law, and give him the girl. To himself they still say nothing, nor in any way take the slightest notice of him. And as no communication of any kind can take place between the girl's people and the young man at this stage of the proceedings, this neighbor now cooks a meal for the fasting lover, and informs him at the same time that his suit is acceptable to the family, and that the girl will be given to him in the usual way.

When I questioned my informant regarding this four days' fast—whether the Squomish youths really abstained from food and drink for four days and nights—he told me that they undoubtedly did, and that it was a matter of honor with them to eat or drink nothing during the whole period, the significance of their abstinence being, that they were now men, and could readily endure the hardships and privations incident to manhood. And, apropos of this custom, he related to me an instance of what befel a certain luckless youth who sought, surreptitiously, to break his fast.

CARRIERS AND AINOS AT HOME.

BY THE REV. A. G. MORICE, O. M. G.

By Carrier I do not mean herewith the Standard Dictionary "a person or company that undertakes to carry or makes a business of carrying persons or goods for hire," neither do I take that word in any of the many acceptations enumerated by that work. Throughout this article a Carrier will be a member of that important aboriginal tribe whose habitat lies to the west of the Rocky Mountains between 52° and 56° of latitude north, and forms a part of the great Dene family of Indians. The Carriers are the so-called Cacullies or Cakalis of the early travelers and ethnologists who meant thereby the Cakhelhne (singular Cakhelh) a meaningless cognomen of extraneous origin which nowadays is applied by the Carriers to all the American aborigines.

Their English name is a literal translation of the "Porteurs" of the French Canadians formerly in the employ of the Hudson's Bay Company, who themselves simply translated the Orelhne, "packers" of the Tekanais Indians, according to the particular genius of their idiom which lacks a proper synonym for the Anglo-Saxon verb to pack. "Packers" would have been more appropriate than Carriers.

The tribe owes its name to the custom according to which a widow had, at the time when cremation was the national mode of disposing of the dead, to pack or carry about in a leather satchel the few remaining charred bones of her late husband. Together with their close relatives, the Babines, who might perhaps be considered a distinct tribe constituting the immediate northwestern neighbors of the Carriers proper, they are semi-sedentary, dwelling in permanent villages, though passing much of their time in quest of the fur-bearing animals and the fish on which they mainly subsist. Both Carriers and Babines, though generally pure Denes and therefore belonging to a savage and nomadic race, have a complete social organization comprising so-called "noblemen" who are the sole possessors of the hunting grounds and the headmen of the various gentes into which the tribes are divided. Their fundamental law is the matriarchate and they are exogamous. The right of succession is therefore in the female line, and connected therewith is a series of ceremonial feasts or potlatches borrowed, as the whole social system, from the neighboring coast races.

These customs, though evanescent among the Carriers, are still in vogue among the Babines who owe their name to a

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practice likewise of western origin and which never obtained among the Carriers, that of wearing labrets, oblong pieces of hard wood or of bone, between the teeth and the lower lip. This was thus made to protrude considerably and recalled to the French Canadians the "babines" or thick, prominent lips of cattle, monkeys, etc.

As for the Ainos or Ainoos, they have remained to this day one of the least known of human races. Chambers' Encyclopedia does not deem them worthy of the shortest article, nor does it grant them even the slightest mention in the course of a somewhat extended article on Japan and the Japanese. What seems to be pretty well acquired to ethnology is that they are the original inhabitants of Japan. But while some would see in that race the primitive stock which, by miscegenation with the Chinese, originated the modern Japanese, it is much more likely that they bear to the latter exactly the same relation as the American Indians to the present white population of this continent. Their language is quite different from that of the Japanese who came from the Asiatic peninsula and most probably belong to the Turanian family, though some ethnologists, with Pickering, would see in them nothing but pure Malays.

In common with most primitive people of a low type such as the Eskimos or Innuits, the Denes and many other native tribes of America, the Tungus of Asia and the Bantus of Africa, to whom we might perhaps add the Alemanni of old, the Ainos call themselves simply "men." From a physiological standpoint, they could not well be more dissimilar from our Carriers and Babines; but, sociologically speaking and especially considered in their homes, they exhibit the most remarkable resemblances with my Indians. The oval, timid looking, though very hairy, faces of the former differs a good deal from the flat, prominent cheek boned and beardless visage of the latter who have such a dislike for any nirsute appendage that they sedulously pluck out the few hairs that will grow on their chin and upper lip. On the other hand, Ainos in the prime of life cannot be imagined without a heavy black beard, and those savages prize so much hairiness that even their women must have the most fashionable of moustaches tattooed on the lip.

Yet their garments and personal appearance are not without points of similarity with those of the Carriers. Like those American aborigines, they part their long, black hair after the fashion of the ancient Nazarenes, and the simple cotton gown worn even by male Ainos, and which falls below the knees and is held up to the waist by a belt, recalls to mind the shirt-like tunic or loose vestment of tanned caribou skin similarly worn, which formed the most conspicuous part of the prehistoric Carriers' wearing apparel.

But it is to the habitation of both races, to their homes and their domestic customs that I wish especially to draw attention. I fell lately on a description of the Ainos hut in an odd number of "Mission Catholiques" by a Bishop who was a pioneer among the missionaries to that people, and I deem it so suggestive that I cannot refrain from quoting it almost in its entirety.

"Imagine the framework of a little roof laid on forked posts about the height of a man; reeds are used to fill in the vacant spaces and serve as walls. The habitation has three openings: a door, a common window and a sacred window. The first of the two windows, cut in the southern wall has nothing uncommon about it. The sacred window occupies the middle of the wall opposite the inside door. It is opened to the east and, as a rule, it allows one or several bear skulls to be seen stuck on forked posts. This window is for worship exclusively. The only outside doorway gives access to a vestibule facing the sacred window. Therein firewood is piled up, millet is thrashed and the dog admitted when the weather is too bad; but on no account will he be allowed to pass the threshold of the inner door, which privilege is reserved for the cat."

"Savages as they are, the Ainos have a sense of dignity! One would hardly suspect it who passes from the vestibule to the dwelling place; it is gloomy, smoky, encumbered and of a disgusting dirtiness. Mats are disposed all around the fireplace and invite people to warm themselves; but the place everyone is to occupy is strictly defined. To the left as you enter, are to be found the members of the household, the women folk nearest to the door, while common visitors squat on the opposite side. The place facing the doorway is reserved for distinguished guests and nobody will ever dream of installing himself there without a formal invitation."

Our informant ends by stating that "the structure of these habitations is always the same, their dimensions alone vary. Identical orientation, uniform furniture, nothing is left to individual initiative, and that all over the Aino territory."

Now, even the most careless observer ever so little familiar with the old dwellings of the Carriers and especially of their neighbors and congeners, the Babines, cannot fail to be struck with their many points of resemblance with those above described. The latter simply betray a higher degree of civilization, a step further away from savagery. The Babine or Carrier habitations did not boast any sacred window, nor indeed any window at all; the alcove where the whole Aino family, with the exception of the older children, retire at night was also wanted, but all the other particulars of the Aino home

had their duplicates on the shores of our lakes. Nay, even at the present day, the Babine houses have, as in Bishop Berloiz's plan, their vestibule where firewood is kept and the dogs await the good pleasure of their masters indoors; the fireplace is in the middle of the building, the place of honor is opposite the door where women or people of little account huddle together, and even today travelers through our Denes' territory who come upon any bear skull are most likely to find it planted on a forked stick—formerly this was invariably the case. The distinction relatively to the places in the house is so jealously observed, at least on ceremonial occasions, that I know of Babines who indignantly left the lodge where people had gathered, because they thought they had been slighted in being placed too near the doorway. Another point of similarity in the technique of the Aino and Carrier houses, is the ladder which in both cases consists simply of a log notched at intervals of a foot or so.

Speaking of the dog and of its place in the domestic economy of the Carriers and Babines, a detail which has puzzled outsiders and given rise to groundless speculations presents itself for explanations. In a most valuable monograph on the status of the modern pagan Iroquois, Mr. David Boyle quotes the following from Harmon's *Journal of Voyages and Travels*: "All Indians are very fond of their hunting dogs. The people on the west side of the Rocky Mountains appear to have the same affection for them that they have for their children, and they will discourse with them as if they were rational beings. They frequently call them their sons or daughters, and when describing an Indian, they will speak of him as father of a particular dog which belongs to him. When these dogs die, it is not unusual to see their masters or mistresses place them on a pile of wood and burn them in the same manner as they do the dead bodies of their relations, and they appear to lament their deaths by crying and howling, fully as much as if they were their kindred."

Modern Carriers and Babines have not improved on (or degenerated from) their ancestors, for it is to the latter that the above passage refers. Nay more, they now treat their cats and horses and cattle in exactly the same fashion, and the writer has more than once been called the father of his own horse by natives who saw nothing ludicrous or disrespectful in this mode of speaking. To be sure, this must sound "absurd" to others than Mr. Boyle; but then "psychologically the Indian differs from the white man immeasurably more than he does physically. His habits of thought are totally unlike ours." This remark is not mine; it comes from the genial author of the above mentioned monograph and it has seldom been my good fortune to find so much truth condensed in so few words. It is because of this undeniable fact that, brought up as I now seem to have been, among our Indians, and having uncon-

sciously adopted many of their ways of thinking, I could never bring myself to accept the late Dr. Brinton's interpretations of aboriginal myths. To me, his comments and explanations are merely the lucubrations of a highly cultivated Aryan intellect, something quite different from the gropings of the infantile Indian mind. I feel certain that our Denes, at least, could never have woven the marvelous abstractions and devised the ingenious symbolisms which he lends the poor American Aborigine.

But to return to our "Carrier dog." In the first place, we should not fail to note the persistence of philological forms over sociological particularities, and thereby establish once more the superiority of the former over the latter from an ethnographical standpoint. The carriers have long ceased to burn their dogs as if they were human beings, but the practice connected with that custom, that of calling father or mother (or indeed grandfather or grandmother as the case may be) those who to us are simply their masters, has survived and will probably last as long as the Carrier dialect lives. This peculiar way of treating domestic animals has left its impress on the language to such an extent that words having a relation to their names are granted the plural proper to personal nouns. Thus, while a Carrier may say that he has killed, for instance, two bear, *nankhe soes*, he will change the *nankhe* in *naue* when he states that he possesses, let us say, two dogs, *naneklikhe*. The same is true of the few genuine adjectives; another lynx, *ayu waci*; another cat, *a yun pus*. The verbs undergo analogous modifications when in connection with such nouns.

The reader has perhaps, by this time, guessed the reason of this. As "habits of thought" of the Indians "are totally unlike ours," and as he does not possess to the same extent as the white race the idea of domination, or such a keen sense of ownership and is otherwise more patriarchal in his surroundings, he considers in his dogs and other animals not so much the brutes he possesses and lords over as the animals the companions he has reared and fed from the time of their birth, alongside with the other members of his family, and whose services he enjoys in no less a degree than those of his wife and of the womenfolk generally—we must not forget that, among the Carriers, the dog is a "packer" no less than a hound. The self-styled "noble" Aryan considers himself the "master" of his dog and the "proprietor" of his horse, while the humbler Indian is content with regarding himself as the father by adoption of those he has brought up and who are to him the continuation of the life they originally received from their own kin.

Thus Mr. Boyle and others will see that in the cremation of the dog among the Carriers there was not the remotest idea of sacrifice.

The above remarks should not appear in the light of a digression, for as long as we speak of the Carrier dog, we treat of the Carrier home. As to the cat, it has of course its place by the fireside here as among the Ainos. The other members of the family, the little children, are treated with the same fondness and exaggerated indulgence as among their Aino brothers and sisters, and, also as a matter of course, instead of carrying them in their arms as is usual with us, the Carrier mothers pack them on their backs in their infancy, no less than the aborigines of Japan. Grown up to manhood, the Carrier will unhappily develop another trait of resemblance to the Aino and, indeed to most primitive peoples, I mean that excessive fondness for alcoholic drinks which, when not curbed by religious motives or fear of civil regulations, plays such havoc among those races and succeeds so well in thinning out their ranks.

THE AUSTRALIAN MUSEUM.

BY FREDERICK STARR.

Of the several creditable museums in Australia, the best known is the Australian Museum at Sidney, New South Wales. It was founded in 1836. A year later it published its first catalogue, in which were listed eight hundred and four specimens in various departments of natural history; there were also in the museum at that time some unclassified fossils. This catalogue was in octavo form, and contained seventy-one pages. At first the museum was connected with the Botanic Garden, and was housed in rooms not its own. In 1849 an important progress was made, by constructing a special museum building. This consisted of one large room with a gallery, and still stands, forming the "old wing" of the present imposing building.

The building now occupied consists of five large halls, each with a gallery; it is, however, but part of the great edifice which is contemplated, and will be extended from time to time. It is already sadly crowded and, at least one-third more space is needed for the satisfactory display of specimens now in hand. Its present force consists of a Curator, six Scientific Assistants, and eighteen other persons. It is incorporated, and is managed by a board of twenty-five Trustees.

It is a museum of all science, but the department of Zoology is one of the most interesting, on account of the highly peculiar fauna of Australia. The taxidermic work is of high excellence, and in the display of mammals and birds the effort

has been to present them in natural surroundings, and to make them, in pose and relation, convey their maximum of instruction. No pains is spared in this effort—thus, in the case of the bower birds, so curious in their play-life, a carefully constructed copy of the bower, or playground, made by these birds, has been fabricated.

Our attention, however, naturally turns to the department of Ethnology. It is not limited in scope, containing objects from all parts of the world; it includes collections of the ancient potteries of Mexico and Peru, relics from the Arkansas mounds, a good Egyptological series, etc. But, as is to be expected, its most interesting displays are those from the native



THE AUSTRALIAN MUSEUM, SYDNEY, N. S. W.

peoples of the great island continent itself, and from the island world of the Pacific.

Leaving the latter, we may, for a moment, comment upon the former, and indicate some of the special features which are being developed by the Curator, Mr. Robert Etheridge, Jr. We need hardly refer to the boomerangs, spear-throwing sticks, spears and parry-sticks of the natives. These may be seen in all ethnographic collections.—The practice of drying the body of the dead is quite characteristic of Australian tribes, and the museum contains examples of such "mummies," which, for purposes of comparison, are cased side by side with Egyptian mummies.—The collections contain more than a score of tree-

trunks, curiously carved by the natives; the designs are varied, and include various zig-zags, lozenges, and the like, which may have been suggested by the scales and markings upon snakes and lizards. These carved tree-trunks are practically unique, and have been figured and described somewhat recently in the *Journal of the Anthropological Institute of Great Britain and Ireland*.—The museum has secured an interesting series of spearheads and surgical instruments, chipped from glass; the latter are employed in the famous operations which are performed upon boys in their initiation into manhood.—Among the many skulls from Australia and the Island World, interesting to the somatologist, one series from the Mallicollo



ETHNOLOGICAL HALL AND GALLERY.

Islanders (New Hebrides) is equally interesting to the ethnographer; these skulls have been artificially deformed, and some of them still retain painted, clay, masks modeled upon them.—Examples of the mysterious hand-prints, from aboriginal rock-shelters, at Wollombi, have lately been acquired by the museum.—Mr. Etheridge is greatly interested in developing an Ethno-botanical Australian collection; this series began with one hundred and fifty specimens, and has steadily increased. The plan is to secure those parts of plants which the natives use as food, drink, medicine, construction material, etc., and to show the mode of their employment.—Another especial series, upon which Mr. Etheridge is working, is an Ethno-conchological

collection, which is not limited to Australian examples. It is intended to show the species of shells which are used for any purpose by savages and barbarians, together with the objects fabricated from them, and the modes of manufacturing these.—Of high importance is the collection illustrating the ethnology of the Funafuti Archipelago. An expedition was sent to these interesting islands by the museum, to study their fauna, flora, structure and people. The results of the expedition have been printed, and, among the memoirs, one is devoted to the Ethnology of Funafuti.

One extremely interesting project of Mr. Etheridge has not yet been fully carried out; if, indeed, it has been begun. As is well known, the native Australians quite generally marked their bodies with scars, the size, form and arrangement of which varied from tribe to tribe. These scars were upon the chest, arms, back, or abdomen. The practice has disappeared from New South Wales, but exists in part of Queensland, Central, North, and West Australia. Mr. Etheridge proposes to have life moulds taken, for the reproduction of figures or part figures, showing these scarifications. As he justly urges, it will soon be too late to undertake such a work.

In the Historical Department of the museum is one collection which is of interest to the ethnologist, for various reasons. It is called "the Cook relics," and consists of objects which belonged to or were associated with the great navigator, Captain James Cook. The greater number of these objects were purchased from descendants of Capt. Cook. Altogether they fill eight cases. Many articles used by Cook in his three voyages may there be seen. Fine old medallions of Wedgewood ware represent Sir Joseph Banks (botanist), and Daniel Solander (naturalist), who accompanied him. The collection includes a number of Polynesian objects, among them the fine feather helmet presented to Captain Cook on Jan. 26, 1779, by the king of Hawaii, and a jade ear ornament given to him by a New Zealand chief. Among the Polynesian weapons is one with an uncanny interest: it is a spear, the tip of which is reputed to be made from the leg-bone of the unfortunate navigator.

Up to the present, the Museum has published little in Ethnology. Besides *The Ethnology of Funafuti*, already mentioned, it has issued an eight-page *Descriptive List of Aboriginal Weapons, Implements, etc., from the Darling and Lachlan Rivers*, written by K. H. Bennett.

PHILIPPINE STUDIES, VI.

THE AMERICAN INDIAN ELEMENT IN THE PHILIPPINES.

BY ALEXANDER F. CHAMBERLAIN.

The present contact between Americans and Filipinos is not the first occasion on which natives of the New World have met these Malay peoples in their island home. It was after Pope Alexander VI. had decided that the Spaniards must use the Western, the Portuguese the eastern, route to the Indies, that Magellan, a native of Portugal in the service of Spain, discovered the Archipelago by sailing around the end of South America and across the Pacific, thus securing to Charles V. the title to them.

When Mexico was thoroughly subjugated by the Spaniards, the advantages of commerce between Asia and Europe across that country became apparent, and soon Acapulco and Vera Cruz, the one on the Pacific, the other on the Gulf of Mexico, rose to great influence as the ports for such traffic.

Many of the early discoverers and adventurers in the Philippines, naturally enough, started out from Mexico. Alvaro de Saavedra's expedition, fitted out at Zacatula under the auspices of Cortez, though aimed at the Moluccas, touched the eastern coast of Mindanao, and in its attempts to return, the Sulu Islands. After the unsuccessful expedition of Villalobos (1542-1543), and the failure of his attempt to settle on the Sarangi Islands, at the extreme south-east point of Mindanao, the Emperor, Charles V., seems to have lost most of his great interest in these far-off lands. Philip II., after whom, as Infante, Villalobos had named the island of Samar *Filipina*, stirred up the Mexican viceroy—he had himself been stimulated by the reports and letters of Urdaneta, at this time an Augustinian monk in the City of Mexico—to prepare another fleet for the Philippines. The Urdaneta-Legazpi expedition, thus inaugurated, left Mexico in 1564, and from 1565 to 1571 the Spaniards explored, trafficked and fought in various parts of the Archipelago; in the last year Legazpi founded the city of Manila, and, dying in 1572, his grandson, Salcedo, who had already done a good deal of exploring, extended his discoveries. It was a subordinate of Legazpi—Alonso de Arellano—who, deserting the expedition, sailed north, and, crossing the Pacific, coasted down the American continent till he reached Mexico, being thus the first to make that land from the west. His vessel is said to have been steered by a mulatto.¹

¹ See Blumentritt. Versuch einer Ethnographie der Philippinen (Berlin 1882), pp. 59-68.

In 1569, the Philippines were formally annexed to Spain; in 1575, Guido de Labazarries was made Governor, and for upwards of a century these islands were practically ruled from Mexico.

Even when the Philippines ceased to be under the viceroy of Mexico, commercial intercourse went on as of old until the rupture with Spain took place. Every year the great Manila galleon and its convoy crossed the seas to Acapulco, where a month's fair, in which also the trade from the western coast of South America was represented, was held.

For more than two centuries the port of Acapulco thrived on the Oriental trade, and became one of the world's great commercial centers, its population swelling enormously at galleon-time.

In his interesting paper on "Oriental Influences in Mexico," Mr. Hough² points out how early this trans-Pacific trade began, and how many plants, manufactures, etc., were introduced into Mexico from the East Indies. Another evidence of this traffic has very recently been discovered in the Hindu relic found in British Columbia, described by Dr. Franz Boas.³

The influence of Mexico and other parts of Spanish America upon the Philippines has not yet been studied. Of course, the great mass of trade was between Manilla and Acapulco, and not the other way, but the America-Philippines traffic was by no means very small, in spite of the fact that taxes and other discriminations bore against the latter.

To the Philippines the Spaniards carried, very early, some of the cultivated plants found by them in Mexico, Central and South America, so that the share of the Indians in the subsequent development of these islands, is linked with the use their inhabitants made of these food-products of the pre-Columbian American aborigines. Among these are the following:

1. *Pineapple*. The pineapple (*Ananassa sativa*), or *pina*, was well settled in the Philippines before the end of the sixteenth century, and it is now so made use of that it is hard to believe that the plant is not native to the country. It is from the fiber of the pineapple that the famous *pina* cloth and other products are manufactured. This beautiful fabric is woven from threads obtained from the leaves of the Philippine species, *Bromelia pigna*. It is sometimes called "*pina muslin*."

2. *Prickly Pear*. The prickly pear, misnamed "Indian Fig" (*Opuntia ficus indica*), was, according to De Candolle,⁴ "one of the first plants which the Spaniards introduced to the Old World, both in Europe and Asia." The *tuna* made its appearance very early in the Philippines.

3. *American "aloe"*. The American "aloe" (*Agave Americana*), provides the well known *pita* fiber.

² American Anthropologist, 1900, II, 66-74.

³ A bronze figurine from British Columbia. Bull. Amer. Mus. Nat. Hist. (N. Y.), 1901, XIV, 51-52.

⁴ Origin of Cultivated Plants (N. Y., 1885), p. 275.

4. *Maize*. Maize, or Indian corn (*Zea mays*), was probably not known in the Philippine Islands before the end of the seventeenth century, not being mentioned by Rumphius. It has since been so generally cultivated in the Malay Archipelago that Crawford, in 1820, thought it indigenous.⁵

6. *Cacao*. The common cacao (*Theobroma cacao*), according to Blanco, "was carried by the Spaniards from Acapulco to the Philippine Islands in 1674-1680," where it thrived well. With it went chocolate.

7. *Red Pepper*. More than one species of *Capsicum* seems to have found its way from America to the Malay Archipelago. Of the shrubby capsicum (*C. frutescens*), Blume tells us that "it is naturalized in the Malay Archipelago in hedges.

8. *Tobacco*. According to Raffles, tobacco (*Nicotiana*, sp.) was introduced into Java in 1601, and Rumphius notes that the name *tabaco* or *tambuco*, in use in the east, was of foreign origin.⁷ It was introduced into the Philippines some time during the sixteenth century.

9. *Tomato*. The common tomato was reported in Malaysian gardens in 1741, by Rumphius, but its general distribution is later.

10. *Sweet Potato*. The sweet potato, or batata (*Convolvulus batatas*), was early introduced into the Philippines. Rumphius reports that, "according to the general opinion, sweet potatoes were brought by the Spanish Americans to Manila and the Moluccas, whence the Portuguese diffused it throughout the Malay Archipelago."⁸ The name *Camôtes*, borne by a small group of islands near Cebu, preserves the Mexican name of one variety of this plant.

11. *Sweet Sop*. The sweet sop or custard apple (*Anona squamosa*), to judge from the description of Rumphius, was "a plant recently cultivated in most of the islands of the Malay Archipelago." Blanco reports its cultivation in the Philippines, but it is doubtful when it was first introduced there.⁹

12. *Pea-Nut*. The pea-nut, or ground-nut (*Arachis hypogea*), according to Brunt,¹⁰ who wrote in 1818, "was probably introduced from China into the continent of India, Ceylon, and into the Malay Archipelago, where, in spite of its now general cultivation, it is thought not to be indigenous, particularly from the names given it." Rumphius, however, says it was imported from Japan into several of these islands. De Candolle thinks that "the Portuguese carried it from Brazil into the islands to the south of Asia in the fifteenth century."¹¹

13. *Anatto*. The anatto, or arnotto (*Bixa orellana*), from whose seed pulp a famous dyestuff was obtained (now known as *roucou* in French, *arnotto* in English,) by the Indians of Cen-

⁵ De Candolle, *Loc. cit.*, p. 391. ⁶ *Ibid.*, p. 290.

⁷ De Candolle, p. 143. ⁸ *Ibid.*, p. 54.

⁹ De Candolle, p. 170. ¹⁰ *Ibid.*, p. 410.

¹¹ De Candolle, p. 412, 415.

tral and South America, "was one of the first species transported from America to the north of Asia and Africa."¹²

14. *Alligator Pear*. The avocado, or as it is called by folk-etymology, "alligator" pear, does not appear to be mentioned by Rumphius, but "was introduced into the Sunda Isles in the middle of the seventeenth century."

15. *Papaw*. The papaw (*Carica papaya*) was long thought to be a native of Asia or of Africa, but Rumphius reports that "the inhabitants of the Malay Archipelago considered it an exotic plant, introduced by the Portuguese, and gave it names expressing its likeness to other species or its foreign extraction."¹³

16. *Cashew*. The cashew (*Anacardium occidentale*) was regarded by Rumphius as of "ancient introduction, by the Portuguese, into the Malay Archipelago from America."¹⁴

17. *Guava*. The guava (*Psidium guayava*) was introduced into the East Indies at a comparatively early date, for it was found wild there from the sixteenth century, but with every evidence of recent naturalization.¹⁵

18. *Marmalade Plum*. The marmalade plum, or mummee sapota (*Lucuma mammosa*), is mentioned by Blanco as having been transported to the Philippines. Its insipid taste, as De Candolle suggests, may have hindered its spread.¹⁶

Some of these plants have been of the greatest importance to the natives of the Philippines; others are of less account. The American Indian is not, however, represented in this Archipelago by his cultivated plants alone. Some strains of his blood are to be found in not a few Filipinos. Several towns in these islands were garrisoned by soldiers of Spain from Mexico and Peru, in whose ranks were many American Indian slaves and recruits. Zamboango, in Mindanao, was one of such garrison towns, and it is quite probable that the natives of some portions of that large island, have as much American Indian as "Arab" blood in their veins. The transport of slaves and "criminals" from various regions of Spanish America to the Philippines, brought thither many Indians of divers stocks. Says Blumentritt,¹⁶ of the view that the so-called Moros are mongrels of Arabs and Malays: "With much more reason could they be considered the mixed offspring of Malay and Spaniard, or Mexican or Peruvian Indians, for the slaves captured by them from amongst the Spanish, Mexican and Peruvian regular soldiers, far outnumbered all the Arabs that ever came there." The American Indian element in the Philippines deserves careful study and investigation.

¹² De Candolle, p. 406.

¹³ De Candolle, p. 243. ¹⁴ Ibid., p. 124.

¹⁵ De Candolle, p. 243. ¹⁶ Ibid., p. 286.

¹⁶ The Philippines (Chicago, 1900), p. 22.

THE THOORGA AND OTHER AUSTRALIAN LANGUAGES.

BY R. H. MATHEWS, L. S.

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For many years I have been studying the languages of the Australian Aborigines, and now submit an outline of the grammatical structure of the Thoorga tongue, which is spoken by the natives of the Tuross, Clyde, Moruya, and other rivers, situated partly in each of the counties St. Vincent and Dampier, respectively, New South Wales.

In the Thoorga language I have discovered the use of two separate forms for the first person of the dual and plural, one of which includes, and the other excludes, the person to whom we are speaking. In the following pages, these are distinguished by the contractions "incl." and "excl.," respectively. This peculiarity has been observed in the dialects of many of the islands in Polynesia, Melanesia and Micronesia.

Another peculiarity not hitherto reported among the Australian aborigines, is the inflection of almost every part of speech for number and person. Nouns, adjectives, pronouns, verbs, prepositions, and adverbs, are all subject, more or less, to this inflection or conjugation.

Nineteen letters of the English alphabet are sounded, comprising fourteen consonants—b, d, g, h, j, k, l, m, n, p, r, t, w, y, and five vowels, a, e, i, o, u. Every word is spelled phonetically, the letters having the same value as in English, with the following qualifications:

Unmarked vowels have their usual short sound.

Vowels having the long sound are distinguished by the following marks;

ā as in fate.	ī as in pie.	oo as in moon.
ā as in father.	ō as in pole.	ee as in feel.
ou as in loud.	g is hard in every case	

Ng at the beginning of a syllable or word, as Ngī in ngīaga, has a peculiar sound, which can be got very nearly by assuming oo before it, ogngī, and articulating it quickly as one syllable. At the end of a syllable, it has substantially the sound of ng in sing.

The sound of the Spanish ñ is frequent.

Dh is pronounced nearly as th in "that," with a slight sound of d preceding it.

Nh has almost the sound of th in "that," with an initial sound of the n.

T is interchangeable with d; p with b; and g with k, in most words where these letters are employed.

ARTICLES.

There is no equivalent of "a" and "the" in the language.

NOUNS.

Nouns have three numbers—singular, dual and plural; the dual is indicated by the suffix burra, and the plural by burraga.

Yooiñ, a man.

Yooiñburra, a couple of men.

Yooiñburraga, several men.

Gender is sometimes shown by using a different name for the male and female, as, Kubbogoobal, a boy; Vandabal, a girl. In other instances, words are added to the name of the animal, signifying "male" and "female." Several animals have a distinguishing word for the male; thus, the name of the Koongara, opossum, is known as kumburrooga, whilst the female is spoken of as koongarakoorooroo.

The principal cases are the nominative, genitive, and accusative, but the dative and ablative are observable in some words.

There are two nominatives—one merely naming the object, as koongara, an opossum, and another to indicate that some act is being performed; thus, koongarangga jiroura thunnan—the opossum leaves is eating.

In the genitive, the name of the possessor takes the suffix dya, or euphonic variants, and the thing possessed takes oo, or its modifications, to agree with the last syllable of the word to which it is suffixed:

Yooiñ, a man; warrangan, a boomerang; yooiñdya warranganyoo, a man's boomerang.

Any object whatever which belongs to a native, can be inflected for person and number, as follows:

Singular	1st Person,	my boomerang	warrangandhooga
	2d "	thy boomerang	warranganyung
	3d "	his boomerang	warranganyoo
Dual	1st Person,	{ our boomerang, incl.,	warrangangul
	2d "	{ our boomerang, excl.,	warranganyullunga
	3d "	your boomerang	warranganbool
Plural	1st Person,	{ our boomerang, incl.,	warranganyin
	2d "	{ our boomerang, excl.,	warranganyinnunga
	3d "	your boomerang	warrangandyoor
		their boomerang	warrangangadyen

The native words in the above example, read "boomerang my, boomerang thy, boomerang his," and so on.

As far as I can yet learn, the accusative is the same as the nominative. Examples of the dative and oblique cases are omitted for want of space.

ADJECTIVES.

Adjectives have the same numbers as the noun they qualify, and are placed after it.

Wurrañ Koobeejanga, a child small.

Wurrañburra Koobeejangamburra, a couple of children small.

Wurranburraga Koobeejangamburraga, several children small,

Comparison of adjectives does not follow fixed rules, but there are several ways of comparing one quantity or quality with another, as: This is good; that is bad. This is strong; that also is strong. This is large; that is very large.

When an adjective is used predicatively, as, jumagambaga—I am good—it can be conjugated for number, person and tense, the same as an intransitive verb. The following example shows the present tense of the indicative mood:

Singular	{	1st Person,	I am strong	Bulwulwaga
		2d "	Thou art strong	Bulwulwee
		3d "	He is strong	Bulwulwool
Dual	{	1st Person	{ We are strong, incl.,	Bulwulwung
			{ We are strong, excl.,	Bulwulwungulla
		2d "	You are strong	Bulwulwoola
Plural	{	3d "	They are strong	Bulwulwurra
		1st Person,	{ We are strong, incl.,	Bulwulwuñ
			{ We are strong, excl.,	Bulwulwunga
	{	2d "	You are strong	Bulwulwan
		3d "	They are strong	Bulwulwurraga

The past and future tenses are omitted, and also the imperative and conditional moods. It might be preferable to include these predicative adjectives among the verbs, but I have thought it best to exemplify them under the present heading, to keep all the adjectives together.

PRONOUNS.

The nominative and possessive pronouns are as under:

Singular	{	1st Person, I	Ngiaga	mine	Ngiagangool
		2d " Thou	Indeega	Thine	Indeegangool
		3d " He	Jeenjulla	His	Jellanudda
Dual	{	1st Person,	{ We, incl., Ngiawung	Ours, incl.,	Ngiawungalool
			{ We, excl., Ngiawungulla	Ours, excl.,	Ngiawungalan-
		2d " You	Indewoo	Yours	Indewool [gool
Plural	{	3d " They	Jeenjullowurra	Theirs	Jellanowurra
		1st Person,	{ We, incl., Ngiawañ	Ours, incl.,	Ngiawunungool
			{ We, excl., Ngiawanga	Ours, incl.,	Ngiawungagool
	{	2d " You	Indewan	Yours	Indeewunungool
		3d " They	Jeenjullowur-	Theirs	Jellanowurraga
			raga		

There are other forms of the above pronouns, meaning "for me," "with me," "from me," etc., which extend through the three numbers and persons. Pronominal suffixes, in contracted forms, are used in great number and variety in the declension of nouns, adjectives and verbs, examples of which are given under these parts of speech in this paper. The equivalents of the demonstrative pronouns, "this" and "that," are declinable for dual and plural number, and also have modifications to ex-

press possession. Interrogative pronouns are likewise declinable. There are no relative pronouns.

VERBS.

Verbs have three numbers, with the usual persons and tenses. There are three principal moods—the indicative, imperative, and subjunctive or conditional. The verb stem, and an abbreviated form of the fitting pronoun, are amalgamated, which admits of their being treated as one word for purposes of conjugation. Space will not allow of more than one example, which I shall take at random from the past tense of the indicative mood:

Singular	1st Person	I threw	Beengalaga
	2d "	Thou threwdst	Beengalee
	3d "	He threw	Beengalool
Dual	1st Person	{ We threw, incl.,	Beengabooring
	2d "	{ We threw, excl.,	Beengabooringulla
	3d "	{ You threw	Beengaboaroo
Plural	1st Person	{ We threw, incl.,	Beengabooraufi
	2d "	{ We threw, excl.,	Beengaboorainga
	3d "	{ You threw	Beengaburrarun
		They threw	Beengabooraawurraga

The negative is expressed by ngam, or ngamb, being infixed between the verb stem and the pronoun, thus: I threw not, beengalngambaga, and so on.

The verb follows the noun, and agrees with it in number:

Warrangan illeega; a boomerang carry-I.

Warranganburra illeegool; a pair of boomerangs carry-I.

Warranganburraga illeegin; several boomerangs carry-I.

There are variations in the verbal suffixes to convey such meanings as, 'I took from,' 'I gave to,' 'I caught for,' and many others of a similar character. Such modifications, for the purpose of giving different shades of meaning, are almost endless.

PREPOSITIONS.

The equivalents of English prepositions are of two sorts, as booroongoona, between; gurroowurro, up (as up a river or creek); guddha, down (the river). Another kind comprises suffixes to verbs to give them a prepositional meaning; thus, instead of having a word for "around," there is a verb, goo-roomboaga, around-go-I, which can be conjugated for number, person and tense. Other words signify "across-go-I," "through go-I," and so on.

Some prepositions can be conjugated by suffixing an abridged form of the proper pronoun:

Singular	1st Person	Behind me	Bulgandyen
	2d "	Behind thee	Bulangoon
	3d "	Behind him	Bulganthoong

Dual	{	1st Person	{ Behind us, incl.,	Bulgangulling
		2d "	{ Behind us, excl.,	Bulgangalyean
		3d "	{ Behind you	Bulgowoolung
Plural	{	1st Person	{ Behind them	Bulgawoolanthoo
		2d "	{ Behind us, incl.,	Bulganyinning
		3d "	{ Behind us, excl.,	Bulganyinneen
			{ Behind you	Bulganthoorung
			{ Behind them	Bulgadhunung

ADVERBS.

Adverbs may be either (i) primitive words, or, (ii) they may be derived from adjectives, or, (iii) an adverbial meaning may be obtained by means of verbs:

- (i) Mullee, why; yooka, when or how; yaggoondyooalee, soon.
- (ii) Jummagamanyeen willian, well runs he.
- (iii) Yannoon-miooga, he goes, I remain; that is, he goes instead of me.

A few adverbs can be inflected for number and person, like nouns and prepositions:

Singular	{	1st Person	Where am I	Wanjeea
		2d "	Where art thou	Wanjaweelee
		3d "	Where is he	Wanjawinne
Dual	{	1st Person	{ Where are we, incl.,	Wanjeengialoongaloo
		2d "	{ Where are we, excl.,	Wanjangooloo
		3d "	{ Where are you	Wanjawooloo
Plural	{	1st Person	{ Where are they	Wanjawurra
		2d "	{ Where are we, incl.,	Wanjanyin
		3d "	{ Where are we, excl.,	Wanjanyinna
			{ Where are you	Wanjanyoo
			{ Where are they	Wanjanwurraga

CONJUNCTIONS.

The number of conjunctions in the Thoorga dialect is very limited.

THE THURRAWAL DIALECT.

It is intended to furnish a cursory abstract of the Thurrawal grammar, for the purpose of showing its affinity to the Thoorga tongue. The Thurrawal language is spoken among the remnants of the native tribes inhabiting the coastal district of New South Wales, from Port Hacking southerly to Jervis Bay, where they adjoin the Thoorga speaking people.

The dual and plural numbers of nouns are shown by suffixes:

- Booroo, a kangaroo.
- Booroolallee, a couple of kangaroos.
- Boorooloola, several kangaroos.

In the human family, different words are used for the masculine and feminine, as, yooiñ, a man; ngurrungal, a woman.

Among mammals, usually, gender is distinguished by placing kowalang after the name of the male, and nungânung after

that of the female, as, bunggoo kowalgang; bunggoo nungânung. For birds, the male has the suffix banhoong, and the female nungânung. for certain animals there is a distinguishing name for males and females.

There is the nominative case, and the nominative agent, as, ngurrungal, a woman; ngurrungalla moondha yoorinya, the woman a snake killed.

The possessive is formed by means of suffix to the name of the possessor, and also to the object possessed, thus: mulyan, a eaglehawk, and ngoora, a nest; but we must say mulyangoollee ngooranhoong for the eaglehawk's nest.

The name of any object over which possession can be exercised by a native, is subject to inflection for number and person:

Singular	1st Person	My head	.Wollarnoongyen
	2d "	Thy head	.Wollarnoongoon
	3d "	His head	.Wollornoongoong

and so on through the dual and plural.

The dative is sometimes shown by the suffix oo, as, Bunnabee, a place; Bunnabeeoo, to Bunnabee; ngoora, a camp; ngooraoo, to the camp.

For the oblique they say, Bunnabee-een, from Bunnabee. Buddi, a waterhole; buddieen, from the waterhole; ngooraeeen, from the camp.

Both the dative and ablative are frequently expressed by a modification of the verbs, meaning "I gave to," "I took from," and many others. Adjectives are declined for dual and plural, and are placed after the nouns they qualify:

Boorroo jillôarî, a kangaroo grey.
Booroolallee jillôaranbool, a pair of kangaroos grey.
Booroolôala jillôarantha, several kangaroos grey.

Comparison is effected in a manner similar to the Thoorga, and certain adjectives can be conjugated like intransitive verbs. An example, in the singular number only, will be given:

Singular	1st Person	Good am I	Nuggoongî
	2d "	Good art thou	Nuggoombee
	3d "	Good is he	Nuggoong

Nominative and possessive pronouns are similar in character to the Thoorga, although differing slightly in form.

COMMUNAL HOUSES IN BRITISH COLUMBIA.

BY C. HILL-TOUT.

The dwellings of the Skokomich (or Skqomic,) were of the communal kind, and were very large. Each village contained one, and sometimes two, of these communal houses. Some of them were of enormous length, extending six hundred feet and more. Houses of 200 and 300 feet in length were very common. In width they varied from twenty to forty feet, and in height from eight to fifteen feet. They were generally made of cedar, split into slabs. The boards were held in place by wythes or ropes, and there were no windows in the buildings. The sunlight and air came through the doors or by the roof, as that part was left open to let the smoke out. They were open from end to end, without partitions or divisions of any kind. Each family had its own allotted space, at the side of the dwelling, and had its own fire. The beds of the family were arranged around three sides of a square, with the open part toward the fire. They were separated from one another by curtains of grass and reeds, which were suspended on two sides, but the inner side toward the fire left open.

The coverings of the poorer were of reed mats, and the pillows of communal mats rolled up. The wealthy classes had blankets made of mountain goat and dressed deer skins. In winter it was customary to keep the fires burning all night. The housekeeper possessed cooking pots of cedar and basketry. Food is served in large shallow troughs or dishes. Smaller platters of the same material were in use, likewise spoons, made of wood and of bone. Of baskets they had a great variety.

The dress of the Koqomichs did not differ from other tribes. The men commonly wore high leggings and waist cloths. Over their shoulders they wore native blankets. The women wore dressed deer skin frocks, which depended from the shoulders to below the knees, and sometimes covered the head with a plaited conical hat, with broad, sloping brim, which served as a receptacle for berries and other small things. These hats were figured in red and black paints.

The canoes of this tribe were made out of solid logs, and have a beam of six or seven feet. The thickness of the sides is less than an inch. They have five different canoes, each called by a special term. Canoe building is quite an art among them.—*See Report of the Ethnological Survey of Canada for 1900.*

OBSIDIAN SPEAR POINTS.

The obsidian spear-points, represented in the plate, are from the Easter Islands, and were found in connection with the human statues, engraved tablets and ancient stone houses, which are so common on those Islands. They evidently belonged to a race which suddenly disappeared from the islands—a race which was organized into clans, but had one king ruling over them. The images are supposed to be the statues of kings, and were placed on platforms facing the sea. These spearheads were fastened to



poles about eight feet long by lashings of hemp, and formed the chief weapons of the natives. They were thrown to a distance, and were also used as a thrusting weapon, much after the manner in which the Zulus use their assegais. They are classified according to their shape, as follows :

FIG. 1, narrow leaf; fig. 2, wide, round pointed; fig. 3, narrow and long pointed; fig. 4, narrow, spade-shaped; fig. 5, broad, straight-edged; fig. 6, smooth, round-edged; fig. 7, broad, fan-shaped; fig. 8, concave and convex-sided; fig. 9, long, sharp-pointed. The shape and size were dependent upon the individual taste and skill.

Editorial.

HUMAN FIGURES IN AMERICAN AND ORIENTAL ART COMPARED.

The study of sculptured art in America has always proved very interesting, although it has never been taken up with as much thoroughness as is desirable. There are a few specimens which have been gathered into the cabinets of private collectors, and these have been studied and compared with one another; but those specimens which have been gathered into the museums, and have been described by the museum reports, have never received as much attention as they deserve. Now, it is because of the fact that they seem to be neglected, that we

shall give a brief review of the specimens of sculpture thus far discovered, and shall draw a comparison between them and the specimens which have been discovered in other countries. We shall, however confine ourselves to those specimens which represent the human figure, leaving out those which have animal semblances, and those which are mainly symbols.

I. In reference to the geographical distribution of these figures, we would say that they are found in every part of the continent; some of them



Fig. 1—Mythologic Figures, from Rocks in Arizona.

carved out of wood, others out of stone, and still others engraved upon shell; many are drawn in outline upon the rocks, a few pictured upon the walls of houses, and still others drawn upon bark or painted upon tents.

Human figures are also very common in Oriental countries, in Egypt, Babylonia, Assyria, India, and even in China. In these countries they form important features of ancient art, and are frequently described, though seldom has there been a comparison between them and those found in America.

These representations of the human figure, when treated ethnographically, illustrate the difference between the native



Fig. 2. Pueblo Idol.

tribes, in their way of conceiving of the human form, and of representing it: 1. The wild tribes of the far north, generally draw the human figure, as well as animals, tents and boats, in outline on ivory, very much as did the cave-dwellers of Europe, but they distinguished between the human beings and demons, as one can easily see who studies the drawings. 2. The hunters around the Great Lakes also drew the human figure in outline, but they made them express activities, and combined them in pictographs, so as to convey a meaning by them. 3. The stone grave people were accustomed to make semblances of the human figure upon shell gorgets, but generally represented them as dancing, and engaged in some religious ceremony, though they are draped in the usual style, and show what kind of costumes the tribes were accustomed to wear.

4. The people of the Atlantic coast were accustomed to bury copper plates in the mounds, on which human figures were engraved, some of which have been exhumed and described. These figures are represented in outline, but they frequently have wings emanating from the shoulders and the beaks of

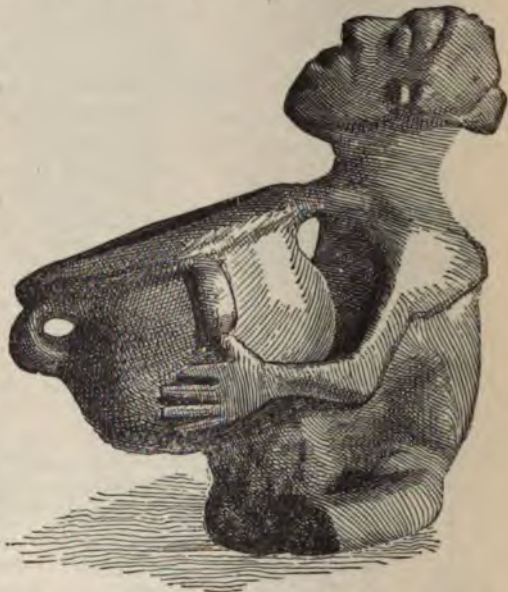


Fig. 3—Sun Worshipper, from the Gulf States.

birds, instead of human faces. They evidently were mythologic figures. 5. Further south, throughout the Gulf States, there were formerly human figures kept in the dead houses. They were carved out of wood, and some of them were very hideous in their appearance. 6. There are also many pottery vessels throughout this region in the human shape. Some of these are very grotesque and comical, others are suggestive of sun-worship. Pottery pipes were common among the Iroquois, and many stone pipes have been found in Ohio made in the human shape.

7. Among the pueblos, human figures were frequently drawn upon the rocks and walls, and the altars and frameworks which represented their religious ceremonies. These were covered

with drapery of many kinds. 8. The Navajoes are accustomed to make sand-painting, in which the human form is represented by a great variety of colors. These are personifications of the Nature divinities, and are very interesting and often beautiful. The rainbow has a human semblance, and the arch of the sky is by them, as well as by the Egyptians, represented as a female figure, whose arms and feet are upon the earth, but whose body spans the sky. 9. On the northwest coast, human figures are very common. They are carved out of wood, and represent the ancestors of the people. They are also mingled with animals and birds, which represent the mythology of the people. Volumes might be written on the significance of these totem-poles, and the human figures contained in them.



Fig. 4—Pottery Vase in Shape of Human Head.

10. The Aztecs had many carved images, which represented the human form in various shapes, and with a great variety of adornments. 11. The same is true of the people who dwelt in Central America, for here we find, as we have seen, many portraits, statues and sculptured columns, some of which are supposed to represent priests and kings, others represent the Nature divinities. There was a system of mythology here which consisted in the personification of Nature powers, and, as a result, every force in nature was represented by the human face or form. The sun and moon were supposed to have faces, and

to be looking out of the sky. The rain, also, had a human face, and the rain-drop was represented by the eye. The lightning was generally represented by the serpent, but it was controlled by divinities bearing human forms. The codices are full of pictographs of human beings in various attitudes, some of them riding upon crooked serpents and emptying vases of water from the sky. Others are seen falling from the sky, headforemost, and landing in great vessels, which are supported by coiled serpents. The hieroglyphs of Central America are made up largely of human faces, mingled with hands and feet.

Strange to say, the entire season is represented in America, as it was in the far east, by the human form, which resembles that seen in the old-fashioned almanacs. Every month in the year was represented by different parts of the body; every constellation in the sky, also, being suggestive of the different activities of the human frame. 12. The calendar stones in Mexico have a human face looking out from the center, and a serpent forming



Fig. 5—Pueblo Doll, with Sky Symbols

the circumference; but in Central America, the human face is seen upon the walls of the temples, supported by staves, arranged in the shape of crosses. These faces, or masks, are so placed that the sun shines in upon them at various seasons of the year, and lights them up by its rays.

13. No such sun masks have been seen in Mexico, though the calendar stone of Mexico represents the sun under semblance of a human face. These sun-masks are to be distinguished from the human figures which are sculptured upon the columns



Fig. 6—Hieroglyphs from Palenque.

and upon the slabs. Recently there have been brought to light a new series of sculptured stelæ, in which human forms are represented, but covered with a great variety of ornaments, some of which were designed to be symbols, and others to represent drapery that was common. These are very suggestive of the stage of civilization that had been reached, as the drapery is very elaborate and the ornaments are so numerous, that we are impressed with the magnificence which must have prevailed among the ruling classes.

The descriptions of these slabs are given by Teobert Maler, who discovered them, as follows :



Fig. 7—Human Effigies, from Mexico.

These figures are connected with the ancient altars, shrines, statues and stelæ. No "find" has been equal to this since those made by M. Habel, and perhaps not since J. L. Stephens discovered the remarkable statues and palaces at Copan. No one can see these figures without realizing something of the barbaric magnificence which existed. The costumes of the kings, queens and priests were very gorgeous. They help us to realize the variety of the personal decoration and ornaments of these statues, which represent divinities or heroes, or to understand the significance of their different attitudes. Of one thing we are certain: the splendor of the palaces and temples have been underestimated by many modern archaeologists, and were not exaggerated by the Spanish historians, as many have supposed, for the very symbols which are contained in these sculptures, show that Egyptians and Babylonians of the early dynasties, had their counterparts in America, except as one studies the specimens of art preserved in their statues.

One of the most important objects discovered was a circular sacrificial stone with an elaborate bas relief on the upper surface, supported by three square pillars, each having ten glyphs on its front face; this was called the altar. Near this several stelæ were discovered. The following is a description of them:

"The preserved relief represents the front view of a male figure, with an oval, beardless face carved in very high relief. Upon the brow is placed the serpent's head, the upper row of teeth forming a diadem. Above the serpent's head is the turban, from the center of which rises the ornamented feather-holder and the plumes of the feathers proceeding from it fall to the right and left. The god is clothed in a tunic reaching to his feet, ornamented with delicately incised Maltese crosses and finished at the neck by a cape of scales. In his right hand the god holds feathers, and his left lies on the medallion of the cape.

14. In Guatemala, there are tablets or slabs which represent human faces looking out from the sky, surrounded by vines



Fig. 8—Idol, from Guatemala.

and various forms of vegetation, while persons are below it lifting up their hands in supplication, their prayers being represented by vines, with nodes in the vines. A description of these is given in the book on "Myths and Symbols."

15. The discovery of statues and idols at Pantaleon, in Guatemala, a number of years ago, with faces distorted as if by old age, was made known through one of the Smithsonian reports, but no explanation of their object was given, and it is still un-

certain what their intent was. 16. About the same time, there were brought to light, in the West India Islands, a number of carved objects which represented human creatures in the attitude of swimming, but bearing upon their backs great humps. These were supposed to represent the island divinities, and were very suggestive symbols, as most of the islands have a mountain peak in the center of them. These images are called *Zemes*, and are worshipped as idols.

17. Now, all these figures are very curious and interesting, and are worthy of attention for several reasons, but especially because they show the stage of art which had been reached by the natives, and because they show the different conceptions which were entertained. There are, to be sure, occasionally those which puzzle the archæologist and baffle explanation. Among these we would place the figures found at Pantaleon. The following is the description of them given by J. F. Bransford, who discovered them in 1882:

"The objects are all of black basalt. They were arranged

around a fountain, in a courtyard, and were very similar in style. The finest of these, in size and workmanship, was No. 1, shown in figures 2, 3 and 4. This was found in a low mound on a hill, in the hacienda San Juan, about seven miles north-west of Pantaleon. Señor Salas informed us that a sculpture similar in size and design, but not in such good condition, was



Fig. 9—God of the Air and Sea, from Peru.

left at the mound. The figure was in high relief, fronting a tablet 50 inches high, 43 wide, and 9 in thickness. A crest rose 17 inches from the upper edge of the tablet, making the total height of the object 67 inches. It was in a state of excellent preservation, the only serious defect being the loss of the greater portion of the nose. The quiet strength and simplicity of the face, is something new in the art of the ancient Americans. It was well formed, the lines simple and clear cut, and without a shadow of the conventional. Majesty was so plainly stamped on the countenance, that it was known by the Indians as *El Rey*—The King. The brow, the eyes and the nose, as far as could be judged, were in good shape and proportion. The mouth was hard, and the chin firm and full of character

On the head was a turban, with a banded edge coming well down on the brow. On the front of the turban, an elaborate arrangement of plumes was secured by a double band, knotted in front. Lying on its left side, supported by the band, was the mask of a human face, nearly half the size of that of El Rey. This mask, the earrings, and the gorget suspended by the necklace, were probably *chalchietls*, as we may well imagine that a man of his consequence would naturally choose the favorite green stone wherewith to adorn his person. As a background for the mask, was apparently a broad leaf—it was too broad to have been a feather—supported in turn by two others of similar design. These may have been beaten gold, worked into the form of broad leaves or plumes. If the last

were furnished by that royal bird, the quetzal, our *cazique* surely rejoiced in a headdress which, in gorgeous brilliancy, left nothing to be desired."

18. There were human figures in Peru, the most interesting of which is the one which was seen by E. G. Squier, sculptured upon one of the massive gateways at Cuzco.

The figure given represents the god of the air and of the sea, which, according to the Peruvian mythology, had human forms but with



Fig. 10—Winged Figure, from the Mounds.

animal attributes, and were consequently very grotesque in their appearance. It will be noticed, however, that the mythology of Peru was very different from that of Central America and the northwest coast.

II. We see, then, from the various and diverse figures, that there was a tribal style of art in America which came from the tribal divisions and mythologies. But the question is, whether there was a style which was peculiar to the continent and can be called American. This question is important, for it may help to solve certain problems which are constantly coming up. Among these problems, the chief is the one which relates to the contact with other continents during prehistoric times.

Many years ago the opinion was held by many that the

Mound Builders were the lost tribes of Israel, and it was argued that there were so many customs and objects which resembled those of the Jews, which could be accounted for in no other way. A similar theory has arisen in reference to the Egyptians, for it is claimed, especially by Leplongeon, that there were many specimens of art, especially in Central America, like those which were common in Egypt.

Very recently the theory has been broached, that the statues and human figures in Central America proved that Buddhism had reached this continent before the time of its discovery. Now, all these theories have been based mainly upon the presence of human figures in America, and upon their resemblance to those which are common in the early art of Egypt and India. There might be added to this, the thought that there are winged circles which resemble those which were common in Egypt and were afterwards common also throughout Europe, and became associated with the thoughts of angels in Christian lands.



Fig. 11—Winged Circle, on Temple at Palenque.

The latter may not seem to be of any importance, and yet it brings up the whole question of the origin of art, and especially of religious art, and it may be well to include everything in America which may have a bearing upon the subject.

It will be remembered that human figures are very common in the sculptured art of Egypt, Babylonia, Assyria, Persia, India, and Greece. In Babylonia and Assyria these figures are often represented as furnished with wings, but in Egypt, India and Greece, they are generally without wings. The winged symbol is, to be sure, very common in Egypt, and winged bulls are common in Assyria, but in the majority of lands of the east human figures are represented as without wings. In America there are many human figures with wings, but they are found mainly among the uncivilized tribes, such as the mound-building tribes of the Mississippi valley, and the Pueblos of New Mexico. In all those cases, where human figures

are furnished with wings, they represent mythologic creatures and not human persons or attributes. In Assyria and Babylonia, wings are suggestive of royalty and power, and perhaps convey the idea that the king rules by divine power. It was in Babylon that Ezekiel, the prophet, saw the eagle, the lion, the ox and the human face all united in one symbol, in his vision. And it was also in that kingdom that palaces were guarded by winged bulls and winged lions. The priests were represented as having wings upon their shoulders and beaks upon their heads. It is to be noted, however, that in Egypt the priests never have wings. The same is true in Mexico, Central America and Peru. Now these facts are important, for they help us to recognize the distinctions between the various nations, in their methods of representing kingly power. There are, to be sure, statues of kings in Babylonia with altars in front of them, which resemble the statues or portrait columns at Copan, as these have altars before them. But the drapery and the ornamentation which cover the human figures are very different—in fact as different as are the countenances and forms of the kings themselves. There are a few statues on the facades of the palace at Palenque, which have faces resembling the face of Buddha, and the attitude is the same as that which Buddha sometimes takes—an attitude with the legs drawn and crossed—but the resemblance ceases with these two coincidences. There were four attitudes which Buddha assumed, each one of which represents his official activities. One of these represents Buddha teaching, with his two open palms on his knees; another is Buddha learning, with his hands entirely closed; another represents Buddha meditating, with both hands open on his knees; another, Buddha is believing and convinced, the knees expanded with hands held upward; another, with Buddha demonstrating, with thumb and index finger touching. Now these points are important, because of their bearing upon the question of contact between the two continents.

It is well known that certain parties have claimed that the American art was greatly influenced by the Egyptians, and this proved that there was contact between Egypt and America in prehistoric times. The chief advocate of this theory was the famous LePlongeon, who discovered a recumbent figure in Central America, which he called Chacmool, and claimed that it resembled the statue of Bacchus. But the statue of Bacchus was not common in Egypt, nor was any such statue of Bacchus common in Greece. The argument fails in this case, as it fails in every case where analogies between the human figures are treated.

The Egyptian civilization did not reach as far as America, nor did Egyptian art have any effect upon American art, and yet there are certain remarkable coincidences between the customs, habits and ways of the eastern nations and the Amer-

ican nations, which cannot fail to bring up the question of contact over and over again. It is singular that the resemblances should be noticed in connection with the human form, for the Egyptian faces have no resemblance to the Maya races.

If it had been the customs and the traditions which were in dispute, instead of the human figure, the decision would be more uncertain. To illustrate: Circumcision was in usage among the Egyptians, the Hebrews, and was common even in Central America among the Mayas. Sun worship was also common among the Egyptians, the Semitics and the Mayas, but there is no proof of contact, for the worship was too common. The same reasoning might be used in the case of other countries, for circumcision is a rite common to all nations in hot climates.

Le Plongeon makes an argument on the similarity between the terrace pyramids and the palaces in Yucatan and those in Babylon. The pyramids were in terraces, and the palaces were built with long and narrow rooms, with arched corridors about the rooms, and open courts in the center. But these arguments will not apply to Egypt, for the pyramids and palaces of Egypt were very different from those of Babylon.

The calendar system of the Mayas and the Egyptians have been referred to, but the Mayas divided their civil year into eighteen months of twenty days, while the Egyptians divided theirs into twelve months of thirty days. The Mayas had a system of fives and twenties, and thirteen was their sacred number, while the Egyptians had a system of fives and tens, and seven was their sacred number, as well as among the Hebrews, Hindoos, Chaldeans and Indo-Europeans. Virgins of the sun were common among the Mexicans and Peruvians. They were priestesses, and dwelt in what might be called a convent or monastery. Virgins were common in Rome, but no one claims that the Latin race ever reached Central America. These must be regarded as remarkable coincidences. They are to be put down in the same list with the symbol of the hand, which was common in India as in New Mexico. In India it was used to remind the gods of the vow and prayer, but there is no evidence that it had this significance among the Cliff-dwellers.

The symbol of the mastodon's head, among the hieroglyphics of Mexico, has been referred to, but it has been denied that any such symbol can be found. There is a god with an elephant's head in India and in Siam, but the whole body is always represented, with the head and trunk of the elephant substituted for the human head. No such figure has ever been found in America.

There are other coincidences more remarkable than these: The cosmic egg; the serpent; the suastika hooked cross; the story of the deluge; the re-creation of the earth; the use of red paint; the presence of jade; the peculiar forms of altars;

the resemblance between the divinities and their offices; especially the appearance of a mother with a child in her arms on the facades of Palenque; but these are all so indefinite and so varied, that they only confuse rather than give force to the argument, so that at present it must be left an open question, whether there was contact between the two continents in pre-historic times or not. The argument against the influence of Egyptians on American art has been summarized by Prescott, as follows:

"The sculptures on the Palenque buildings are in relief, unlike the Egyptian, which are usually in intaglio. The Egyptians were not very successful in their representations of the human figure, which are on the same invariable model, always in profile, from the greater facility of execution this presents over the front view. The full eye is placed on the side of the head, while the countenance is similar in all and perfectly destitute of expression. The Palenque artists were equally awk-



Fig. 12—Manitou Face on Palace Facade, at Uxmal.

ward in representing the various attitudes of the body, which they delineated also in profile. But the parts were executed with much correctness, and sometimes gracefully; the costume is rich and various; and the ornamental headdress—typical, perhaps, like the Aztec, of the name and condition of the party—conforms in its magnificence to the oriental taste. The countenance is various, and often expressive. The contour of the head is, indeed, most extraordinary, describing almost a semicircle from the forehead to the top of the nose, and contracted towards the crown, either from the artificial pressure practiced by many of the aborigines, or from some preposterous notion of ideal beauty. But, while superior in the execution of the details, the Palenque artist was far inferior to the Egyptian in the number and variety of the objects displayed by him, which, on the Theban temples, comprehended animals as well as men, and almost every conceivable object of use or elegant art.

The hieroglyphics are too few on the American buildings to authorize any decisive inference. On comparing them, however, with those of the Dresden codex, probably from the same quarter of the country, with those on the monument of Xochimilco, and with the ruder picture-writing of the Aztecs, it is not easy to discern anything which indicates a common system. Still less obvious is the resemblance to the Egyptian characters, whose refined and delicate abbreviations approach almost to the simplicity of an alphabet. Yet, the Palenque writing shows an advanced stage of art, and, though somewhat clumsy, intimates by the conventional and arbitrary forms of the hieroglyphics, that it was symbolical and perhaps phonetic in its character."—*Prescott, Vol. II., pp. 404-405.*

III. This leads us to consider the character of aboriginal art in America. In doing so, we shall leave out all those specimens which are found among the uncivilized tribes of the North, and confine ourselves to those which are common among the so-called civilized races of Central America and of Peru. We maintain that these are fully equal to specimens which have been exhumed from the mounds of Nineveh and other localities in Babylonia, which represent the art of those countries at the opening of history. The casts of many of these specimens have been brought to this country, and are now in museums alongside of casts which represent the specimens of art found in the cities of Central America, and so furnish the opportunities for a comparison. These specimens, which are presented in plaster casts, do not give the same impression as the original sculptures in stone would. The study of the casts, however, give opportunity for comparing the art of the historic countries with that which has been found in the prehistoric cities in Central America.

The casts from Babylon and Assyria generally represent huge animal figures, such as human-headed bulls, bird-headed priests, and other objects which are known to have guarded or lined the walls of ancient palaces of Babylon. They are generally marked with great simplicity, and yet are very significant, as they give the same impression of kingly power that they did when standing in the doorways of the palaces and lining the walls of the long, narrow rooms. The faces present the features of kings and priests, notwithstanding the animal forms on which they are placed, and at the same time they show the national type of the Babylonians and Assyrians.

Among the casts of Central America there are occasionally animal forms, but the most of them are so grotesque and complicated, that one can hardly make out the animal which was intended to be represented. They are evidently mythologic, and are full of a latent symbolism which only the natives could understand.

We are impressed, in studying these casts, with the very

peculiar style of art which prevailed among the ancient people. There were elaborate figures carved in relief upon the facades, which represented the serpent figure as stretching from one end of the palace to the other, with an imitation of lattice-work within the folds of the serpent, but a human face is seen looking out from the jaws of the serpent at the corner of the building. The Manitou face is often seen as an ornament on the facades. This face has a glaring eye and a peculiar hooked nose, resembling the trunk of the tapir; at its end is a circle, causing it to resemble the ornament common in Japan, the ears and the mouth of the Manitou being hidden by a number of grotesque ornaments. The tiger, the owl and the turtle, and other animals, are represented on the facades of the palaces, but the human faces, of gigantic size, are seen looking out from the walls near the foundations of the pyramids and the palaces, and these are much more impressive than are those representing animals. The following specimens of the human figure are worthy of attention, because they represent a style of art which is in great contrast to that which prevailed in other countries, independent of mythology:

1. Idols or human figures are seen over the doorways of palaces at Palenque, their heads covered with great plumes, which fall down to the feet and almost hide the form from view. These show the custom which prevailed among the warriors and kings, of wearing great plumes as signs of royalty.

2. There are, as we have shown already, many portrait columns at Copan in which the human figure is very prominent. The face looks out from the center of the column, while above it is the crotalus jaw, and the glaring eye of the snake, and above this a great variety of ornaments and figures; while below the face are seen necklaces and capes, and armlets and wristlets, and skirts which cover the body and almost hide it from view with the richness of their ornaments; and yet, the mingling of serpents and animal forms make the figure ghastly and hideous to the cultivated eye. Some of these images are finished in the round; their limbs stand out boldly, and show that the kings and priests were well fed. The feet are thick and short and clumsy—almost as thick as those of the Chinese women; but they are covered with moccasins, which are richly adorned with jewels. There is also a network of lacing upon the limbs, which shows the skill of the weaver.

3. There are human figures upon the piers of the palaces at Palenque, which are not so elaborately dressed, and are more natural in their proportions. They, however, have the same general characteristics as those found upon the facades and the portrait columns. These probably represent the different divinities which were worshipped, and yet they show the skill of the artist in representing the human form.

4. There are also idols in Central America which have very little drapery or ornament upon them. These are finished in the

round. Some of them are represented in attitudes which are very suggestive, and were designed to convey a meaning to the people. These idols were placed near the temples, and may have been worshipped.

5. There are animal-headed seats or thrones in Central America. There is, however, a bas-relief in stone, at Palenque, which represents a man nearly naked, seated cross-legged upon an animal headed throne, and a woman in front of him draped in a very rich garment, which is woven after a pattern which seemed to have been common in that country. She is holding in her hands apparently a mask, or headdress, furnished with plumes. The significance of this group is unknown, but the costumes and the faces are such as are common in this region, and are totally unlike any found in Egypt or in India,

6. Another bas-relief was found by J. L. Stephens in the temple called Casas de Piedra, at Palenque. This temple was

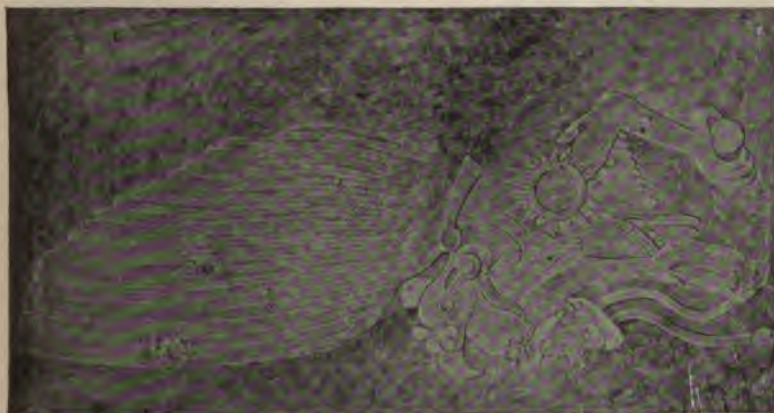


Fig. 13—Winged Figure at Cosumel.

a shrine, and the bas-relief was upon the back wall and faced the doors. It represented a human figure seated upon a globe, the globe resting upon an animal-headed throne. But the seated figure was dressed like a chief, with a short kilt or skirt, having one leg drawn up, the other resting upon the globe. Its attitude is graceful and somewhat commanding, but its form and face have no resemblance whatever to the Egyptian or Hindoo princes or kings. In fact, when we look at the faces of these Maya kings and princes, we are struck with the contrast which they present to the kings of the east, far more than we are with the resemblances, for they nearly all have the retreating forehead and the curved nose, which is the most prominent feature, and which seems to have been a feature which the artists took particular pains to display.

These features are as distinctive and peculiar to Central

American art, as are the passive features of Buddha to the Buddhistic art, and as are the heavily-bearded figures to the Babylonian art, or the conventional figures to the Egyptian art. They, however, represent peculiarities which were natural and ethnical, and so are valuable for the information which they furnish with reference to the people who built these monuments.

7. There are colossal bas-reliefs at Palenque which illustrate this point even better than the seated figures. Two groups of these were seen by Stephens, one on either side of the stairway which led to the palace, all of them filling up the space between the ground and the sills of the palace. They were carved on stone, in bas-relief, nine or ten feet high, and in a position slightly inclined backward, apparently looking upward to the door of the palace. They are adorned with headdresses and necklaces, with a peculiar skullcap upon the head, and no plumes above the cap. "The design in anatomical proportions is faulty, but there is a force of expression about them which shows the skill of the artist."

Some have thought that the retreating forehead was a sign of royalty, and that artificial means were used, perhaps in infancy, to secure this. But in these two bas-reliefs the seated figures resemble captives, and they have retreating foreheads.

8. There is another bas-relief, in stucco, at Palenque, which represents a king standing, with a crown upon his head, and above the crown waving plumes, while upon his shoulders is a cape set with jewels, and a breastplate; about his loins a tunic, probably a leopard skin; he holds in his hands a staff or sceptre; at his feet are seated two naked figures, cross-legged—probably captive kings.—See Stephens' *"Incidents of Travel in Central America,"* p. 311.

9. There is another bas-relief in stucco on one of the piers of the palace at Palenque, which represents a king and a queen, both dressed in the usual royal attire, and both of them holding in their hands the crooked form of a serpent, which was in this country a symbol of great significance.

10. Two standing figures were seen by Stephens on the piers of Casas de Piedra, each of which has a child in its arms, resembling the Virgin Mary, and yet they are clothed in the usual costume, with plumes upon their heads and fringed garments about their loins, and a peculiar symbol in their hands.

11. The tablet of the cross, at Palenque, contains two human figures, both of them with their faces toward the cross. They are dressed in garments which were probably made of cotton cloth, but it is arranged in folds about their body and has a rich appearance. One of them has a baton in his hand, the other is holding up an offering to the bird which stands on the head of the cross. There are masks in front of these figures with human features, and many human faces are seen upon either side of the tablet.

ARCHÆOLOGICAL NOTES.

THE HERMES RESTORED.—The recovery of the shipload of the works art, so strangely preserved to us by the sea-god, has been going on. The best of the statues discovered was a splendid bronze statue of Hermez, preserved in fragments. The fragments at Athens have been cleaned, and the statue partly restored, temporarily. The restoration of it may possibly be done at Vienna, by Herr Wilhelm Sturm, the restorer of the archæological collections of the imperial palace. Herr Sturm goes on to describe the method of restoration, as follows:

"In fitting together the statue, the experience will be useful gained in the case of a large bronze statue of an athlete, Ephesus, which is now in the collection of the Imperial Palace at Vienna. The method is this: the fragments are bound together on their inner surface by strips of brass, and screws of the same metal, and in such a way that the latter do not project at all on the outer surface, but rather are rendered entirely invisible by the coating of patina. When the preserved fragments have been thus bound together, the hollow form of the body thus formed is fitted by brass pins upon a skeleton of tinned iron, extending through the trunk, arms and legs.

"For setting up the whole, there will be considered a bronze base, in which, without technical difficulties, a hollow can be made, corresponding to the leaded projection at the lower extremity of the leg, on which the statue stands."

In Vienna, the precious statue will be deposited in the private rooms of the Imperial Archæological Museum, immediately on arrival; will be accessible to no unauthorized person, and will have the same protection as is furnished to the treasures of the Imperial Palace; and of this, both the Greek representatives, and especially His Excellency, Mr. Manos, the Greek Ambassador at the Imperial Court, may be assured.—*The last No. of the Jahrbuch des Kais. Dent. Inst.*

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THE SACS AND FOXES.

An article in the *Folklore Journal* for October and November, 1901, gives a new and interesting resumé of the mythology of these tribes. It shows that there is considerable resemblance between this mythology and that of the Ojibwas, and yet it is original and peculiar to this tribe, and must have arisen while they were in Wisconsin, where the cobwebs were formerly seen filling the air, and forming filaments which might be taken to be shrouds for the cloud-divinities. This people were lovers of Nature, and were very imaginative. Their mythology is very fanciful.

THE NORTHWEST COAST.

Explorations on the northwest coast have been going on for several years, under the auspices of the American Museum of Natural History of New York, the results of which will be soon published. The parties who have done the most work, are Dr. Franz Boas, James Teit, H. I. Smith, Livingston Farrand, Dr. Rowland B. Dixon, Dr. A. L. Kroeber, and Berthold Laufer. The result is that many resemblances between the cultures of the Siberian tribes and the northwestern American Indians have been traced, and the probability is that the Ainus and the Tennehs will be shown to have many things in common, as our correspondent, Father Morice, suggests in his article.

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HOUSES AMONG THE HURONS.

Formerly the houses were made on the communal plan with long, narrow huts made of bark and saplings with a door in either end, but they gave up their old style and took to building after the manner of the early French settlers, log and board houses which were disposed in double rows along narrow lanes and were divided into rooms.

Each household consists of a single family comprising only a few persons, but is at present very unlike the patriarchal household of their ancestors wherein eight or ten or as many as twenty-four families lived under one roof.

The old clan system was such that a child belonged to its clan first and to its parents afterwards. The clans were related to one another throughout the whole tribe and the child was provided for by the clans, but the inheritance of its parents was distributed among the clan. The old Huron style of dress consisted of a short skirt, leggings and mocassins, but it has changed to the modern style. (See the report of the ethnological survey of Canada, 1901, article by Leon Gerin.

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The *Open Court* for February, 1902, has an article on the Mysteries of Mythra, by Prof. Franz Cumont, and another on Indian Burial Customs, by Dr. William Thornton Parker.

The *Biblical World* for January, 1902, has an article on Grinding in Ancient and Modern Palestine, by Prof. Gustaf Dalman, P. H. B., DD., Leipzig.

The *American Architect* for Feb. 1, has an article on The Hermes Recovered Near Anticythera, by Arthur Stoddard Cooley, reprinted from the Boston Transcript. Also on Excavations Near Cairo, with the belief that a Buddhist Mission went from India to Egypt about 250 B. C.

ANTHROPOLOGY IN COLLEGES AND UNIVERSITIES.—An article on this subject, by Prof. Geo. MacCurdy, reports thirty-three colleges and universities in which anthropology is taught as follows: Beloit, Bellevue, Boston University, Brown University, Clark University, Columbian University, Washington, Creighton University, Omaha, Dartmouth, Georgetown, Harvard, New York, Ohio State, Chicago, California, Illinois, Urbana, Indiana, Bloomington, Kansas, Lawrence, Minnesota, Missouri, Nebraska (Lincoln), Pennsylvania, Philadelphia, Vermont (Burlington), Wisconsin (Madison), Western Reserve (Cleveland), Willamette (Oregon), Yale (New Haven), Philipps' Academy.

The department is an adjunct of Sociology in 9, Philosophy, in 5, Psychology in 3, Geology in 5, Medicine in 1.

Philipps Academy, at Andover, has two instructors and a collection of 40,000 specimens. In addition to this report, it is well to state that a large number of smaller colleges, such as Carroll College at Waukesha, Wisconsin, and some of the Normal Schools, are giving considerable attention to the subject. The museums are also establishing lecture courses, and the prospect is that the department will, before long, be represented in all colleges.

Any college which does not have Anthropology taught as a part of the curriculum, will be considered behind the times.

THE AMERICAN ANTIQUARIAN AND COLLEGE LIBRARIES.

In connection with the above, it is well to state that the AMERICAN ANTIQUARIAN has been recognized as authority from the outset, and complete sets are now in the libraries of the majority of the institutions mentioned. Other journals have risen since it was established, but as it was first in the field, and has since been sustained by prominent archæologists, it is still sought for, and back numbers are picked up closely.

The fact that the magazine has been published in the interior, where the majority of prehistoric works are to be found, the subjects treated have been chiefly those which relate to the antiquities of this continent, as compared with those of other continents; in other words, archæology has been the chief department. Still, mythology, linguistics and ethnology have received marked attention. Physical anthropology has not been represented to any extent, though the reports of excavations have mentioned the peculiarities of the bodies discovered, and especially the burial customs of the different tribes have been described.

The diversity of the origin of the human race has never been advocated, and the theory that there were different centers has not yet been adopted. In fact, it seems premature to advocate such a theory, especially as the palæolithic age has proved to be conspicuous by its absence.

RECENT DISCOVERIES.

GREAT COLLECTIONS.

A LARGE COLLECTION OF RELICS IN THE REINDEER PERIOD. Mr. M. Massenat has been a diligent explorer of the caves and rock-shelters in the Vezere valleys. The relics represent the life and industry of the Magdalenian age. M. Massenat was led to recognize three epochs; the "Laugerie," the "Cro-Magnon," and "Le Moustier," corresponding to the "Magdalenian," "Solutrean" and "Mousterien," all embraced under the so-called "Reindeer Age." They consist of flints, reindeer antlers and reindeer bones.

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RELICS FROM EAST AFRICA. In contrast with the preceding is a collection by Alfred Sharpe, from Uganda, East Africa. This consists of a white wood stool, twenty-five inches high representing a squatting female figure, resting on a pedestal and supporting with upraised arms the seat. Also a double gong, hammered out of soft iron, and a stone hammer, six and a half inches long, from the Mamhwe country. These stones are found in the ground and are supposed to be supernatural stones.

A still more interesting collection was gathered from a pre-historic cemetery at El Amrah in Egypt, six miles south of Abydos. Here were about seven hundred graves belonging to the "New Race." The graves yielded a celt, mace-heads, forked hunting lances of flint, dagger of copper, clay dolls, some cloth wrapped around a body, baskets used in the manufacture of pottery, a pottery coffin. Most interesting of all was a fragment of pottery which represented an ancient house, the only pottery-house which has ever been discovered. The house is oblong in shape, sloping back from the base something like the Mastaba of the Egyptians, but curved in at the top but with no roof. From its form it was supposed to represent a house or hut, built of boughs, laid with wattle-work of twigs, covered with mud. The "New Race" had occasion to use boats as the land was more swampy than now. Some of the boats are represented in models of pottery. They were also a pastoral people, for in no less than three graves were found pottery groups of kine with crooked horns, weapons of war and the chase such as hunting lances, mace-heads, as well as copper daggers, showing that the people were hunters as well as herdsmen.

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IN CALIFORNIA. Basket work and specimens of cloth, presented by Rev. Selwyn C. Freere, have been placed in the British Museum, a gift from Rev. R. W. Summers, a missionary in California. The baskets are cylindrical and have figures of horses and other animals, woven in the sides. The collection contained hemispherical mortars, cylindrical pestles also lances and arrow-heads of chert and obsidian, plummet-shaped stones, supposed to be charms, sinkers, hammer heads, shell beads, bone needles and awls, flat instruments for smoothing mats, also water-tight baskets and large stone mortars.

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FROM NEW ZEALAND. Collections made by Sir George Grey and bestowed upon various institutions, but mainly in the Art Gallery of Auckland. In this collection is the image called Matua Tonga made from red volcanic stone, representing the reproductive powers of nature. These relics have been kept secret. No one but the highest chiefs or the Tohunga or priest of the Maori being allowed to see them.

BOOK REVIEWS.

THE HUMAN EAR; ITS IDENTIFICATION AND PHYSIOGNOMY: Miriam Ann Ellis. Adam and Charles Black: London. The MacMillan Co.: New York. 1900. 160 pp. x, 225. \$1.75.

As the author of this book continually refers to science and anthropology, and as the publishers announce the work as rivalling those of Francis Galton in importance, we naturally expect to find it a carefully developed and scientifically exact treatise. As a matter of fact it is nothing of the sort. It is a book for popular readers, chattily written. It touches various suggestive topics lightly. It contains some original ideas, attractively presented, in a notably feminine way. The subject examined is the human outer ear, the shell or concha. Miriam Ellis studies it from the point of view of identification. Each normal individual has two ears; they are unlike; each of them presents a number of variable features. If the border of the ear is divided into five parts each pair of ears gives ten variable elements. The possible combinations of these ten elements give a good basis for identification. The author has devised a method of making nature-prints of ears and a system of card-records. Her plan is not suggested for the identification of criminals but of honest people. She gives no clear directions for putting the system into practice nor any good reason why it should be used. Persons who might be willing to dirty their finger tips for an anthropological friend or for the insurance company will find it less agreeable to have an inked roller pass over the ear and carry its dirty coating into the hair. We can see how a wide use of either the Galton or the Ellis system can be made for police purposes under police direction; we hardly see how either can be widely applied to non-criminals, who retain freedom of action. If collecting ear-prints is to be a family matter, like the list of names and birthdays in the old bible, or if it is to be a fad, in the line of a new sort of autograph collection, no doubt it is practicable. We can even imagine a considerable rivalry between collectors, in securing the largest number of ear-marks of eminent persons. While the author appears to consider this the most important feature of her study, she really devotes more space to the subject of ears as an index of character. Thus the book is timely in these days of revival of astrology, phrenology and palmistry. Far be it from us to deny some basis to physiognomy! That a man's face, including his ears, is—to a degree—an index to his character, no one doubts. Nor does any one doubt that the forehead of a nominally intelligent man and that of a microcephalic idiot differ, and this difference has an easily apprehended meaning. But, just as the minute subdivisions of faculty localization of the phrenologist arouse doubt and opposition in the mind of the anthropologist, so such statements as the following must jar on the scientific thinker:

"This is an example of energy in exceptional circumstances. Division (3) absorbs Division (4) in the right ear and pulls it too high; and in the left ear Division (3) is as large as Division (4). Division (5) has a large place in each ear and is well shaped. Independence is shown in the top of the pinna being nearly flat. It is this together with the size of Division (5) that gives the energy in looking after the well-being of many. The pair belongs to an Irish lady, a nurse at the Royal Naval Hospital at Haslar. Miss E. Keogh is one of the only two naval nurses who have received a medal."

One can only wonder at such statements as he wonders at the statements of the palmist. Do not the facts regarding Division (3) and (4) in the two ears counterbalance? It is then the largeness and well-shapedness of Division (5) and the flatness at the top of the pinna that give Miss Keogh her medal. When we can say what relation there is between these peculiarities and the character, we may for the first time speak of science.

We need not pursue the author's discussion of ears and heredity and ears in art, in folk lore, and in literature. They are treated in the same sketchy way. If the book made no pretense we could simply dismiss it as interesting and vivacious. As it is we must meet it with criticism. (F. S.)

- L'ANIMISME FETICHISTE DES NEGRES DE BAHIA: Dr. Nina-Rodrigues. Reis and Company: Bahia, Brazil. 1900. 8° pp. vii. 158.
 METISSAGE, DEGENERESCENCE ET CRIME: Dr. Nina-Rodrigues. A. Storcke et Cie; Lyon, France. 1899. 8° pp. 40 with plates and diagrams.
 DES FORMES DE L'HYMEN: Dr. Nina-Rodrigues. J. B. Bailliere et Fils; Paris. 1900. 8° pp. 38 with cuts.

Dr. Nina-Rodrigues, of the medico-legal faculty of Bahia, Brazil, has investigated a variety of interesting subjects in Brazilian anthropology, ethnology and criminology. Three of his recent papers are before us. In his *L'animisme fetichiste des negres de Bahia*, he presents most curious data. The Bahia negroes—though nominally Catholic—are much what their African ancestors were in religious belief and practice. Among them are plain survivals of Mahomedanism with its unbounded love for amulets. Far more interesting are the numerous survivals of pure paganism. Hydrolatry, dendrolatry and litholatry still remain and examples of all three are given; there are however other objects of worship than water, trees and stones. The author discusses the method of securing and sanctifying fetiches of all sorts. He also describes in detail the fetish priests, places to worship, modes of worship, etc. Most interesting perhaps of all the curious subjects he presents, are the states of ecstasy or possession into which the devotees pass: these are critically examined, from the point of view of the medical expert.

In *Metissage, degenerescence et crime*, our author presents a study of the district of Serrinha, in the State of Bahia. The district has a population of from ten to twelve thousand, of whom about two thousand live in the town of Serrinha. Degeneration and neurotic diseases are shown to be frightfully common in this population which is for the most part of crossed blood—negro, indian and European. Tables are presented of degeneracy, neurosis, and criminality, showing themselves in certain families through generations. Nina-Rodrigues attributes this abnormal frequency to the mixture of races. The idea is not new and every traveler, in lands where great mixture of notably differing races has taken place, has felt that abnormalities are really numerous in such populations. But our author's paper is not convincing. Degenerescence and crime occur with undue frequency in those of pure European blood in those lands. If this is so, their occurrence in the mixed bloods may not be more frequent, and may be due, not to the mere fact of crossing, but, to the degenerescence in the introduced whites and blacks. Without denying the awful frequency of abnormalities in the mixed population, we object to considering it due to crossing, *per se*. It is but fair to state that Dr. Nina-Rodrigues himself recognizes that degenerescence takes place in the descendants of European immigrants.

In his third paper, Dr. Nina-Rodrigues presents an important study, having both scientific and practical, *i. e.* medico-legal bearings. He suggests a simpler and more complete classification of forms than seems to have been offered before and shows that the form has decisive importance in many cases where legal questions, regarding the rupture of the membrane, arise. (F. S.)

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ZUNI FOLK-TALES. Recorded and Translated by Frank Hamilton Cushing, with an Introduction by J. W. Powell. New York and London: G. P. Putnam's Sons: The Knickerbocker Press, 1901. 474 pages; large 8°, 12 plates, and many pen and ink sketches: \$3.50.

Aside from the scientific value of the thirty-three tales presented in this posthumous work of Cushing, they possess a literary charm which heightens their fascinating interest. Cushing was a prince of story-tellers, and the pleasure he took in the narration was intensified to his hearers. It is apparent that this book will be sought for by those studying the Indian mind, expressed in his love, as well as by connoisseurs of literature. This

work marks the first adequate presentation of folk-tales of American Indians; it is a revelation that there is something besides paucity of invention, and a crudeness verging on grotesqueness, or a weak assimilation of European motives to be found in the mythology of our aborigines. This flatness of Indian folk-tales has been the despair of Andrew Lang, and of other students in this field. There is a breadth of imagination and a boldness in the handling of the paraphernalia in these tales, that is to be expected from dwellers in the Valley of Zuni—a country of heights, broad, brilliantly-colored spaces, and the clear sky of semi-arid southwest over all. One can never forget the sensation, when, after toiling over the barren mesas between Navajo Springs and Zuni, he looks down into this great valley and gets an impression of its vastness and mystery.

The cycle of animal stories is very interesting. The coyote is the clown, and gets the worst of the bargain with the animals he encounters. His adventure with the locust is full of humor. The eagle, hawk, raven, turkey, owl, prairie dog, gopher, bear, badger, deer, mountain lion, antelope, coyote, wolf, mole, turtle, snake, tarantula, beetle, and other animals, play their parts well. The absence of rabbit stories is noteworthy. The adventures of the Twin War Gods, especially in their contests with demons and other mythical beings, are set forth in a number of the tales. This entertaining and instructive book has an introduction of ten pages, by Major J. W. Powell, in which is set forth clearly the present knowledge of the mythology, or folklore, of the American Indians.

WALTER HOUGH.

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TRANSACTIONS OF THE CANADIAN INSTITUTE. DENE SURGERY by the Rev. Father A. G. Morice, O. M. I. (Read 3rd Feb. 1900.)

This pamphlet is in explanation of certain implements found close by Indian skeletons near Stockton, California. The implements have sharp points, curved outlines and serrated edges. They were pronounced to be frauds at first but afterward said to be used for lacerating and bleeding of temples. The idea of their having been used as saws must be abandoned. There are five methods of blood-letting among the Denes, one of which explains the curved shape and serrated edges of these relics. It consists of scratching numerous lines on the limb and placing the bruised root of the hemlock plant on the scratches. A stone curry comb made in the curved shape would be very suitable for this.

Mr. J. Mooney refers to two methods of blood letting among the Cherokees; one of them is by scratching. This explains the relics and proves them to be genuine. The pamphlet goes on to describe the different methods of surgery among the Denes and is very useful, and would be especially so to surgeons.

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RESEARCHES IN THE CENTRAL PORTION OF THE USUMATSINTLA VALLEY By Teobert Maler. (Memoirs of the Peabody Museum of American Archaeology and Ethnology, Harvard University, Vol. II, No. I.) Cambridge, 1901, 4°. 75 pp.

This sumptuous publication embodies not only the results of Mr. Maler's explorations in the interest of the Peabody Museum between the years 1898 and 1900, but also the narrative, with its appropriate plates, of his earlier (1895) researches amid that wonderful group of ruins, lying upon the Guatemalan side of the Usumacinta River—the Piedras Negras.

Interesting indeed, is the account of the romantic expedition to the Lake of Petha, buried in the dense forests and known only to the outer world through the reports of the Lacantun traders who come from its vicinity. Mr. Maler was rarely favored in many ways in his effort to acquaint himself with the region and its natives. The discovery of a deserted settlement, with its fields of bananas, sugar cane and maize, reads like a passage from the "Day Dream." The death of its chief inhabitant had

caused the hurried flight of every living creature, and not even a four-footed guardian was left to protest against the prying into hidden corners, and the profane handling and photographing of sacred things.

The complete circumnavigation of the lake and its ramifications brought to notice a rock painting, the chief figure of which was the plumed serpent head so familiar to the student of Mexican and Mayan symbolism, who, I think, will scarcely recognize in the forked and bent tongue of the monster, "the act of swallowing a man head foremost," (page 30.) Comparison with the feathered ear pendant (?) immediately beneath shows that no human shape is there portrayed. Whether or not Mr. Maler's explanation of the group drawing be accepted, the suggestion incorporates a statement of no little interest, in view of the unearthing, in 1895, of a series of pots on the Rio Cunany, Brazil. The words are: "Certain perforated vessels in which the women wash the maize, which has been soaked in lime-water." A probable service is thus supplied for those jars with a large number of perforations which have aroused so much conjecture as to their use. (See, for example *Globus*, Bd. 78, S. 138, Bd. 79, S. 49 v, 115.)

Of the many centers of Mayan life, more or less thoroughly investigated by Mr. Maler, there is space to refer to but one—Piedras Negras. Here were found rock sculptures, the debris from innumerable houses, the akropolis with its Casa Grande, the ruins of no less than ten temples, thirty-seven stelæ, six lintels, and five altars. The publication of these monuments furnishes material for many a long day's study and a more extended reference to the various figures is not at present desirable, but one is tempted to ask why on page 46 (Stela I.) and again on page 58, (Stela XI) the sculptures, here, as elsewhere in the Usumacinta Valley, the work of a pure Mayan people, are referred to the Nahuatl god Quetzalcoatl (Ketsal ko itl) in lieu of his Mayan analogue Kukulcan, whose attributes are well known to be the same. On Stela 14, closely allied to Stela 11, it is suggestive to find the human hand occurring in the place of the plume holder, (a position occasionally occupied by a glyph) when it is remembered that "Kab-ul," the Working Hand, was reputed to be one of the symbols of the Mayan culture hero, Itzamna. (Brinton after Cogolludo, *Myths of the New World*, p. 216.)

Throughout this valuable report there is one note which rings out again and again above all others—a cry for haste in the preservation of these priceless legacies from the ancients, a cry of despair at their ruthless and irreparable destruction. "Add to this wanton vandalism, the damage indirectly occasioned by the lumbering industry in the downthrow and breakage of the massive stelæ, whose upturned sculptured and painted faces rapidly lose their individuality, and the picture is a distressing one for the Americanist."

H. NEWELL WARDLE,

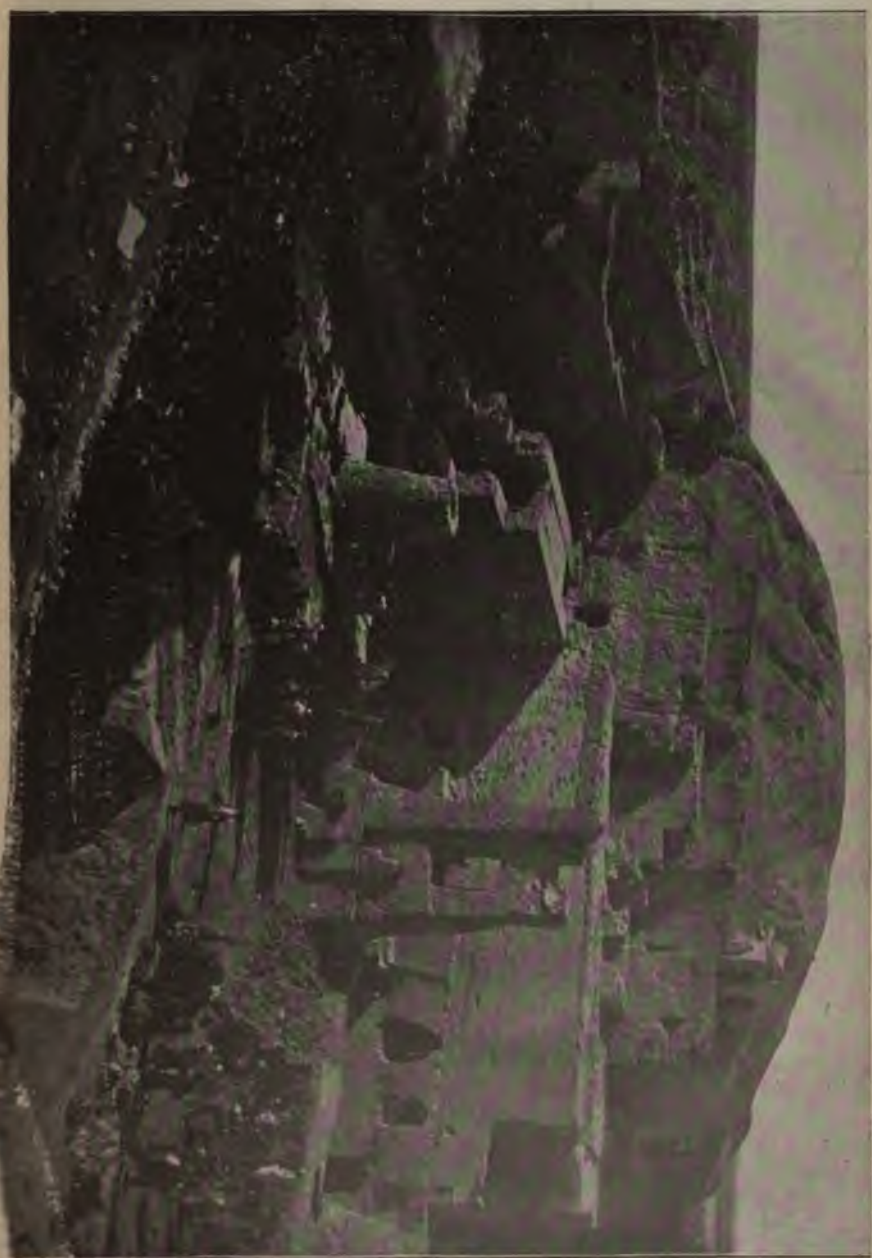
"Academy of Natural Sciences, Philadelphia."

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GOVERNMENT MUSEUM, MADRAS. CATALOGUE OF THE PRE-HISTORIC ANTIQUITIES, by R. Bruce Foote, Madras, 1901.

Of the ages represented by this collection, the palæolithic is numerically the smallest, the neolithic contains very few high-class specimens, though an oblong oval ring-stone and a club-head, with some pottery and cylinders and jars are found among them. The bronze age is represented by a large number of articles, such as vases, beads, spear-heads, but specimens of the iron age are very numerous. The iron age pottery is quite different from that of the bronze age, but is, after all, not so well finished, or so attractive. The iron weapons resemble those of the bronze age, in shape and appearance. They consist of arrow-heads, knives and chisels. It is an interesting catalogue and one that would be valued by archaeologists and collectors.

PLATFORM, WALL AND ZIGURAT AT NIPPUR





BURIAL PLACES AND FOUNDATION WALLS AT NIPPUR.

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THE RUINED CITIES OF ASIA AND AMERICA

BY STEPHEN D. PEET.

One of the saddest things, in connection with the history of man, is: that so many races have risen to prominence, and then declined and left only a mass of ruins as the signs of their presence and power. This was the case in the far East, where the opening of history is supposed to have occurred; it is also the case in other lands, where history is more recent, and where the spirit of progress is still manifest.

If we go back to the earliest period, we find certain nations in a low stage of advancement, not much higher than the savages of our own country; but that was a time before history began to be written, and when man was without any skill—either in art, or in architecture, and was incapable of making a record for himself; but there came a time, when his powers were so developed, that his very works became his monuments, and his written words marked the beginning of his history. The particular region which has been fixed upon as, the earliest home of civilization, and the first place where cities are supposed to have been built, is that situated near the southern coast of Asia, between the two rivers, which have been conspicuous in history, the Tigris and the Euphrates.

This, then, is the place where we shall begin our study of the Ruined Cities of the World. It is also the place where most scholars begin their study of history, and the place where the students of comparative religion begin their study of mythology and tradition. To this region, also the theologians and the bible scholars go back for their starting point; for here, it is supposed, that the Garden of Eden was situated.

It is true, that the centre of population gradually moved from the South to the North, and under the rise of the "Seven Great Monarchies," the cities of Babylon were the first, the cities surrounding Nineveh were the second; but in all these regions, the early cities are in ruins, and scarcely anything is seen of them except the "Remains of Lost Empires."

There were other cities which afterward arose, some of them in Persia and Phrygia, others in Phœnicia, still others in Greece, in Crete, and Cyprus, and in the Islands of the Sea; but they are nearly all in ruins, and are at present, the objects of curiosity to the traveler; the places where the archæologist and the explorer does his chief work.

I. In taking up the subject of these ruined cities, we shall follow the geographical and historical order; taking the ruined cities of Babylon as the first object of study.

The testimony of explorers, is that the cities of the plain of Babylon were numerous, and in them were great palaces and towers. Around them were walls and gateways, which were well guarded. Outside of the walls there were, in most cases canals, which were used for irrigating the soil. The cities were generally situated upon the rivers, somewhat remote from the seacoast. There were boats of many kinds to be seen upon the rivers and in the canals. Frequently four cities belonged to the same province and were under the same dominion, and the claim is that there was a division of the territory according to the points of the compass, the religion of the people requiring that the king rule, in the name of the divinities which were in the sky, the center of all being the place where the gods and men met together.

Now it is noticeable that this same custom has prevailed among other nations of the earth, some of them quite remote from this point, for the Chinese hold that theirs is the Celestial Empire, and that the Emperor rules in the name of the divinity; the four spaces above, and the four below, with a meeting place of the two in the centre, making nine divisions of the celestial capitol, as well as nine divisions of the Celestial Empire. It is also held by some that in America a similar custom prevailed. The Pueblo tribes believed that there were six divisions in the sky and six divisions in the earth; the zenith and the nadir being added to the four quarters, the meeting place of the two making the thirteenth point. In accordance with this theory there were seven Pueblos at Zuni, New Mexico, though in the city of Mexico itself, there were four divisions only, with a temple in the center of each one, while the palace and the great temple, or Teocalli, was at the meeting place of the four; while streets which divided the city went from the great temple to the four quarters of the earth.

It is strange that this symbolic geography should have existed at so early a date, and that it should have prevailed in so many distant places; but this shows that society was, at the first, controlled by the religious sentiment, and that there was something sacred even in the location of the cities and in the arrangement of their streets and gateways; in the situation of the palaces and temples, and in the very style of their architecture and art. Such was the case, not only in Babylon and Assyria; but in Egypt, Persia, Phœnicia, and all the cities of the east.

It is very remarkable that the cities which existed at an early date in Babylonia, should have been identified in recent years, and that their size, number, relative situation, and architectural character should have been ascertained by the examination of their ruins, and that we should have been able to



Kishu Ur-Nisak of Lagash, surrounded by his sons and pages.
Reprinted in *Recent Researches on Middle Eastern Antiquities*, from the *Journal of the American Oriental Society*. Discoveries in Chaldea



Hittite relief, with inscription, from a mound near Malatya, found May 23, 1894,
and now in the Imperial Museum at Constantinople

This plate and the one on the preceding page, give us an idea as to the appearance of the Accadian race, of which the Hittites were a branch. In the first plate we see the costumes of the people and can easily recognize in their faces a resemblance to those which were sculptured on the walls of the palace at Palenque in Central America, for the same retreating forehead and hooked nose can be seen. There were horses and chariots, but the warrior uses the bow and arrow in hunting lions. This warrior, though a Hittite, has the same features as the old Accadian king and his sons, and they are not unlike the features of the captive kings of Central America.

identify the form of religion which prevailed. It is to be noticed, however, that the earliest specimens of art, as well as those of architecture, have been connected with the religious sentiment, and that history and mythology are everywhere mingled together in the early records.

It was once supposed that the pyramids of Egypt were the earliest monuments, and that these were the only structures which were erected in obedience to the religious sentiment but it is now held by many of the archaeologists that the cities of Babylonia antedated the pyramids of Egypt, and that the cities were erected and ruled in the name of the divinities; the kings and priests being united in their government.

As to the race which brought in the first civilization, and introduced the earliest forms of architecture, there is some uncertainty; but the general opinion is that the earliest races belonged to the great Turanian stock, the same stock as were the Finns and Chinese of the North, and the Dravidics of India, the Hittites of Syria, and possibly the same stock as the North American Indians.

The scriptures represent that three races which sprung from the three sons of Noah; but that their descendents became disobedient and undertook to erect a tower toward heaven, to escape from any flood which might arise in the future; but the confusion of tongues occurred, and people were scattered in different directions. An explanation of this has been given. It is that the Accadians, Semitics, and the Mineans, or Ancient Elamites, spoke different languages and this resulted in their dispersion. This story of the dispersion is significant when considered in connection with the tablets which have been discovered representing the old Accadian and Hititte race, illustrations of which are given in the plates.

The Accadians, or the Turanians, may have been, and possibly were, the builders of those rude stone monuments which are scattered all over the globe; in India, in China, in Japan, and in Peru. The same kind of monuments are found in Syria, in Northern Africa, in Great Britain, in Scandinavia, and in South America. They nowhere reached the stage of civilization, which appeared among the Semitics or the Aryans, though they built many cities, some of which are found in China, and others in Central America; the style of those in Central America being very similar to those in Babylonia. The Semitics occupied, at the earliest date, the region near the mouth of the Tigris; but spread their empire toward the Mediteranean. They included the Babylonians, Assyrians, Hebrews, Arabs, and Phœnicians. They were great builders, and to them may be ascribed most of the cities of the east, which are now in ruins. The Aryans, or Indo-Europeans, came after the Assyrians, and built many of those ruined cities, which became so distinguished in history. Their first seat of empire was the plateau of Iran, situated at the head

waters of the Tigris and Euphrates, but they divided; one portion went east into India, the other went west and became the builders of the great cities of Ecbatana and Persepolis, and afterward of the great cities of Troy, Ilium, Mycenæ, Tiryns, Athens, and Corinth; the ruins of which have lately received so much attention. It is to be noticed, however, that several thousand years elapsed between the building of the cities of Babylonia by the Semitics, and the beginning of the architecture of the Aryans, or Indo-Europeans, and that a new style appeared among the Persians, which had great influence over the Greeks and Romans, and the growth of architecture, among these two races covered the whole period of ancient history, and has furnished to the world the grandest specimens of art that are known.

As to the styles which were embodied in these ancient cities, we shall need to take the testimony of the explorers



SCENERY NEAR MOSUL.

who have recently entered into the field, as well as that of the ancient historians, who were familiar with them when they were occupied by teeming multitudes. Layard says:

"The architecture of a people must necessarily depend upon the material afforded by the country, and upon the objects of their building; but the descriptions given of the ruined edifices of ancient Assyria, show that they differ in many respects from those of any other nation with which we are acquainted. The earliest habitations, constructed when little progress had been made in the art of building, were probably but one story in height. In this respect the dwelling of the ruler scarcely differed from the meanest hut. It soon became necessary, however, that the temples of the gods, and the palaces of the kings, depositories at the same time of the national records, should be rendered more conspicuous than the humble abodes by which they were surrounded. The means of defense also required that the castle, the place of refuge for the inhabitants in the time of danger, or the permanent residence of the garrison, should be raised above the surrounding country, and should be built so as to afford the best means of resistance

to an enemy. As there were no natural eminences in the country, the inhabitants were compelled to construct artificial mounds, hence, the origin of those vast, solid structures, which have defied the hands of time, and with their grass-covered summits and furrowed sides rise like natural hills in the Assyrian plains.*

"It was first necessary to form an eminence, that the building might rise above the plain and might be seen from afar. This eminence was not hastily made by heaping up earth, but regularly and systematically built of sun dried brick. Thus a platform, thirty or forty feet high was formed, and upon it they erected the royal, or sacred edifice,

Sundried bricks were still the principal, but could not in this instance, for various reasons, be the only materials employed. The earliest edifices of this nature appear to have been at the same time public monuments, in which were preserved the records or archives of the nation, carved in stone, and on them were represented the exploits of kings, or the forms of divinities; whilst the history of the people, and invocations to their gods were also inscribed in written characters upon the walls."

"The spaces between the great public edifices were probably occupied by private houses, standing in the midst of gardens and built at distances



RUINED TOWER AT BIRS NIMRUD.

from one another, or forming streets which enclosed gardens of considerable extent. To the palace was attached a park, or paradise, as it was called, in which was preserved game of various kinds for the diversion of the king. This enclosure, formed by walls and towers, may, perhaps, still be traced in the line of low mounds branching out from the principal ruin. Now, the peculiarities of these cities of the plain were all the same. Each one had in its centre, as the chief object, the great ziggurat, or tower, which reminds us of the tower of Babel, a structure which is supposed to have been built in imitation of the mountains, which were, perhaps, the earliest abodes of the people, or at least, the most impressive objects of nature."

Layard speaks of the general extent of the city, and of the canals and gardens which were within the walls.

Dr. Peters also speaks of the number of the cities and the extent of the canals. He says:

"In ancient days the whole country teemed with a vast population, and was dotted with innumerable cities. Another class of ruins, the ruins of

*Nineveh and Its Remains.—Vol. II, p 198.

ancient canals I have not noticed at all, although they are, if possible, more numerous, more striking, and more characteristic than the ruins of the cities. They run like great arteries through the country, lines of mounds ten to thirty feet high, stretching in all directions as far as the eye can reach."*

"The names of the cities of Babylonia are all well known, especially to the Bible students, as Ur, of the Chaldees, was the childhood home of Abraham. 'Ur was not only the seat of a great temple, it was a great city of the first political importance, dominating southern Babylon about 4000 B. C. Both Ur and its sister city Eridu, were commercial towns, and teak found in the ruins of the latter proves an early connection with India. South of Eridu we find Sipparah, the ship city, where the records were buried during the flood. Both Ur and Eridu seem originally to have been situated near the sea, if not on it, but at present they are one hundred and twenty miles from the Persian gulf."

This furnishes a basis for calculation as to the age of these cities. It is supposed that they stood on the shore about 6000 or 7000 B. C., a date which has been fixed upon by Dr. Hilprecht from a study of the ruins of Nippur.

Now, it is remarkable that this description of the cities of the east, with their gardens, and canals, and walls, and platform mounds, on which temples were erected, corresponds so closely with those given by the Spanish historians of the cities of Mexico and Central America, that we might take the picture of one for that of the other. The explanation given of the difference of the ruling classes, from the common people, will also apply to the cities of America. The same is the impression which is given by the reports of the explorers, for they all speak of the towers, which were the most prominent feature of every city.

It appears that in Mexico, the temples were in the shape of high towers, and upon the summit of terraced pyramids and were the most conspicuous objects in the city, and were often seen crowned with the smoke of the sacrifices. It has also been held by some authors that these pyramids or teocalli were built in imitation of the mountains whose summits were sometimes crowned with the clouds of smoke, which arose above the volcanic fires.

Dr Peters says:

"To the early Hebrew mind, the mountain top or artificial high place afforded a means of close access to God."

"The ziggurat is composed of two stages, represented by the exterior wall and by the interior wall. About it on all sides are found rooms or corridors. This covered a space of something over eight acres, and was inclosed by a huge wall, which stood to the height of sixty feet and was almost fifty feet at its base and thirty feet at the summit. On the top of this great wall, at the southeast, was found a series of rooms, fourteen in all, of different sizes. They were irregular tower-like masses at three of the corners of the wall; immediately to the southeast of the ziggurat, a long street ran northeast and southwest. Various fragments of pavement were found; columns of the same general significance as the pillars which stood before the temple at Jerusalem. Similar columns were erected in front of all Phœnician temples. Bent found in Mashonaland, in what seemed to be a Phœnician building, solid masonry columns which had the same significance. The Arabs regard these columns as male and female, and as signs

*See "Nippur," by J. P. Peters, D.D., vol. II, p 306.

of divinity. The brick causeway by which to approach the temple, came out at a point between the two columns; about nine meters below the surface a solid terrace of crude brick was found; above it a causeway and clay tablets, belonging to the second dynasty of Ur, 2500 B. C., and below door sockets of Sargon and fragments with a date as early as 4000 B. C. A conduit or drain for carrying water from the upper surface, was found built of baked brick, and over the conduit was a perfect arch, which is the oldest specimen of the arch ever found.

"It seems to me that the Jewish, Phœnician, and Assyrian temples are in origin, similar to the Ziggurat temples, such as we have at Nippur, and that the holy of holies correspond to the mysterious shrine on the summit. The temple is so arranged that one ascends constantly, the holiest portion being the highest.

Precisely the same meaning is attached in Babylonia to a high place. The ancestors of both the Hebrews and the Babylonians, although inhabiting the plain country of Babylonia, were not autochthonous there. Their forefathers had been natives of the mountains, and so they made the temple of Bel at Nippur to represent a mountain.

The same opinion was formed by Dr. Hilprecht, who discovered the platform of unbaked brick upon which the ziggurat stood, and formed an open court at its base, a discovery which led him to carry back the date of the first city to a marvelous antiquity, 7000 B. C.

Next to the tower itself, the most interesting and ambitious structure, was the Court of Columns, which is fifteen meters square. On three sides of this ran a sort of edging, out of which arose four round brick columns, resting on square bases. In front of this court in the northwest side were the remains of a long narrow pavement. The columns were built of brick which were made to fit together in the center; but leave a considerable space in the middle, and were dressed on the outside, making the surface smooth and true. These are supposed to be the earliest columns in existence. They date back to a period of 5000 B. C. The court itself was surrounded by buildings on all sides, the walls being of unbaked bricks and large blocks. Here we have another feature which seems to have been common in all of the early cities of the world.

Columns and courts surrounded the temples and towers and we are reminded of Solomon's court, as well as the courts which were common in Mexico and Central America. Columns of different forms, and very much more elaborate, were found at Tello, showing that they were a common feature, and appeared at a very early date. They prevailed from about 3000 B. C. until about the thirteenth century B. C.

There were various coffins found in the ruins at Nippur, which date back to 1300 B. C., some of them slipper-shaped and some of them tub-shaped. These show considerable progress of art, but the most interesting specimens are the door sockets, with inscriptions on them, which date back to 2500 B. C. Dr. Peters says in conclusion:

"Babylonia is one of the places where civilization and culture originated and was the birth place of that civilization, to which we have fallen

heir, and the indications of the discoveries at Nippur suggest that the settlement of these great cities was made not later than 6000 or 7000 B. C. At that remote period, men inhabited this country sufficiently advanced in civilization to found cities, build houses, make pottery, and in general carry on the industries of settled and civilized life.

About 2800 or 2900 B. C. we find the city of Ur exercising a hegemony over all of southern Babylonia, and the kings of that city styling themselves princes of Eridu, Erech, Nippur, and Wurka. Apparently there was a close intercourse with Egypt in those days, and the art of Babylon was strongly influenced by the traditions of the Nile. Each seems to have suffered greatly from the oppression of the Elamites, and it was apparently during the period of the Elamites supremacy, that Abraham migrated into Canaan, and the expedition which Amraphel, king of Shinar, Arioch, king of Elasar, Chedorlaomer, king of Elam and Tidal, king of Goyim, was conducted against the cities of the valley of Jordan."

II. Here, then, we see that the first great empire which arose in the east is entirely in ruins, and buried beneath the ruins of later cities, with a period of two thousand years and more marked by the intervening layers. We shall, then, need to go to another locality to find the records of that intervening period. They will be found in connection with the second great dynasty, which arose in Assyria, a region to the north of Babylonia. Here there are also many ruined cities, but they are cities constructed partly of stone, rather than of sun dried brick. They are built after the same general pattern; but the difference consisted in the character and finish of the walls, the size and style of the palaces, and especially in the character of the columns, which had begun to be used.

It is curious, that in Assyria, as in Chaldea, there was a special pre-eminence of four cities. This is shown in the book of Genesis, where Asshur is said to have builded Nineveh, Rehoboth, Calah and Resen. Assyria contained, besides these principal cities, a vast number of large towns, so numerous that they cover the whole face of the country with their ruins. The ruins opposite Mosul are those of Nineveh, twenty miles south of Nineveh, is Calah, marked by extensive ruins at Nimroud. These ruins occupy an area somewhat short of a thousand acres, about half the size of the ruins of Nineveh. Forty miles below Calah was Asshur, marked by the ruins of *Kileh Sherghat*. Nine miles from Nineveh stands the ruin known as Khorsabad, the walls well marked, their angles pointing to the cardinal points.

The palace of Sargon at Khorsabad has been described by Fergusson. The ruins lay fifteen miles from the Tigris. The remains of Khorsabad, Koyunjik, Nimroud, Karchemish, make the four corners of a vast quadrangle, which contained an area of two hundred and sixteen square miles, about ten times that of London. The ruins opposite Mosul consist of two principal mounds, known as Nebbi Yunus and Koyunjik. Xenophon, who passed close to the ruins of Nineveh, described the walls of the city. Up to a height of fifty feet, they were composed of hewn blocks of limestone, above this sun dried brick. There was a continuous series of battlements along

the top. The wall was pierced at intervals by gates, by which rose lofty towers. This castellated rampart was not the only means of defense, for outside the stone basement lay a water barrier, or moat. There are many pictures of the Assyrian castles, so that they are familiar. The palaces of Nineveh have been described and pictured by Layard with all their intricate adornment, and convey the idea of great magnificence.

The ruins opposite Mosul consist of two principal mounds, Nebi Yumis and Koyunjik, the platforms on which palaces and temples were raised. The first covers about forty acres and the second covers about one hundred acres and has a height of about ninety-five feet. On this artificial eminence were raised in ancient times, the palaces and temples. The entire length of this side of Nineveh was about two and one-half miles. The circuit of the wall was about eight miles. The rampart or wall, according to Diodorus, was 100 feet high and so broad that three chariots might ride side by side along the top. It was pierced at irregular intervals by gates above which rose lofty towers. Outside the wall was a broad, deep moat, into which the river was made to flow.

Among the architectural work of the Assyrians, the first place is occupied by the palaces. They made their temples insignificant in comparison. In the palace their art culminates. There every effort is made, every ornament is lavished. The Assyrian palace stood uniformly on an artificial platform, commonly composed of sun-dried bricks. In most cases the sides were protected by massive stone masonry, carried up perpendicularly to a height beyond that of the platform, crowned with stone battlements cut into gradines.*

The pavement consisted, in part, of stone slabs, sometimes inscribed, and sometimes ornamented. The terraces were at different elevations and were connected by staircases or inclined planes. The ascents were on the side adjoining the town. The palace arose perpendicularly, generally with the river, a moat or a broad lake at the base of the walls. In this respect they resembled the platform at Copan, which was washed by the waters of the river, with two secret or hidden channels, leading from the interior of the palace to the river.

The platforms in Assyria appear to have been rectangular, very much as they were in America. Palaces were commonly placed near one edge of the platform mounds. They were composed of three main elements, courts, grand halls, and small private apartments. A palace has usually from two to four courts, which are either square or oblong, and vary in size according to the general scale of the building. In one palace at Nimrud, one court had the dimensions of one hundred and twenty feet by ninety; at Khorsabad, the palace of Sargon had four courts, the largest of which was two hundred and fifty feet long and one hundred and fifty feet wide; the smallest about one hundred and twenty feet each way.

The palace at Koyunjik had three courts, measuring respectively ninety-three feet by eighty-four; one hundred and twenty-four by ninety, and one hundred and fifty-four by one hundred and twenty-five.

The palace of Essarhaddon had a length of one hundred and sixty and a width of sixty-two feet, and was divided by a wall down the middle to support the roof. The courts were paved with baked brick or with stone slabs. The halls were ornamented with elaborate sculptures, sometimes with a double line around the four walls. The most striking peculiarity of

*The ornaments of the walls by battlements, cut into gradines, may be seen in the building called the Nunnery at Chichen-Itza, though this is at the top of the wall rather than at the foundation.

the ground plans of this palace was that they were divided by straight and parallel lines into exact rectangles, though the buildings are irregular, especially in their internal arrangements. Rooms open into one another and have very few corridors or passages.

Another feature of the palace of Assyria was the portal. This was not so high or commanding in appearance as was the portal of Egypt; but they were, nevertheless, very imposing. They were ornamented with colossal, human-headed bulls on either side, and were probably spanned by an arch. Received within the portals, the visitor found himself in front of a long wall of solid stone masonry, which rose from the outer court to a height of at least twenty feet, with a flight of steps leading up to the entrance, where was another portal, or gateway, ninety feet wide, twenty-five feet deep, guarded by three winged bulls of gigantic size, which stood at right angles, facing the spectator. A colossal figure strangling the lion, representing the Assyrian Hercules, was also seen at the entrance.

"The great state apartments consisted of a suite of ten rooms, and in their external and internal decorations was the most splendid in the whole palace, all of them lined throughout with sculpture. This hall was called the Hall of Punishment. A second hall opened by three doorways upon a square court, which was occupied by buildings on three sides,



GROUND PLAN OF COURTS IN ASSYRIAN PALACE.

the state apartments on the northeast, the temple on the southwest and a range of buildings called Priests Rooms on the southeast."

This description by Rawlinson is suggestive for it brings before us certain analogies which have been recognized in the ruined cities of America.

The temple court was guarded by winged bulls, with a series of human figures or genii; but the courts and halls, with the sculptured figures, remind us of the halls of Palenque, though in the latter place, there are no domestic animals, and the human figures or genii are without wings.

The palaces of Central America were generally arranged about the four sides of a court, and were furnished with arched corridors, which fronted both directions; a corridor fronting on the court, and another fronting the stairway; though the space between the corridors and the stairways was very narrow compared with the paved platforms on which the palaces of Assyria opened. The height of the buildings was a matter of conjecture. Layard and Fergusson held that there was an upper story, and all their restorations represent the palaces having two stories, the upper story presenting a heavy cornice. These restorations, like that of the palace of

Peru, are not always to be relied upon. It is held that the palaces and temples were columnar.

But the column was not by any means as important a feature as it was in Egypt, Persia, Troy, and Greece, for the carved images, such as winged bulls with human heads, and winged human figures, were the most conspicuous architectural ornament.

The Assyrians did not employ this architectural ornament; but that they could not have been unacquainted with it is proved by pillars being represented, supporting a pavilion or tent in the older sculptures of Nimroud; but the first indication of the use of columns in buildings is to be found in Khorsabad. It is possible that a conventional architecture, invested with a religious character, was introduced before the knowledge of the column, as an ornament, hence, it was not admitted as an ornament in sacred buildings.

The narrowness of the chambers must be attributed to the want of means of supporting the ceiling, and a dislike to the column or post as a support."

We may suppose that human-headed animals took the place of columns in Assyria as an architectural ornament, and yet pillars and columns were used as ornaments when totally detached from any building, and so were not used for support. This was the case in Central America, for there are stelae or portrait columns in the courts at Copan, with altars in front of them, the hieroglyphics upon the sides and back, evidently having some reference to the history of the king whose portrait is given.

The beginnings of such columns are to be traced back to a religious sentiment, which made the sun the great divinity, and considered the movements of the sun as connected with the life of the people. The turning of the sun at the solstices being watched closely.

The arch was more of an architectural ornament in Assyria than was the column. Here portals were all arched, and the entrance to the palaces were through the arched doorways, still there was no such arch as we find in modern architecture. and, in fact, no such arch as we find in prehistoric America, for they were merely straight passages which were arched in one direction, while at Chichen-Itza and other places in Central America, there were double arches.

Thus it was in Assyria, rather than in Babylonia, that we find analogies between the architectures of the cities of Central America. These consist in the character of the walls, the shapes of the platform pyramids, the size of the palaces on the pyramids, the arrangement and number of apartments in the palaces, the broad stairways that lead to the palaces, the main difference is found in the ornamentation of the facades and the symbolic decorations of the inner apartments. In America the temples were more conspicuous than in Assyria, as there were generally three or four of them in every city, and and all were placed upon the summit of a pyramid, which was generally much higher than the platforms on which the palaces were erected.

The stairways in America are very imposing, and great effort was laid out upon them. The balustrades were in the shape of massive serpents, whose heads project beyond the stairways. Human figures were often carved upon the steps; in one case at Copan, every step was carved so as to present a series of hieroglyphics, which could be read from bottom to top, making what is called the "hieroglyphic stairway," and one of the most interesting architectural curiosities in the world.

Bancroft says:

"The rooms of the Casas de Monjas, eighty-eight in number, all present the same general features of construction, angular, arched ceilings, wooden lintels, stone rings or hinges on the inside of the doorways, holes in the sloping ceilings for hammock timbers, the entire absence of any openings except the doors; the platform on which the building stands forms a narrow promenade only ten feet eight inches wide on the exterior of the buildings and in the court.

"The entrance to the court is by a gateway, ten feet eight inches wide, and about fourteen feet high; the top being formed by the usual triangular arch. Opposite this gateway is a stairway, which leads upward to the upper terrace."

The Assyrian stairways were somewhat imposing; but not so much so as those in Persia, or even in Central America. In Persia, as we shall see, the stairway was the most important part of the palace, and was so easy in ascent that horses could be driven up, and large processions could ascend to the platform.

The facades of the Assyrian palaces have been admired; but those seen in Central America are certainly interesting. In these the cornice extends around the whole circumference just above the doorways, while above the cornice, the whole space is covered with elegant and elaborate sculptures. The four interior facades, fronting in the court, all present elegant specimens of the decorators art.

The gateways in Assyria, were also as we have seen, very imposing; but not so imposing as those of Egypt, though they were, perhaps, designed to impress all who approached them with a sense of awe. The historians speak of Thebes, with its hundred gates; Homer speaks of Troy as having imposing gateways. The "Lion Gateway," of Mycenæ, is known to all. The scriptures speak of the gateways as the place of judgement and the seat of authority, and so, throughout all time, the gateway to a city was regarded as the most important feature. The gates of the city of Jerusalem all had names which designated their character.

The portals of Egypt have been spoken of and were the most prominent feature in Egyptian architecture. They were generally placed in front of the temples and were guarded by two rows of Sphinxes, whose heads are fronting one another. The gateways in Mexico, Central America, and Peru, were also very imposing. One of the portals in Mexico had a massive statue placed over it, which was carved in the most hideous shape. It represented the God of War, of Death and of Hell, and was covered with serpent fangs, and teeth, and tails, and had a grinning skull looking out from the center.

III. This leads us to the ruined cities of the Persians. These were not so near together as those in Assyria; but they were quite numerous, and many of them were built with a grandeur that even exceeded all others. The peculiarities of the Persian architecture was affected by the material which was used. This was more apparent in the column than in any

other element. It is supposed that the earliest buildings of the Persians were constructed out of wood, and the columns were nothing but the trunks of trees, which supported a projecting portico in front of the building. The ceilings and sides of the houses were made of poles or round logs, the rafters being made of the same material. This supposition is derived from a study of the rock-cut tombs; for these, all present the same features, as they are cut in imitation of houses with beams.

The Persians were at first a rude people, possessing neither literature or art of their own; but borrowed what they had from the Assyrians and the Babylonians, and the empires farther south. In this respect they resembled the Aztecs, who borrowed their civilization as well as their architecture from the cities of Central America; but modified it to suit their own mythology and the demands of their situation. The ruins of Persepolis exhibit the same forms of architecture, the same peculiarities in the arrangements of the bas-reliefs, the same entrances formed by gigantic-winged animals and the same religious emblems as are seen in the palaces of the Assyrians. The walls of their cities were of extraordinary size and height. The Persians introduced a columnar style even after they began to build in brick and stone; but their columns were at first in imitation of the posts, or trees, which originally supported the projecting roofs of their wooden buildings and formed porticos in front of them.

The Assyrians did not employ the column as an architectural ornament. They undoubtedly made use of pillars of wood, and, perhaps of stone; but the surmounting with capitols occurred late in their history.



ASSYRIAN FACADE.

We do not find in Persia many ruined cities. Ecbatana was a city which reached such proportions of grandeur as to astonish the world and many have taken the ruins of this city as the means by which they would learn the styles which prevailed throughout the entire region. The columns of this city present peculiar shapes. They are round and have heavy bases carved in the shape of dogs and animals. The capitols are finished in the shape of animals heads, the shape of a double-headed lion, or an ox with two heads; the united body constituting the capitol and the heads making the ornament for the capitol. These were evidently among the earlier spec-

imens, though they continued quite late in history, and appeared in all the palaces of the Persians.

Perrot and Chipiez say:

"If we pass in review all the types and columns on the sites of the ancient cities, we find the Persians differing from the Assyrians and the Babylonians. The distinctive feature in the group is composed of the fore parts of two quadrupeds. It appears in the reign of Darius 600 B. C. The shaft is slender and slightly tapering and fluted, though in the rock-cut tombs it is plain. The base of the columns in the palaces at Susa is peculiar to Persia. The ornaments are arranged in a vertical form instead of horizontal. The capitol is divided into two parts; the lower part cylindrical, and the upper part with animal figures. The oldest stone column of the Persians is in the palace at Pasagardæ and is modelled after the primitive wood post; but is of stone. This was derived from Media, where at Ecbatana were edifices of pretentious buildings."

Polybius says of Ecbatana:

"The palace measures seven stadia in circumference. The magnificence of the various buildings gives one a high notion of the wealth of the persons who raised the noble pile, although nothing but cedar and cypress were employed in the construction. They were plated throughout; rafters, ceilings, wainscoting, columns supporting porticos, and peristyle were all sheathed in silver and gold."

Dr. A. H. Sayce says: "Columnar architecture had its natural home upon the banks of the Euphrates. Wood and brick had to take the place of stone and naturally suggested the employment of the column which seems soon to have become a mere ornament and developed a great variety of forms; colored half-columns were used in the temple at Lig-Bagas and Erech for decorative purposes long ages before they were employed in the same way by Sargon at Khorsabad, and it is to Babylonia and Assyria that we may trace the Doric and Ionic pillars of Greece; but the chasteness of Greek taste preserved it from the many fantastic forms into which the column branched out in Babylonia and Assyria and, especially in Persia, where we find it resting with a circular base on the back of lions, dogs, and winged bulls. While the column thus became an ornament rather than a support, the buttresses against which the early Chaldean temples rested never lost their original character. The Persian art was derived from Babylonia through that of Susiana. Pallaces were raised on lofty platform like those of Babylonia, where such a protection from the marshy ground was needful, and the platforms were adorned with broad handsome flights of stairs which led to their top. The Persian architecture may best be studied in the remains of the palace near Persepolis, in the five largest buildings. The first was the palace of Darius; the second that of Xerxes; the third that of Artaxerxes; while the other two were known as the hall of one hundred columns in ten rows of ten each; each 35 feet high, and 20 feet distant from its companion. The eastern palace contained four groups of pillars and a square of 36 pillars in six rows of six, and covering an area of over 25,000 square feet.

In one respect, the palaces of Persia, resemble those of Peru, for all agree that the temples and the palaces were there covered with gold and silver.

The complex column, with double capitol and volute, rose between the four enormous pillars of the propylea at Persepolis. It upheld the ceiling of the central hall of the great palace, and formed the supports of the hall of one hundred columns at Persepolis. Staircases appear in the pavilion at Ispahan as at Persepolis.

Susa was surrounded by a wall of burnt bricks, which inclosed palaces and temples. It appears that Persia borrowed

stair ways and columns and other features from Assyria, but as modified by Media.

Ecbatana was chiefly celebrated for the magnificence of its palace. It was probably constructed originally by Cyaxares. The circumference of the building was said to be 1,420 yards, or somewhat more than four-fifths of an English mile. The size exceeds that of the palace of Susa, while it is in turn exceeded by the palatial platform of Persepolis. We conclude that the area which was consigned to the royal palace, was far from being entirely covered with buildings. One half the space was probably occupied by large, open courts, paved with marble, surrounding the various blocks of buildings. The pillars, which form the most striking characteristic, were for the most part of wood rather than of stone. These wooden pillars, either of cedar or of cypress, supported beams, which crossed each other at right angles; leaving square spaces between, filled in with woodwork. Above the whole, a roof was placed, sloping at an angle. Polybius distinguishes the pillars into two classes; those of the main buildings and those that skirted the courts. From this it would appear that the courts were surrounded by colonnades as they were in Greek and Roman houses. The pillars, beams, and the wood-work were covered with thin laminæ of precious metals, even gold. This palace served probably as a model to Darius, or Xerxes, when they erected their great palatial edifices at the more southern capitals.

An older and ruder style of architecture appeared in the main building, which depended for its effect on the richness and costliness of the material. Pillar architecture began in this part of Asia with the Medes, who were content to use wood, but the Persians afterward conceived the idea of substituting splendid and elegant stone shafts, which formed the glory of their edifices. The Medes and Persians appear to have been content to establish in each town a fortified citadel, or stronghold, without using the further defenses of a town wall.

The ruins of Persepolis represented in the cut illustrates the peculiarities of Persian architecture. It will be seen that the columns are in the shape of trees, but have capitals in the shape of ox heads. The palace was situated on a high plat-



RUINS OF PERSEPOLIS.

form which is paved and is reached by a wide stairway, the sides of which are covered with ornamental figures in bas-relief. This platform and stairway remind us of the terraces and stairways above which were the palaces of Palenque and Copan in Central America, though the most striking analogies are

seen between the facades of Babylonia and those of Peru, restorations of which are seen in the plates accompanying this chapter.

IV. There are cities in Asia Minor, in Cyprus, in Crete, Syria, and Phœnicia, which are now in ruins; but which present a series of structures



STONE ROOM AT BOZRAH.

quite unlike those of any other region. The earliest, or at least the rudest of these, are found in Phœnicia and Sidonia, for here we find dolmens succeeded by megalithic structures, and these in turn by tombs and topes, and these again by ruined towers, and bridges and other structures. Architecturally they would be placed below such cities as Troy and Mycenæ, as their art is ruder than that which is known as belonging to the Greeks and Romans.

It may be said that there was a greater variety of architecture in Western Asia in ancient times than in any other part of the globe. We have here, in the first place, the strange cave houses, which were quite common in Cappadocia, but have only recently received any attention. These belong to different dates and different races; the Hittites



STONE DOOR AT BOZRAH.

are supposed to have dwelt in them as early as 1400 B. C.; the Phrygians as early as 800 B. C.; the Cappadocians about

the time of the christian era, and other people down to the present time.

Next to these may be mentioned the celebrated "giant cities of Bashan." These cities illustrate the same points which are made in connection with the cities of Assyria, Persia, Chaldea, Greece, and Phœnicia. They were situated among the mountains to the east of the Jordan, but exhibited a succession of building periods. The majority of these cities of Bashan do not go back as early as those in Babylonia; but they are supposed to be the cities which were occupied by the giants in the days of Moses; when the Israelites came out of Egypt.

These giant cities were preceded by the dolmens and the cromlechs, which are common in the same region; but were followed by cities which were celebrated in history, such as Tadmor in the wilderness, and the ruins of Baalbek.

Several authors have written about these cities and the remarkable succession apparent in them. The following is the testimony which Rev. J. L. Porter has given. He says:

"In one spot, deep down beneath the accumulated remains of more recent buildings, I saw the primitive dwellings of the aboriginals; with their stone doors and stone roofs. These were built and inhabited by the gigantic Emim and Rephidim long before the Chaldean Shepherd migrated from Ur to Canaan, high above them rose the classic portions of a Roman temple, shattered and tottering; but still grand in its ruins. Passing between the column I saw over the beautifully sculptured doorway, a Greek inscription telling how, in the fourth century, the temple had become a church; but on entering the record of still another change appeared, for an Arabic inscription showed that it had been occupied by the Mohamadens.

The stone houses of the giants are represented in the cuts.

It will be seen from them that columns and arches, cornices, stone pavements, windows, doors with panels, piers and lintels, were in use at the time. The walls, roofs ponderous gates and bars are characteristic of a



RUINS OF TYRE.

period certainly later than the dolmens, though perhaps, earlier than the building of Troy and Mycenæ, yet at a time when strength and security were the grand requisites.

The ruins of Tyre and Sidon have been frequently described, and have been made familiar by engravings. These cities were marts of commerce at an early date. The Phœnicians

were Semites; they were navigators and merchants; they settled Cyprus, Sicily, Sardinia, Cadiz in Spain, Carthage in Africa. Their caravans passed through Palmyra, Baalbek and Babylon, and permeated all the Orient. They obtained tin from the British Isles; amber from the Baltic; silver from Tarsus; gold from Ophir, in eastern Africa. The ruins of Tyre belong to a comparatively late date. The cut represents these. It will be seen from it that the arch was known, and that the masonry was substantial. The waters of the sea roll over the site of the ancient city.

Tyre was founded about 1550 B. C., and was captured by Nebuchadnezzar, 605, B. C., and by Alexander 332, B. C.

The ruined cities of the wilderness, Palmyra* and Tadmor, should be mentioned in this connection. Solomon, the great

king of Israel, built Tadmor in the wilderness and the store cities of Hamath. Palmyra was the convenient half-way house between the commercial cities of Phœnicia and the Persian Gulf. Both these cities were destroyed by the Romans. Their ruins show the style of architecture which prevailed at the time.

V. The ruined cities of Troy and Greece remain to be considered. These cities first became known to the world through the writings of Homer, and the Greek historians. They formerly were supposed to have been comparatively modern, dating their beginnings about the time



FOUNDATION WALLS AT TROY.

of Solomon, contemporaneous with the temples of Egypt, or the cities of Persia, but the explorations of Schliemann at Troy; at Mycenæ; and at Tiryns, have proved that they were much older. These explorations also brought out the fact that throughout

*The style of architecture at Tadmor and Palmyra was the same as that which the Romans introduced into nearly all their cities, those which were situated in the desert of Africa, as well as those in the deserts of Arabia and Asia, columns with Corinthian capitals being very common in all. The cut which represents these columns is placed on the plate along with one which represents the columns at the palace of Kabah in Central America. It will be seen that the columns are very different, and yet the cornice and the entablature and general style of the American palace is perhaps as imposing as that of the palaces of Tadmor in the wilderness. The restoration of the palaces in Babylonia and Peru will also show the character of the American architecture compared with that of Asia.

this entire region there was a succession of cities each of which had been built upon the ruins of the one preceding, so that the record of many periods could be read in the ruins. It is maintained by some of the best archæologists that many of these buried cities were at the outset, little more than villages, and that their beginnings were marked by a citadel or fortified hill resembling the hill of Salem, which David took and made his capitol. Such hill forts or castles were common throughout Judea, Asia, Minor, and Greece, at an early date. They remind us of the castles of Europe in feudal times. They also resembled the hill forts of the Mound Builders of the Ohio valley, and especially the fortified hills of Mexico, Central America, and Peru. Mr. F. H. Bliss, explored a hill of many cities near Lachish in Palestine, and Schliemann discovered a succession of cities wherever he began to dig.

A good illustration of this is furnished by the cut which represents the different layers or foundations which were laid bare at Troy. The layer of the first city is about eight feet deep; the second city

lies from eleven to twenty feet above the first. The most imposing erection of the new period is the great citadel wall, and the circuit wall near which Dr. Schliemann found his great treasure. The excavation showed the varying fortunes of the city through a period of some



*RUINS OF CORINTH.

1500 years, during which the hill of Hissarlik was continuously inhabited, though in the time of its older settlements it had imposing palaces, and massive fortifications. Considered individually, the buildings and the objects discovered at Troy, are found to occupy a middle position between the three great civilizations of the ancient world, the Assyro-Babylonian, the Egyptian, and the Greek.

The excavations revealed a citadel of small extent, like the Acropolis of Mycenæ, Tiryns, and others, which did not contain the whole city; but only the palaces of the rulers. In all these cases the city lay at the foot of the hill, which, at Troy, has almost completely disappeared. We, therefore, must think of the people whose kings dwelt on the citadel of Troy as resembling those who dwelt on the plains of Babylonia, whose rulers, consisting of kings and priests, built their great towers

*The cut on this page shows the ruins of Corinth before the recent excavation. It will be noticed that the columns are very graceful and beautifully crowned with capitals and cornice making the city appear like a queen notwithstanding the desolation which prevails.

and temples and palaces and dwelt in them apart, very much as did the kings and priests in Central America, who had their palaces and temples on the summit of the terraced pyramids.

VI. We turn, in conclusion, to the ruined cities which have been discovered in the islands of the sea. It appears that these were established in prehistoric times by the people who had migrated from the Asiatic continent, and who carried with them the civilization which they had received from the East. Among these the Phœnicians are to be placed as the first. There was to be sure, a race preceding them called Hittites, which spread throughout Asia Minor, and built the early cities in that region, and along the Mediterranean coast, in Syria and Palestine, but they were overcome by the Egyptians, under Rameses, II., and never built cities which were at all enduring, or the ruins of which have at present any importance. The Phœnicians were always great traders, and carried on commerce between the people of the far East, and those of the far West, making the coasts of the Mediterranean the chief marts of trade, though they reached as far as the British Isles, and introduced bronze into the prehistoric settlements of the interior of Europe, which marked the beginning of the Bronze Age.

It was through the Phœnicians that the architectural triumphs of the East were carried to the islands of the Mediterranean. Phœnician colonies settled in Carthage in Crete, and in Cyprus, long before the Mycenæan age. They built there heavy walls, lofty towers, palaces surrounded by colonnades, galleries, long piers which protected the harbors, and cities with streets, which were lined with massive houses and lavishly adorned.

These ruined cities lie below the ruins of cities which were built by the Greeks in Mycenæan times, and form the lowest layer which has been reached. They were the earliest builders on these islands, and are supposed to have erected the towers which are so numerous in Sardinia, and elsewhere, and which have been ascribed to the Cyclopæans, a giant race, but were followed by the Hellenes, who introduced into these islands a new style, the same style which prevailed at Troy and Mycenæ, the main feature of which was an acropolis on which the temples, and palaces, of the ruling classes were built.

Many cities have been discovered in Crete and Cyprus, some of which belonged to the earlier Phœnician and some to the Mycenæan times and some to the Roman, all of them containing structures which enable us to recognize the different styles which prevailed and to read the history of architecture from the earliest to the latest period.

PRIMITIVE KERAMIC ART IN WISCONSIN.

BY PUBLIUS V. LAWSON.

Paper read before the Wisconsin Natural History Society at Milwaukee, January 16, 1902.

One of the chief charms of Archæology is its wide range of study in the various fields of exact science and knowledge with its ever opening discoveries. There is no subject within this versatile study which brings out so many and varied facts as the ficile art. Clay being universal over the earth's surface and in the plastic state readily formed into any desired shape, has from the earliest times, even among the most primitive people been used in the manufacture of vessels of many forms. Keramic art is among the earliest achievements of man. Its broken fragments found among the pebbles, or earths of the most remote and obscure places, are always the unmistakable handiwork of man.

POT SHERDS.

Vast quantities of broken primitive pottery is found upon the fields and within the mounds and graves in our state. Whole vessels are very rare. The broken pieces are from the size of a pea to several inches. They range in thickness from the gauge of the knife blade, indicative of a delicate cup, to five-eighths of an inch, indicative of a very large fifteen gallon vessel. Tracing out the circle, shows openings from three inches to sixteen inches in diameter. Some seem to have square corners, but nearly all are rounded. In my collection of over five thousand fragments the number of vessels represented is several thousand which once graced the barbaric board of our aboriginal people. Because of its sombre appearance it is seldom gathered by a collector of relics, unless its markings or size attracts the attention, yet for the study of prehistoric races it is among the most valuable of their remains. The forms made out are basins, bowls, cups, pitchers, and larger jars or kettles. Some one has said no two are found alike. Some pieces seem to be formed like a pitcher snout, with knobs and tips for handles. Some have holes in the rims for strings to suspend them. I should say from the fragments the local characteristic form is globular, round bottom with low neck and rim turned out, with its opening little less than the width of the body.

COLOR OF THE ANTIQUE POTTERY.

The clays of Wisconsin are formed by the decomposition and disintegration of igneous and sedimentary rocks, which

were distributed and assorted by water and the glacier or remains in situ, as shales and kaolin. The shales burn cream, kaolin burns white color. The lacustrine, stream and glacial clay burns either cream or red. No clay in our state burns gray or blue, black or brown. The color of the body of most of the local primitive pottery is gray or blue gray. Some are black and a few pieces white. Some are red.

Dr. E. Desor of Switzerland, suggests of the black pottery of Swiss lake dwellings that it was obtained perhaps by smoking or burning in an open hearth. He does not know how the pottery was fired, neither do we know how this pottery was fired, whether in kilns or open hearth fire, nor would it make any difference. The manner of firing does not change the color of the clay. Local brick firing is practically in open hearth in camps or scove kilns, and burns both red and cream, never blue or gray. I have some pots made of our red clay which were fired in a kiln and are cream color, notwithstanding

all the smoke, fire and creosote passed over and through the ware. The kiln only serves to intensify the heat. The brickets of ancient Aztalan which undoubtedly were burned by heaping wood upon them in open fire, have not changed from red to blue. The red color is caused by the presence of iron oxide in clay. The absence which in perceptible quantity or change of the combination of the oxide by the fire, allows the firing to set the cream color, at the period of incipient vitrification. Colors are only caused by a chemical change in the combination not by any chemical discharge from the fire,



Gray is the prevailing color of the pottery of the Atlantic sea board, and the mound building region; yellow of the ancient province of Tusayan; polished black of the Pueblo; smooth red of the Gila valley in Arizona, Mexico and Panama; white of all the Cliff dwellings; red and yellow in New Mexico and Arizona. The open hearth theory of firing cannot prevail to explain this difference between black and white. The only proper explanation is that given by Dr. Buckley in his late report on local clay. Gray, black, blue, and purple shades are largely due to carboniferous matter; while white, red, yellow and brown tints are largely attributed to iron oxide. Hence, clays upon being fired change to a different color. This is the rule; a few

clays do not change. There is said to be a brown clay in Carolina which does not perceptibly change on firing. At Apt Province in France there are beds of pale brown clay from which terrines or covered pots are made which are almost exactly the same color as the unbaked clay.

The Milwaukee clay compared with Madison clay in the Wisconsin Geological Survey, Vol. 2 shows that while both are red clays, yet the Madison clay with slightly less iron oxide, burns red, and the Milwaukee red clay with more iron oxide, burns cream. To explain this it is stated that the light color is due, not to the absence of iron, but to the manner of its combination, in which it is controlled by the calcareous matter present.

As no clay in Wisconsin burns black, gray or blue, which is the prevailing color of the body of the primitive ware found in our state, then we must conclude such ware was not made in our state but was imported. The brick red pottery may have been made from Wisconsin clay, but its tempering ingredient being usually black quartz, which is not found here, makes it a doubtful native product.

BLACK QUARTZ TEMPERING.

Pure clay as it is found in the bed cannot usually be suc-



cessfully made into earthenware. It will check in drying and crack irreparably in firing. In the early potteries in Menasha which flourished from 1856 up to a few years ago the native modified red clay was mixed with 20 per cent. of bank sand in the manufacture of the common earthen jars, milk pans, jugs, flower-pots, and fired in kilns, so arranged that the fire and smoke passed directly through them and out at a chimney in the rear or overhead. Flower pots and tile required a day and night to properly burn, and heavier earthenware required forty-eight hours. Millions of brick have been made at Menasha and along the Fox River of the same red clay mixed with five per cent. bank sand to temper the clay. They required six days and nights burning. The above vessels and brick all burn cream color. Sand is silicate or disintegrated quartz rock. Quartz or silicate is infusible unless mixed with soda and hence does not perceptibly swell or shrink by heat or water. It thus becomes the very best mixture for clay. The world over, in both ancient and modern times, silicate in some form has been the tempering ingredient used in Ceramic and allied

arts. The authorities say: "It is necessary that the clay should be mixed with a certain quantity of siliceous earth, the effect of which is to increase its firmness and render it less liable to shrink and crack on exposure to heat."

Pulverized flint glass and white sand is mixed with the clay now for the same purpose. It is remarkable that both in Europe, the Orient and America the same thing should be used as a tempering mixture in the clay and for the same purpose by primitive men and civilized as well. More than half of our native primitive earthenware contains silicate in shape of ground black quartz which is the same as flint or glass or sand used as a tempering mixture. The particles can be seen with the naked eye thickly dispersed through the body of the ware. They are jet black, with ragged edges, and have conchoidal cleavage, that is to say without cleavage, and it is compact, massive igneous rock. Its corners glint in the light, and has glass hardness, cannot be scratched or crushed with the knife. This black quartz is not found in our state in the drift or in situ. I do not know its source, but suppose it to be near the carboniferous clay from which the vessels were made. It is found in the black, red, blue and gray fragments of pottery.

SHALE OR SHELL.

Another tempering ingredient used here and universally over the mound region is shale or shell. There is some contention over the real identity of this content. It can be plainly seen thickly dispersed in the fragments, often in pieces over one quarter inch in size and seldom pulverized. Most of the books designate it as shell. It does have the appearance of broken shell, and often has a pearly lustre. It effervesces with acid. No one has yet named the shell, and there is this singular thing which I have noticed upon examination of hundreds of specimens, that these white flakes are all flat, none rounded, concave or convex. They do not show any of the hinge or back of the shells of univalves or the coarse black outside of the shells. The only fresh water shells are snail or mussel, none of which could be used without some identifying part being found in so many fragments to betray its origin. But if shell was burned in this clay vessel in the heat of from 800 to 1500 it would be black as jet if not destroyed entirely, none of these particles are black, but it is fresh and hard as if the shell was dead but yesterday. Shell is lime, in fact, the material of all limestone, and if a pebble of limestone is accidentally left in the mixture of which the vessel is made the firing would turn it into lime in the caustic state which upon exposure to moisture will slack it and crack the ware. This shale is still in good condition. If we assign any sort of antiquity to this aboriginal pottery, this shell material, if such it is, would have rotted years ago exposed as it was to every kind of outdoor weather, but it has not rotted. It is still hard,

scratches with a sound similar to scratching a school slate or sharpening a slate pencil. It scratches into fine sandy, gritty, particles, much sandier than rotten shell dust. It exhibits a flat straight cleavage, like shale or slate. Its color, cleavage and pearly lustre is indicative of feldspar. An analysis would show it to contain feldspar and aluminum and possibly carbonate of lime and magnesia in small quantity. None of this shale or feldspar is native to Wisconsin in the shape found in the pot sherds. Some experimenters are now endeavoring to determine the identity of this shale mixture.

A few fragments contain as a tempering mixture rounded gravel and sand, but such are not often found in our state. The fragments tempered with black quartz, or shale, or rounded gravel are always mixed with one of them singly, never with both together in one vessel. Further on it will be again explained that the vessel decoration relates also to this tempering ingredient. Those with black quartz are the textile marked, and those with shale are decorated by other methods.

POROSITY, GLAZING.

Most clays, especially local clays are, when fired are very porous. Brick used as filters and drain-tile will absorb the surrounding moisture. The test of earthenware is that the tongue will cling to the broken edge as it takes up moisture so rapidly. This native antique pottery is very porous. It absorbs a drop of water instantly and its pores can be seen without the aid of a glass. The potters mentioned at Menasha learned in their earliest experience that our local red clays would not take a glaze without the ware first being dipped in a slip made of Ohio or New Jersey clays. Some clays near Milwaukee will take Staniferous glaze. The chemical change that takes place in glazing with salt, is that the soda of the salt fuses with the aluminum of the clay to form silicate. The object of glazing is to make the ware water tight. I find that in testing those primitive fragments which have bowl enough to hold water that they are water tight, and as the broken edges are all very porous, this ware would not hold water unless it was glazed. The slip or enamel or veneering can be plainly seen on most of the native specimens. It is usually red, white or brown. It is this glazing which gives a red appearance to so many of the pot sherds. The universal statement of all the books is that the mound builder pottery is not glazed. But we all know that there is much misinformation in the books on these subjects. This glaze or enamel has mostly been placed on the ware before burning, but frequently after the body of the vessel has been fired. It is most frequently only seen on the outside, but often on both inside and outside the vessel. Both the black quartz and shale wares are glazed. This glaze is not glass, as it can be scratched with the knife. I call it glaze because there is no other name. It is at least a covering to make the ware water tight. It is often half the thickness of the vessel

and often a very thin film. It often shines and is often highly polished. It is found on nearly all the fragments whether decorated or not though the decorated fragments have no lustre or polish. We may be justified in concluding all native pottery to be glazed as it would be valueless to hold water or as cooking utensils without, because of its great porosity. We may find an excuse for not knowing with what material the glazing was accomplished in the fact that it is not known to this day with what materials the famous Grecian vases were glazed. It will not be profitable here to discuss it, but I have no doubt that this subject of porosity is the best of evidence that the primitive pottery found here was not made here because our clay fires more compactly than the pot sherds, and is undoubtedly made very porous by the loss of carbon of which the primitive pottery clay was heavily charged.

FIRING.

As to the baking many have supposed that a hole in the ground was a primitive potter's kiln. That would do to prepare for them a delicious dish of clams, or bake potatoes, but as there would be no draft to give the heat requisite for pottery, (2500 to 3000 degrees), it was not the method used. I would suggest that the pot was laid on a hearth of stone with dried faggots heaped about it. This method would heat the upper part and rims the most and, and the fact that so many sherds of rims and upper parts are found, has suggested the method of firing. Many fragments exhibit evidence of nearly melting or almost blow pipe heating, indicating some method of firing much superior to a hole in the ground.

KNEADING.

In the local pottery fragments I have discovered no blow holes or blister marks made by air bubbles in the clay paste, while in process of being formed into shape by the ancient potter. A common brick spall which is made of clay which has only been run through a pug mill will be found to be very coarse and have large cubes of native clay unmilled. Clay for pottery must be much more broken up and mixed than for common brick. In addition to the pug mill with its knives to cut up and mix the material, the clay must be run between rollers to grind it to a fine powder or paste and thoroughly break up all its parts, and it must then be carefully kneaded and worked over again so that every particle is thoroughly kneaded. When turning on the wheel it must be repeatedly forced back on to the wheel to rid it of air chambers. This will be sufficient for common ware, but much more washing and straining and repeated kneading is required for the higher grade of pottery.

It will be noticed that the primitive pottery is not coarse nor full of blow holes. It seems coarse because the tempering

of quartz or shale is not finely powdered, but the clay has been thoroughly mixed. This indicates that the remains of the archaic pottery art which has come to our notice was far advanced beyond the earliest state, in which the clay would not be much mixed, as it would take many generations to discover the laborious process necessary to mix these clays to make the well mixed ware of our local fragments.

POTTERS WHEEL.

In the fragments with shale tempering it will be noticed the small flat fragments of white shale are always flat with the ware, not presenting except in very few instances its edges to the face of the ware. This is evidence that the plastic clay has been pressed between the hands and such pressure has flattened out the shale tempering. If turned on a potter's wheel this shale would present its edges in every direction. I have seen no evidence of the potter's wheel.

CONVENTIONAL DECORATION.

Some of the decoration of the ware and perhaps all of the



embellishment may be said to be primitive, yet it is so only in degrees. My specimens show edges decorated by notches made with a horn or the potter's nail, and with a shell. Others have the inner side of the curve of the turned over rim decorated in same manner as the outer part of the rim. The outer parts of the rim and the neck and the upper part of the body with numerous designs, hardly any two alike. Some of these are dots made with a quill, the nail, with a horn, with a square stick, and rings with the end of a bone, (one such marked rings one inch in diameter), with a deer horn, with the finger. Curved and straight lines with horn, stick and fingers and string corded or plated. These are formed into figures repeated about the vessel and often several methods employed in one vessel. These designs are concentric parallel lines around the vessel, or chevrons, festoons, triangles and many other designs; none of them requiring more than a few idle moments to impress into the plastic clay. If I were to pick out some characteristic design I would not know which one to take. None are made with a stamp. It is true these designs may be said not

to be carelessly made, in the sense that they are simply child's play and without the least art. They do exhibit some sense of the symmetry of art. Considered in the light of their environment, the supposed crude condition of society, they exhibit a symmetry and taste far beyond the scale in which we place them. As for instance, one piece in which the rim is turned over at right angles to the neck, the dots and lines are made with a square implement, into right angles and squares like the Egyptian frieze. Chevrons made with twisted cord is quite a favorite form of decoration. The handle, tips and knobs are decorated. One form of marking quite common especially in the Clam eater village of Little Lake Butte des Morts is the triangular chevron. It is made with dotted lines, also with a pointed implement. It is also impressed with twisted and plated cord. Such zigzag or diagonal patterns also appear in the textile fabric impression. This chevron pattern is also very prevalent over the whole eastern part of the United States. Another widely distributed type of marking is by square incised holes, making parallel lines or curves and squares or chevron figures. Samples of this marking are found in the town of Neenah and at Aztalan, Wisconsin, also in Indiana and New Jersey and in old England.

I have local specimens marked with either a sea shell or fossil, by a series of indented crescent holes. Several specimens are marked by a round horn or stick closely wound with a small twisted cord.

No decoration that I can find is made in high relief, but all intaglio or impressed.

TEXTILE FABRIC DECORATION.

Much of the ware is marked with textile fabric, such as cloth made of wild hemp, thistle fibre and bark, also rush mats and grass bagging. Mr. Holmes supposes much of this marking is for decoration and his reasoning is good. I have not found evidence to verify this, however, except in an uncertain way, which is this: Some of the rims are fabric marked upon both sides, whereas if the marking was accidental in hanging the vessels for drying or in forming, the marking would result only on the outer side.

It has been said that the textile fabric was older than pottery, because it was supposed that the fabric marked pottery had been moulded in a basket or sand-pit lined with cloth, or moulded in a cloth bag, but it has been discovered that few vessels are entirely impressed with fabric, and Mr. Holmes has discovered by the festooning of the cloth and lay of some of the strings that even the lower parts of the vessels have been clothed marked upside down, proving the cloth to have been laid on after the vessel was formed. Mr. Holmes has also shown that rush mat markings are not impressed by stiff or rigid basketing, but by loose pliable fabric. So the relative

age of pottery or fabric still remains an open question, with inference in favor of pottery being the older. It is certain that the cloth was removed before firing as I have a specimen showing a rim made thicker over parts first marked with fabric, and numerous specimens show further decoration after being impressed with fabric. It is not certain nor even probable that fabric was used to assist in moulding as some local specimens show moulding over gourds, and none show any cloth marking on the bottom, and a clay form would be much the easier to use as a mould on which to make the hand made vessel. It would be easily made and easily removed by picking out in pieces. Some of the cloth marks lay over each other, showing they were impressed for decoration and over-lapped. Fortunately the plastic clay has either by design or accident, preserved for our eyes, the texture and web and warp of hundreds of primitive designs in textile art, which would have been absolutely lost without. It reveals to us the real thing except the material of the thread as plainly as if we had the fabric itself. By making casts of the clay moulds, the cloth is brought out as plainly in every detail as if we had the real article. A



very few fragments of mound builder cloth have been found preserved by wrapping copper or charred by fire, or in the copperas caves of Kentucky. Inscribed clay tablets of square tile in Mesopotamia impressed with characters forty five hundred years before Christ, give the history of a people and their doings six thousand four hundred years ago. And here in Wisconsin an antique people many years ago wove and spun and made cloth in their primitive loom which, though it has long since crumbled to dust, having been impressed on their pottery, it has come down to us as if photographed by the loom master of ages ago. The study of this cloth is a revelation, which in itself would make one respect if not love a people with such a diversity of skill, such prodigality of ingenuity. Mr. W. H. Holmes says of this fabric as revealed to us by the moulds of pot sherds, that the materials used in weaving consists of fibre of bark, flax and hemp, nettle, and grasses, and I

think I may add rushes. With these he says are made mats, baskets, nets, bags and plain cloth, all of which I have traced in local pot sherds. Thinking to ascertain the number of patterns, and kinds of cloth and textures as shown in the local fragments in my possession I undertook to count them. I was astonished at the number. Even in many patterns that showed seemingly the same kind of weaving, the threads were different sizes. There are patterns which Mr. Foster says cannot be woven with a loom. There are zigzag and chevron patterns; there are braid patterns, and cloth with a border and selvage. As a comparison of the above methods of decoration with those of Europe we may quote Mr. Foster's remarks: "In the plastic arts the mound builder attained a perfection far in advance of any samples which have been found characteristic of the stone or even bronze age of Europe." He quotes John Lubbocks remarks of the stone age: "That the most elegant ornament on their vases are impressions made by the finger nail or by a cord wound round the soft clay." Dr. Cyrus Thomas mentions a pot excavated from a mound in Vernon county, Wisconsin, by Mr. Middleton in service of the Smithsonian Institute, and says of it: "Which I believe is of the finest quality of the ware so far obtained from the mounds of the United States." (1883, 1884 Ethnological report.)

RELATION OF TEMPERING MATTER TO DECORATION.

An important and singular discovery I have made is that all fabric and string-marked local pottery is tempered with black quartz, none of it with white shale. I have a specimen of red pottery from Missouri, grass fabric marked, which is tempered with white shale, so the rule cannot be said to be universal. And another singular discovery I have made is that all local primitive sherds decorated by curved and straight lines, dots and finger nails or other implements in fact all pottery decorated in some manner except by fabric or thread is tempered with shale.

As to location the pottery found at Bear Lake, Waupacca county, was fabric marked only, and of several hundred pieces found at Germaninn, Marquette county, none was fabric marked. And of that found on one village site, which we call Little River, or clam eater village, on Little Lake Bute des Morts, West Menasha, nearly all is fabric marked. This shows that two tribes or nations occupied the State before the Indian, and by this method of study we might trace by pottery alone the different races or nations and their imigrations about the United States.

WHO MADE OUR PRIMITIVE POTTERY.

And now we come to the question of who made the local pottery and where was it made. The lithological evidence preceding, proves that most of it was not made in Wisconsin. That

the Indian known to historical times, did not make it, is evidenced in the remark of Father Dablon writing of the Mascoutins and Miamies in 1670. He says: "they are not rich in household utensils, their country hardly furnishing them material for making bark dishes." The birch bark dish seems to have been a favorite vessel with Wisconsin Indians and is in use even to day. In another place Father Dablon mentions of the lake tribes, such as Chippewas, Hurons and Ottaway, that they made a bark dish, into which filled with water, they placed heated stones to boil their food. Father Claude Jean Allouez, says: "Of the Foxes, Sacs, Winnebago, Pottowatomies, and Menomonies assembled at the Sac Village, at the head of Green Bay, 'where he landed in 1869,' "they knew not how to make even a bark dish or pot. They most often used shells." Upon the site of the Winnebago Villages on Doty Island, which was occupied by them over two hundred years, there are no pot sherds. In the vicinity I have found a few. There are no fragments on the site of the Fox village in West Menasha, which was occupied by them sixteen years. The only fabric which our Indian made was a rush mat. His Wampum belt was leather, and the beads strung with iron, wood bark or leather. No cloth such as exhibited to us in the marking on the pots is known to have been made or used by our Indians. But the pottery was not made in Wisconsin, as we have shown above, as the clay and the tempering are not native to our State. In 1659 Radisson mentions a tribe possibly the Iowa, who made wooden spoons.



DIVISION OF LABOR.

Another important conclusion may be drawn from the matter treated in this paper. Much of the ware is undecorated, dark and sombre. There was the potter then, and a more skillful artisan, the artist and artisan. Mr. Foster says, "supposing the modelling of particular utensils, was confided to skilled artists, who impressed upon the plastic clay an individuality which is not to be confounded with more general forms." Then we have the skilled artist. Herein we have division of labor. The potter, the artisan, and the skilled artist, and from what has been explained of the skill required in kneading the clay, tempering, firing as well as decorating it may be readily concluded, none of these names could be applied to many in any tribe or nation. Hence, we have here, the best evidence of a guild and, as I believe, of an extensive trafic in

earthenware. The hundreds of cloth patterns impressed on the clay exhibit another class which raises its spinner and weaver also above the common throng and creates another guild, in which constant practice made perfect, and exhibited also an intertribal traffic in linengoods. Taken together it shows their art is not to be classed with the mud pies of our childhood or the rush mats of our local aboriginal tribes.

Since this paper was read, Mrs. S. S. Frackelton of Milwaukee, who is celebrated for her beautiful work in the fictile art, has made several important experiments which conclusively prove that the tempering contest of archaic earthenware is not shell. She mixed some blue clay from Redwing, Minn., with crushed mussel shells of Lake Winnebago, forming them into a bowl and a jar, which were fired in a china kiln, until the ware was well burned and the color changed to cream. The shell content was burned to a lime, and within a week had air-slacked and shattered the little bowl into fragments, and the jar was so filled with cracks, and shattered that in two weeks it scaled off in pieces and the least touch would cause it to crumble in ruins.

In the same kiln with these two modern pieces she also placed a fragment of primitive pottery from Menasha and one from Germania, Wis. Their color changed from gray to red, but the shale content was left as hard and its lustre as pearly as before, and it still cuts hard and crisp like slate while the burned shell powders between the fingers.

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THE PHILIPPINE LIBRARY.

BY FREDERICK STARR.

Undoubtedly the most extensive and important library of *Philippiniana*, if I may use that word, is the property of a Spanish gentleman, W. E. Retana, who printed an admirable catalogue of his collection in 1898. At that time Senor Retana had two thousand nine hundred and eighty six pieces in his library. These books included (a) works printed in the islands, (b) works treating of the islands, and (c) works written by Filipinos. We have no intention of discussing the whole collection, but propose calling attention to one important part of it to which the name, *The Philippine Library*, may be applied with particular appropriateness, namely: the books which treat of, or are written in, the native languages of the Archipelago.

It will be a surprise to many to learn that books have been

printed in the islands and that many of these are in native languages, yet, such is the case. Among the earliest books in these languages are certainly San Buenaventura's *Vocabulario* of the Tagal which was printed in 1613, and San Agustin's *Tagal Arte* which appeared in 1703. Retana has no copy of these. The oldest work of linguistic character in his collection is, Mateo Sanchez' *Vocabulario* of the Bisayan, which was printed in Manila in 1711, and forms a folio volume of nearly six hundred pages. Since that time to the present, printing presses, not only at Manila and other island towns, but in various foreign lands, have been busy, and, to-day, considerably more than one thousand printed works, in or upon the native languages, exist.

Senor Retana, himself, possesses more than nine hundred of these. They represent twenty-five different languages. The only material in several of these, however, consists of brief vocabularies gathered recently by scientific students or travelers. Thus, of the Aeta (negrito), Joloano, Manobo, Bilaan, Samal and Tagacaolo, which he includes in his list, there are no actual books. Of the eighteen others, however, there are true printed documents.

In each of seven of the languages a dozen or more books have been printed or studies made. These, with the number of works, are Bisayan (352), Tagal (230), Ilocan (143), Bicol (61), Pangasinan (24), Pampangan (22), and Ibanag (15). Next after these, in literary representation, are our *Moro* allies, of Sulu and elsewhere, with eight works to their credit. It is only fair to the Tagals to state that the term Bisayan includes three well distinguished dialects—those of *Cebu*, *Panay* and *Leyte and Samar*. The printed matter in any one of these would fall below the Tagal number.

Inquiring into the nature or character of the works in "*The Philippine Library*," we may roughly classify them as:

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| { | A. | <i>Scientific studies</i> of languages, vocabularies, etc. | |
| | B. | <i>Practical Works</i> for instruction, or to facilitate intercourse— <i>artes, gramaticas, vocabularios, and diccionarios</i> . | |
| | C. | Books actually printed in the languages and intended for the use of natives. These are: | |
| | | 1. Religious. | |
| | | 2. Non-Religious. | (a) by foreigners.
(b) by natives. |

Of course the most interesting, as the least numerous, fall in C. 2. b. We may however say a few words regarding each group.

There are few Philippine languages of which absolutely nothing is known. Of the little blacks, negritos, Aetas, who are usually considered the aboriginal population, and who lead

the life of roving savages, we have some vocabularies gathered by foreign investigators like A. B. Meyer, Blumentritt, and Montano. Of some of the less known Malayan tribes, we have vocabularies and 'grammatical observations.' Of the better known and civilized Malay populations we have, besides vocabularies and grammatical studies, various comparative investigations, tracings of Sanskrit and Chinese influences, etc., etc. Curious and unique in its kind is Gregorio Martin's *Collection of Tagal saws, phrases, and colloquialisms*. But there still remains an enormous and interesting field for linguistic study.

Far more numerous, than these investigations of scholars and philosophical discussions, are the practical works for facilitating intercourse. There is a long list of *Artes, Gramaticas, Vocabularios and Diccionarios*, mostly the work of devoted missionaries, who, here, as in Mexico, early applied themselves to studying the native tongues. The term *arte* (art) means a practical manual for learning a language; it is the term used, by preference, by the older writers, while *gramatica* (grammar) is more commonly employed by later authors. So the term *vocabulario* (vocabulary), almost universally used by the early priests is replaced, in time, by the more pretentious *diccionario* (dictionary). There are in Retana's collection fully twenty *artes*, thirty-two *gramaticas*; eighteen *vocabularios*; and twenty-three *diccionarios*. Certainly the most famous of all the *artes* is that of Totanes, first published in 1745, which has gone through many editions, and, is probably, the one most used to-day by foreigners learning Tagal. Among modern *gramaticas*, many are patterned after the "Ollendorf" method and the use of that name in a title appears to insure some popularity. It is noteworthy that most of the books in this large class are written from the Spanish standpoint to enable Spaniards to learn some native tongue. There are, however, some written to help natives learn Spanish. Thus, an abecedario for primary schools in Cebu has gone through seven editions at least, and there are elementary works for teaching Spanish to Tagal, Ilocan and Isanay children.

Coming now to books printed in Philippine languages for native reading, we find that it is the largest of the three groups and is made up chiefly of religious works. Out of the nine hundred books already mentioned as in Retana's library, more than six hundred are of this character. There are volumes of prayers, sermons, biographies of saints, sacred histories, catechisms, etc., in great variety and in many tongues. Most popular however, are the *novenas* and closely related works. These are little paper covered books of but a few pages, with prayers and meditations for a nine day's religious exercise in honor of some special saint or sacred event. In this great group, there are but few examples of translations of parts of the Bible. Is it a curious accident that the one most specifically mentioned in Retana is the *Lamentations* of Jeremiah?

With the curious recent quickening of the Protestant conscience toward the Filipinos, we have the British and Foreign Bible Society entering the field in 1898 with a Tagal *Luke*, and in 1899 with a Pangasinan *John*. It may be that others have since appeared.

Of non-religious works in Philippine languages a number were written by foreigners. Thus there are books of etiquette; books of moral maxims; books of advice; there are fables and pious fiction. Most of these books are by priests. A considerable list, issued by a paternal government, instruct the natives in the civil code, taxation, regulation of carriage rentals, cultivation of tobacco, cocoa, and coffee, and the care of sick children. These books are usually bi-lingual, Spanish and a native dialect side by side. While speaking of these governmental manuals, we must state that official proclamations have frequently been printed in one and another Philippine language. A good many broadsides have also been issued by the Filipinos themselves, both in the days of Spanish rule and in this later time of American military occupation. Nor has the Filipino lacked for periodicals. *El Ilocano* was the first absolutely "indian" periodical published; it was issued twice a month from 1889 to 1896 and was in the Ilocan language. In *El Pasig*, published in the sixties for some months, there were articles in several of the native tongues. We will not try to list the periodicals which have printed more or less of native matter. Such are still published, among them *Ang Kapatid Ng Bayan*, (the cry of the people), a morning daily published at Manila, half in Spanish and half in Tagal, is perhaps representative.

A notatable characteristic of the Filipino is his fondness for poetry. So great is this, that many of the strictly religious booklets are wholly or in part, in verse. There are some forms of poetical production, which are, though semi-religious in character, and often prepared by the priests—highly popular. Such are *pastorelas*, for singing and acting, celebrating the birth of Christ and various passion plays. Still more popular are the *corridos*, of which Retana has nearly fifty. These are long and highly romantic poems detailing the doings of knights and ladies, princes and princesses, with high sounding names and dwelling in Spain, Portugal, Albania, Turkey, Hungary and other regions so remote and unknown in Filipino experience as to be, practically fairyland or some other mythic district. Such works as these lead us on to set dramas of which a number have been printed in Tagal, Ilocan, Bicol, and Bisayan. On the whole comedy appears the favorite, though not the only dramatic form. A number of poems pure and simple, with no attempt at either romance or drama, may also be attributed to Filipinos, several of them being by *indios*; i. e., individuals without Spanish admixture.

In prose there are calendars (almanacs), several novels—usually with a "purpose"—and occasional useful manuals. Among these the *Manual del Mediquillo Visaya*, manual of the

Bisayan herb doctor, is eminently curious as it gives, in bilingual form (Spanish and Cebuan) the lore of the indian doctor.

This suggests the *books of aniterias*, which, though not in print, should be included in the Philippine Library. They are wee books, of manuscript prayers, worn, as charms, upon the person. They are in themselves amulets and the repetition of the prayers they contain gives magical assistance. Retana has published one of these curious books, with prefatory notes, explanatory remarks, and translation. His specimen was taken from a bandit prisoner, who had worn it, sewed up in a little pouch, hung by a cord about his neck. It was written upon blue paper and appeared to have been made about fifty years ago. It consisted of fifty-two leaves, or one hundred and four pages of writing, which measured about two and five-eighths by two and one-eighth inches. The text was in corrupt Latin, corrupt Spanish, and almost as bad Pangasinan. Its pages "contain balms for curing all classes of diseases; prayers to the Virgin and all the Celestial Court to free the bearer from justice, to conquer enemies; to reduce him himself to smoke or render him invisible; to give him power to steal without detection; to sally with success from every battle; to render firearms and weapons of steel harmless against him; to protect him against snakes and witches; to win the hearts of women." These prayers present a curious mingling of christian and pagan notions and, were, no doubt, composed shortly after the islands were christianized. Most interesting of all are two prayers, one of which is addressed to the *caiman* (or crocodile), and the other to the bees. Scattered through this medley of christianity and paganism of Latin, Spanish and Pangasinan, of piety and criminality, are mysterious characters and symbols, which, if they ever had any meaning are, to-day, incomprehensible. So great is the confidence of the *indios* in such books, that cases are known, where they have stood up before firearms without flinching, when they had one upon their person.

Thus we see that the Philippine languages are not unrepresented in print; that, in fact, "the Philippine Library" is quite extensive, ancient, and varied in contents. A thousand books is no mean showing, even though many of them are small and thin. New books in the native languages, similar in character to those described, are constantly appearing. Last Fall a friend purchased a handful of little books, for me, upon the streets of Manila. Out of twenty-one thus secured fifteen were not in Retana's list. Only four of these had appeared, however, since his catalogue was printed. It is clear then that we have actually underestimated the number of books in or on the Philippine languages, in basing ourselves upon his figures.

CULTURAL DEVELOPMENT OF MAN.

BY DR. A. L. BENEDICT,

Buffalo, Superintendent Ethnology and Archæology, Pan-American Exposition.

There have been most elaborate schemes suggested for the classification of the different peoples of the world in regard to their progress in art, science, and industry. Many will recall such a classification in one of the geographies in common use a generation ago which subdivided those nations commonly termed civilized into civilized and enlightened. Among the enlightened nations were the United States and those which have contributed most liberally to its population while the other races of Europe were designated as merely civilized. The love of country and of ancestry which this classification aroused in youthful bosoms and the soul-satisfying discomfort of the occasional Russian or Italian who was so unfortunate as to attend the same school with the scions of the enlightened races will doubtless be recalled. It is always difficult to classify development according to natural law and whatever subdivision is made should be based on the most tangible and conspicuous evidence. Taking a bird's-eye view of the various peoples who now inhabit the earth, or of whom we have knowledge through history or archæology, a three-fold classification has suggested itself to every student who has not made a distinct endeavor to invent some complicated classification which should be different from that which was at once obvious and common. Adopting the natural rather than the logical method of classification, we shall first select our types and later define in general terms what those types signify. The first type consists of peoples living most nearly in a state of nature such as the Africans and Esquimaux of the present, the ancestors of the present European nations at the time of their conquest by the Romans, and the American Indians of a period which has barely yet elapsed.

Secondly, we note the Chinese of to-day and the Japanese up to a generation ago, the ancient monarchies which clustered about the Mediterranean Sea at the dawn of history and the other similar aboriginal monarchies about the Mediterranean Sea of America,—the Gulf of Mexico. As a third type, we recognize the Grecians, Romans, and Jews at the time of their maximum development and the present nations of Europe and America. The first type we designate as savage, the second as barbaric and the third as civilized. Any attempt to subdivide these three prime types proves difficult and unsatisfactory and it frequently happens that we find a people emerging from one type into another, or we find two peoples of different type

united under a common government, without the assimilation or annihilation of the weaker type. As a general rule, the attempt to force a race from a low to a high grade of culture proves disastrous. The American aborigines, for example, have been almost annihilated in their contact with the white race. The negroes seem to thrive physically under the domination, more or less merciful, of superior races and to a large degree have even acquired the intellectual attainments of their superiors. The Japanese have also within the last century surprised every student of human history by leaping at a single bound from higher barbarism into civilization, apparently suffering neither morally nor physically, for this apparent violation of the natural laws of human progress. In India, there has existed for centuries a peculiar mixture of diverse cults and under British supremacy, there exists at present a condition which defies any satisfactory attempt at classification. We also have a unique example in the Jews who have resisted absorption and have maintained their lineage with a little admixture through centuries of persecution. Though compelled for centuries to subsist under the most unsanitary and commercially deplorable conditions, they have emerged under more benevolent laws as a people without political organization, living in, and we might say *by*, other civilizations without being of them. It is also note-worthy that the Jewish people, originally pastoral and agricultural, has devoted itself, wherever transplanted, to non-productive industry and in fact, that it illustrates parasitism of the highest and most independent kind, genuine productive industry and actual pauperism being equally rare in its members.

In attempting to define the three stages of savagery, barbarism and civilization, we must analyze the social and political life of man, we must study his organization, with regard to his own community and those foreign to it, we must inquire into his religion, his industrial occupation and intellectual development, the last being denoted especially by his progress in language, spoken and written.

The evolutionist, from the trend of his interests, has expected to offer either in a living people or in the remains of some extinct race, evidences of man just emerging from the brute creation, —man with no spiritual life, or intellectuality beyond some little ingenuity in the satisfaction of his appetites, —man without speech, without religion, without knowledge of the family relation or tribal government, with no idea of differentiation of the activities of the various members of a community, with little skill even in the rude arts of hunting and fishing, with no knowledge of implements beyond the choice of sticks and stones which may be better adapted to his needs than others and with no thought of shaping tools and weapons to his needs. This anticipation of the evolutionist does not exist at present nor is there proof that it ever has existed. Wherever human remains have been found, there

have been found with them, fairly ingenious implements, in most cases even the crude indication of an artistic striving, and the disposal of the dead and even the rubbish which has accumulated about his ancient hearth-stone, suggest that the earliest man of whom we have any knowledge possessed some sentiments in regard to his family and some affectionate regard for the dead which persists to the present day. Indeed, the nearest approach to a cold-blooded lack of human affection and of divine ideals has been found among the natives of Africa who have, in industry and language reached a fairly high state of development.

To sum up the distinctions among savagery, barbarism and civilization, the following tabular view may be convenient although numerous exceptions to the statements therein contained will be encountered by the student in the actual study of the human race:

SAVAGERY

Family—about as present.

Political organization—practically no internal government.

No conception of police organization. Questions of equity decided informally though often by a political chief. Punishment of criminals left to personal vengeance. Hence, the law recognized duty of vengeance for the family, clan, etc. External political organization well defined though definite conceptions of international law were not always in accordance with modern standards of ethics. Every male adult a warrior.

Religious organization—Idea of creator and intermediiator usually well defined. Idolatry frequently entirely wanting especially in the North American Indians. Symbolism sometimes frequently used and merging into idolatry. Ethical standards similar in general to those prevailing among civilized peoples but subject to numerous exceptions on account of peculiar ideas. Mythology usually recognized as a personification of natural phenomena and forces. Priesthood not very stable. Priestly offices usually discharged by elderly men and women of prominence. Life-long devotion to priesthood not rare.

Differentiation of Occupations—Occasional example of medicine man or implement maker. Otherwise practically no differentiation of trades.

Spoken Language—(The theoretic classification of languages does not apply to the cultural development of man as might be anticipated. The language of the lowest savages known is comparatively

perfect in construction and ample in vocabulary and most principal ideas of tense, mode, abstract ideas, etc., can be translated from one language to another without reference to the developement of the people speaking it. While there are some notable exceptions to this statement, the languages of savage peoples are surprisingly competent to express civilized ideas, their principal lack being in nouns corresponding to objects unknown on account of the state of development.)

Written Language—Entirely ideographic except that proper names are written as a rebus. No indication of sound can be given in this way and the name would be pronounced differently or misinterpreted if the reader were not familiar with the spoken language of the writer.

Food Supply—Hunting, fishing, crude agriculture.

Art—Simple and crude. Seldom possible to distinguish fine arts from useful ones. Conventionalism well developed but crude efforts at representative art surprisingly free from conventionalism.

BARBARISM

Family—Polygamous.

Political Organization—Internal political organization elaborate, consisting of a monarchic organization of the aristocracy. Police regulations well defined to the extent of protecting the monarch from the aristocracy, and the aristocracy from the common people. Little or no attempt at systematic and rational enforcement of civil and criminal laws. Courts of equity common. Criminal offences, not of political significance, usually left to personal vengeance. Male members of aristocracy almost universally warriors. Lower classes usually in a state of more or less complete slavery and subject to military duty as required. Conceptions of international law and international relations very vague.

Religious Organization—Idolatry prevalent. Polytheism, Sacrifices on an extensive scale largely for the support of the priesthood. Priesthood permanent, numerically large and influential. Medical and scientific arts usually under the control of the priesthood.

Differentiation of Occupations—Quite accurate division of occupations, certain occupations being confined to the aristocracy and others to the lower classes. Comparative fixity of trades by heredity.

Written Language—Ideographism developed into arbitrary conventional signs. Writing iconographic—that is, on the principal of the modern rebus, comparatively few conventionalized ideograms being combined to suggest the sounds of other words.

Food Supply—Agricultural and pastoral skill well developed. [Pastoral life impossible in North America on account of the lack of domesticable animals and very little developed in South America because of the paucity and relatively slight value of domesticable animals].

Art— Art highly conventional, representative art being so conventionalized as to appear like a caricature.

CIVILIZATION

Family— Family rights protected by law.

Political Organization—Both internal and external political organization elaborate. Points of difference from conditions existing in savagery and barbarism too well-known to require recapitulation.

Religious Organization—Tendency to return to more natural and simple ideas. Priesthood less numerous and less influential. Atheism or dissension from existing religious views comparatively common. More or less complete cession by priesthood, of medical practice, scientific domination and political influence. [Practically all modern civilized nations are either nominally christian or christianity has influenced their standards of ethics].

Differentiation of Occupations—Specialization of industry more marked than in barbarism but only on account of economic and industrial advances. No restriction with regard to class or heredity. Change of occupation during life-time of an individual, common.

Written Language—Writing mainly phonetic although the letters of the alphabet may ultimately be traced to ideograms.

Food Supply—Agricultural and pastoral life well-developed.

Art— Sharp distinctions between fine and useful arts and between conventional and representative arts. Caricature well developed but of limited application.

ANTHROPOLOGICAL NOTES.

BY ALEXANDER F. CHAMBERLAIN.

Maltese Archaeology. Albert Mayr who studied on the ground the prehistoric monuments of Malta, has published the results of his observations in "Die vorgeschichtlichen Denkmäler von Malta (Muenchen, 1901), of which work a recension by S. Reinach appears in "L'Anthropologie" (Paris), Vol. XII, pp. 730-732. According to M. Reinach the investigations of Mayr correct all previous accounts of Maltese archæology, even that of Perrot and Chipiez, based upon insufficient data. The megalithic sanctuaries, contrary to the opinion of Fergusson and others, seem to have had no roofs, and show the predilection of the ancient Maltese for elliptic foundations and bent lines. Such monuments are the Gigantia, Tal-Kaghan, Mnaidra, Hadjar-Kim, etc. The conic stones, pillars, altars, etc., are of cult-significance. Some of the other stone structures, towers, walls, dwellings, rock-houses, sculptures, etc., recall sometimes Ægean and sometimes Libyan art. The pottery has certain not clearly defined resemblances with the primitive ceramic objects of Cyprus. The opinion, hitherto generally held (although in 1856 H. Rhind opposed it) that monuments of the Maltese islands were of Phœnician origin, must now be abandoned, and the few inscriptions discovered are merely evidence of later colonization, not of original settlement. These Maltese megalithic structures belong to a culture wider and older than that of the Phœnician, and with analogous monuments in Sardinia, the Balearic islands and south-western Spain, represent a western insular civilization of the Mediterranean region, more or less independent of, although for a long time in contact with, that in the east; the presence in Malta of spirals and corbelling, indicates Mycænian influence. Mayr holds that the primitive population of Malta to whom are due these megalithic monuments came from the African coast, but Reinach considers the proof of analogies between the Maltese structures and those of French Africa not very convincing, and inclines rather to the Tripolitan region for such resemblances. He thinks also that there are close analogies between the steatopygic statuettes found in Malta and those of the Egyptian proto-Libyans, than between the former and corresponding Ægean art. Reinach concludes that the idea of the colonization, at an extremely remote period, of Malta by the Phœnicians must be given up. So "prehistoric Phœnicia loses a new province, and the oriental mirage has one less pillar to support it." Malta remains, however, none the less interesting to the archæologist and student of early man.

Corsican Ethnology. In September 1901 the "Association

Fra'nçaise pour l'Avancement des Sciences" met at Ajaccio in Corsica, and the occasion naturally brought into prominence the ethnology of the island past and present. Several papers relating to Corsica were read before the Anthropological Section and excursions to points of archæological interest were made. A few months before the meeting there was discovered in a quarry at Cagnano, near Luri (on the Cape Corso peninsula, in the extreme north of the island) a rock-shelter, where were found a number of large objects, some fragments of pottery, human skulls, and other osseous remains. The bronze ornaments of Cagnano, according to M. Ernest Chantre, resemble those of the tumuli of the Jura and Franche-Comté, from certain Italian and Sicilian necropoli and from Koban in the Caucasus. Of the skulls one has some resemblance to that discovered by Captain Ferton at Bonifacio (in the extreme south). The latter gave an account of his investigations in the memoirs in "Premiers habitants de Bonifacio et leur origine" and "Poterie néolithique trouvée a Bonifacio." No traces of quaternary man seems to have been found here, but many remains of neolithic culture like that of the continent during the same period. The flint, serpentine and quartz employed to fashion implements and weapons are of local origin, but the considerable objects of obsidian (this rock does not occur in Corsica) must have come from abroad, by way, probably of the Sardinian trade-routes. The man of these rock-shelters, hunter and fisher, fed largely upon the *Lagomys Corsicanus*, a little rodent long ago extinct on the island. The osteological peculiarities of neolithic Corsican man [dolichocephalic, platycnemia, etc.,] bring him into relation with the contemporaneous man of the continent. This type seems to have widely dispersed over the island and has perpetuated itself to this day, although later driven back by the differing race that introduced into Corsica a knowledge of copper and bronze and their manufacture. Finds by Tommasini at Balagna and by Franceschi at Pioggiola, the last yielding many bronze objects, were made some years before these later discoveries. The sculptured menhirs of Corsica,—the range of Palaggio, near Tizano, is the largest—have been studied by E. Michon. Very interesting are the two curious sculptured menhirs of Santa Maria and Capocastinco. These Michon compares to the so-called Apricciani statue, wrongly considered to be a Phœnician sarcophagus cover. Dr. P. Delisle, who resumes the papers of the meeting for "L'Anthropologie" [Vol. XII. pp. 757-764], expresses the opinion that the "Corsican type" is not as uniform as has been thought, with respect to both the past and the present population. The most noteworthy types are the Cro-Magnon and the Berber. The former is still easily distinguishable in the district of Balagna, where the latter [scattered also here and there all over the island, at Corte, *e. g.*], is also to be noted. Some of the dolichocephals are of a finer type; brachycephals and intermediate varieties

are also to be found. Some of the Berber element may be due to the "Sarrazins," who have occupied certain sections of the country for some three centuries. Most authorities make the earliest inhabitants of Corsica come from Sardinia,—ultimately, in all probability, from northern Africa.

The Alpine Type. In the "Centralblatt für Anthropologie" [Vol. VI. pp. 321-330], Dr. Gustav Kraitschek, of Landskron, offers objections to Ripley's recognition of a so-called "Alpine type" as one of the three fundamental races of which European peoples are composed. According to Dr. Kraitschek, Ripley's "Alpine type", is not autonomous with the "Teutonic" and the "Mediterranean," but very clearly a hybrid or mixed form, one of several combinations of dolichocephalic and brachycephalic stocks.

The Alleged Somatic Inferiority of Woman. Dr. Giuffrida-Ruggeri's article "Sulla pretesa inferiorità somatica della donna" [Arch. d. Psichiatria, Vol. XXI., pp. 4-5] is calculated to give pause to some of the somatological detractors of woman. From a careful examination of one hundred male and one hundred female skulls from one region he comes to the conclusion that the so-called "inferiority" of woman has no existence in a scientific sense. Dr. Giuffrida-Ruggeri does not even allow that the skull of woman is somatically nearer the infantile form than is that of man. It is easier to maintain indeed, that modern woman stands higher morphologically than modern man. Her so-called "inferiorities," are neither infantile, nor developmental in their significance, but express merely incidents of cranial relations. The same things in a woman and in a child are not identical.

Kraus Ethnographico-Psychologico-Musical-Museum in Florence. A catalogue of part of the objects [musical instruments of all sorts, times and peoples] in this interesting collection appears in the "Archivio per l'Antropologia" [Vol. XXX. pp. 271-297]. The Museum contains in all 1076 specimens. Of these Asia furnishes 118; Japan and LiuKiu 65; Corea 7; China and Annam 21; Siam 3; India 6; Persia 8; Arabia and Asia Minor 8; Australia and Polynesia 21; Java and Nias 9; New Guinea 1; Marshall Is. 1; New Britain 6; New Caledonia 4; Africa 42; Egypt, Nubia and Sudan 25; Abyssinia 6; Tunis, Algeria, Morocco and Congo 11; Europe 871; Turkey, Servia and Montenegro 8; Russia 13; Italy 434; France 56; Belgium and Holland 13; England 19; Germany, Austria and Switzerland 87; parts and appliances 231; America 26; North America 10; Mexico 7; Haiti 4; South America 5.

Artificial Sleep. From a brief résumé by Kohlbrugge [Cbl. f. Anthr., Vol. VI. p. 379], it appears that the Javanese know how to produce a pleasant artificial sleep by pressure of the carotids, whose name in the native tongue is *verat-tidor*, "sleep nerve." The accompanying anæsthesia makes it easy to pe

form minor operations upon the patient. The folk-thought connecting the carotids and sleep is very old. Celsus called the carotid artery *arteria somnifera* and *carotid* itself is said to be derived from Greek *karos*, "sleep." Even the ancient Assyrians are credited with a knowledge of carotid-sleep.

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ARCHÆOLOGY IN AUSTRALIA.

BY JOHN FRASER, LL. D., SYDNEY.

Six months ago I gave you some account of the departure of the Spencer and Gillen expedition into the interior of Australia for the purpose of examining, in the interests of Science, some of the manners and customs of the undiluted Tribes there. They have now done their work and are returning, but instead of following the routes of the Overland Telegraph Line from Fort Darwin on the Northwest Coast to Adelaide, South Australia, they have pushed across from Alice Springs in the interior to Burrolula, a small township on the West Coast of the Gulf of Carpentaria, six hundred and fifty miles by land from Fort Darwin. There they expected to get the steamer which plies between that part of Carpentaria and the Port, but we now learn that the steamer has gone to the bottom of the sea, and the party must wait in that lonely and malarious region till means can be used to bring them off and carry them back to civilization. This delay is unfortunate, for they have had malarial fever already and are weak in health, and the raining season is coming on.

The Australian Association for the advancement of Science, held its Ninth Session in Hobart, the Capitol of Tasmania, a few weeks ago. This Association was first formed in Sydney in the year 1888, and has met in the chief cities of Australia at intervals of one or two years. The next meeting will be held at Dunedin, New Zealand, in 1904. At the recent Hobart meeting, Captain Hutton, director of the Museum at Christ Church, New Zealand was voted to the chair and gave the Presidential address. It was on "Evolution" and in the opening sections it touched on some questions that belong to Anthropology. From the fact that man sleeps and dreams, it was argued that early man was "led to believe that there was in him a spirit independent of his natural frame in its movements, and that this spirit lived on as a ghost after the death of the body; hence ancestor spirits and their deification and worship and thence the worship of mythical personages in general; then came a belief in beneficent tribal gods, and that inanimate objects also contained spirits. After such remarks as these, the president

went on to consider Darwin's theory, and the more recent aspects of it.

In the Anthropological section, papers were read on "Anthropometry and child measurement;" "Primitive ways;" especially burial rites, "Legends and marriage rites of the blacks in Central Australia;" "the Islands of the Pacific Ocean" and so on.

The Science Congress occupied nine days and had six hundred and thirty one members. It organized public lectures and excursions into the country and received hospitality both from His Excellency, the Governor, and from private residents.

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STONE CIRCLES.

BY A. M. SWAN.

Stone circles, similar in many respects to those found in England, are not rare in New Mexico. One located on the east line of the Socorro Grant, in Socorro county, New Mexico, is typical of many of these circles. The interior of this circle is about forty feet and has been surrounded by an outer circle. The inner circle is in the best state of preservation, most of the upright enclosing stones being still intact. The stones have plan equi-distant from each other. In the centre of this circle there are four upright stones forming the four corners of a square, which have been capped by a large flat stone now broken in two but edges still supported by the interior pillars forming what English Archiologist would probably term an Altar stone.

Not far from the Cochite mining camp in Benialills county there is a somewhat smaller stone circle of the same design and others have been noticed in several other locations.

That these circles were not intended for the trapping of game is rendered very improbable from their location on high exposed ground with no natural barriers to aid the hunter in surrounding and driving his game as well as from their small area. In each case which has come under my observation, very ancient ruins may be found in the immediate vicinity, some of which are of great extent.

Another class of upright stone remains consists of lines set at square distances apart covering great areas. One of these located on the Navajo correction line—surveyed by the late Col. Walter G. Marman, covers an area of probably one thousand acres of land. The rows of upright lines are parallel and run in an easterly and westerly line. Similar remains, I believe have been found at Yucatan.

THE ORIGIN OF THE ALPHABET.

BY ARTHUR J. EVANS.

In my excavation of the prehistoric palace of Knossos I came upon a series of deposits of clay tablets, representing the royal archives, the inscriptions on which belong to two distinct systems of writing—one hieroglyphic and quasi-pictorial; the other for the most part linear and much more highly developed. Of these the hieroglyphic class especially presents a series of forms answering to what, according to the names of the Phœnician letters, we must suppose to have been the original pictorial designs from which these, too, were derived. A series of conjectural reconstructions of the originals of the Phœnician letters on this line were, in fact, drawn out by my father, Sir John Evans, for a lecture on the origin of the alphabet, given at the Royal Institution, in 1872, and it may be said that two-thirds of these resemble almost line for line actual forms of Cretan hieroglyphics. The oxhead *Aleph*, the house *Beth*, the window *He*, the peg *Vau*, the fence *Cheth*, the hand *Yod*, seen sideways; and the open palm *Kaph*; the fish *Nun*; the post or trunk *Samekh*; the eye *Ain*; the mouth *Pe*; the teeth *Shin*; the cross-sign *Tau*; not to speak of several other probable examples, are all literally reproduced.

The analogy thus supplied is, overwhelming. It is impossible to believe that while on one side of the East Mediterranean basin these alphabetic prototypes were naturally evolving themselves, the people of the opposite shore were arriving at the same result, by a complicated process of selection and transformation of a series of hieratic Egyptian signs derived from quite different objects.

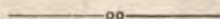
The analogy with Cretan hieroglyphic form certainly weighs strongly in favor of the simple and natural explanation of the origin of the Phœnician letters, which was held from the time of Gesenius onward, and was only disturbed by the extremely ingenious, though over-elaborate, theory of De Rouge.

Whether, however, the Phœnician letters, or rather their pictorial originals, were actually selected from the Cretan characters is a different question, and on this I wished to express myself more guardedly. The correspondences are, indeed, so striking that they certainly seem to point to, at least, the camel's head and neck *Gimel*, must have been adopted on Syrian soil.

What I ventured to suggest at the Bradford meeting was that the points of community might be ultimately

explained by the powerful settlement of the Aegean island peoples on the coast of Canaan, represented by the Philistines and the abiding name of Palestine. The biblical traditions, which gave part of them, at least, the name of Kerethim or Cretans, have been recently confirmed by an important piece of Egyptian evidence going far to show that Kaphtor, whence they traditionally came, is the same as the insular realm of the Kefts, the chief representatives of Mycænaean culture on Eighteenth Dynasty monuments. The prolonged sojourn of the Caphtorim or Philistines, in their new home, would itself explain the absorption of local elements among the hieroglyphic forms that they had originally brought over. We know that they shortly lost their indigenous speech and became Semitized.

On the walls of the tomb of Rekhmara, the Governor of Thebes under Thothmes III—in the first half, that is, of the Fifteenth century B. C.—the Keft chieftains are seen bearing precious vases, and ingots, and golden ox-heads as tributary gifts to Pharaoh. It is of great interest in relation to the chronology of the clay archives of Knossos that on several of the tablets, with linear inscriptions—in this case, no doubt, containing inventories of the royal treasure—there appear beside the written record pictorial representations of vases, ingots, and ox-heads, precisely similar to those of the Egyptian painting. It seems probable from this that part of the clay archives of the palace of Knossos go back to the fifteenth century B. C. The date of the most recent is, at all events, limited by that of the destruction of the palace itself. Of the numerous relics found within this great building there are none which point to a period as late as the latest prehistoric elements of Mycenæ itself. It would be extremely unsafe to bring down anything found within its walls later than at most, the twelfth century B. C.—London Times.



LAKE DWELLINGS IN BELGIUM.

BY ALEXANDER F. CHAMBERLAIN.

At the International Congress of Prehistoric Anthropology and Archæology (Paris, 1900), Baron Alfred de Loe, of Brussels, read a paper on *Découverte de palafittes en Belgique*, calling attention to the discovery near Roulers on the little river Mandel, in western Flanders, of the first important remains of lake dwellings within the territory of Belgium. This is not the first discovery of such remains, for vestiges of pile-dwellings had

already been found by Haubourdin at Strambuges, Gerærts and van der Capellen (1872), at Wideux in Limbourg, Captain Delvaux near Audenarde, and others at Blæsvelt, in the province of Antwerp, etc. In the fall of 1899, in connection with the lowering of certain reservoirs, near Roulers, there were discovered a large number of piles of blackened oak, numerous osseous remains of animals, and the almost complete skeleton of a man. At Emelghem, in the summer of 1899, in the process of enlarging a tributary streamlet of the Mandel, some piles together with bones of horses were found, and in the same locality on high land overlooking the stream flints and horses' teeth had some time before, been discovered. But the discovery now under consideration in particular was made at Denterghem (in a marshy meadow once the estuary of a small tributary of the old Mandel) in the month of August, 1899. M. Coucke, a member of the municipal council of Denterghem, in draining the meadow, discovered some bones of ruminants and a terra-cotta disc, and notified the Abbé Clérhour, who instituted systematic and careful excavations. These resulted in the finding of some 300 oaken piles, several incised beams (for horizontal placing), a number of well-sawed planks pierced with large holes made with a metal auger, etc. The Abbé thinks he has discovered also the oak trunk which supported the bridge from the dwelling to the dry land. Most of the piles were down, only a few being erect and covered with an old, thick layer of mud. they penetrated some distance into the Flanders sand, the bottom of the marsh. The best preserved piles were still 2.20 meters long, square in section, and sharpened at the lower end with a metal hook. The beams were 3 meters long, the planks 4.10x0.30x0.06 meters. The condition and state of preservation of these oaken objects seem to indicate different degrees of antiquity and to prove that piles, beams, and planks have all been renewed at various times. The archæological deposit, occurring at a depth of 2 or 3 meters, contained, distributed pell-mell among the piles, a good variety of objects belonging to all epochs. The osseous remains discovered include: parts of human tibia, femur, humerus and cubitus; various bones of fox, wolf, dog (4 individuals), horse (7), boar (6), stag (2), goat (5), ox (12), also the frontal bone of a *Bos primigenius*, perhaps a hunter's trophy. A large quantity of husked hazel-nuts was also found. The objects of human industry here discovered were as varied; small flints, discoïd scrapers, arrow-heads, chips, some of them retouched, rejects and nuclei of divers sorts, fragments of polished axes, horn sheaths and handles for tools, a pierced piece of stag-horn having originally had a wooden handle, a portion of the antlers used for a pick or hoe, a chisel made of the cubitus of a horse, ribs of oxen used as polishers; long bones of animals broken to extract the marrow; stampers, fragments of querns, mullers, etc., of tertiary sandstone; a dog-tooth pierced (for suspension) like those of the Robenhaussan deposits, etc.

Of bronze objects there were found: a little ring, some spirals, a crescent-shaped pendeloque, an open bracelet (ornamented here and there with punctillated lines in the lake-dwellers' fashion). Masses of limonite and sand-stone, scoria, fragments of slag, a portion of a large earthen mould, rejects, etc., were likewise disinterred. Among the other interesting specimens were fragments of hand-made earthen pots, ornamented on the edge and the upper part of the belly with nail and finger-marks suggesting Campignian or Hallstattian analogues; also other more elegant (wheel-made) vases of finer earth of the Menapian type. In addition to all these there were discovered: a large bronze coin of the emperor Trajan (98-117 A. D.); the bottom of a varnished red earth vase marked *Conatus*; a bronze fibula, a little clay lamp (white with black cover), weights for nets (or perhaps weaving instruments); a tegula fragment, part of a conglomerate mortar, bits of earthen vessels of all sorts and colors, the bottom of a thick blue glass bottle, fragments of gray pottery decorated by the roulette in a way characteristic of the Frankish period and belonging to the VIII-IX centuries. Belonging to a later epoch still are the fragments of large vessels (well-made and sonorous) of a type in use in the IX-XII and XVI centuries, varnished pitchers which cannot be anterior to the XIV-XV. centuries, knife-handles, etc. The lake-dwellings of Denterghem are thus remarkable as belonging to a "station" which dates as far back as the neolithic period and appears to have been more or less continuously occupied till towards the end of the Middle Ages of European history. It is thus quite probable that lake-dwellings were of common occurrence in Lower Belgium, and were occupied continuously down to a comparatively late period in historic times. The human bones found at Denterghem give no indication of race, but the skeleton of Roulers has been studied by Dr. E. Houzh, according to whose examination it belongs to the brachycephalic neolithic race of ancient Belgium. The man of Roulers would then be related to the brachycephalic people of Furfooz, Hastière, Sandron, Obourg, of the Grenelle type, found most sure in modern times at Saaftingen. Altogether, these recent discoveries of remains of lake-dwellers in Belgium form one of the most interesting and important results of European archæological activity. An abstract of Baron de Loc's paper is published in *L'Anthropologie* (Paris), Vol. XII (1901), pp. 558-564.

CONTACT BETWEEN ASIA AND AMERICA.

NOME, ALASKA, Feb. 20, 1902.

EDITOR AMERICAN ANTIQUARIAN:

My Dear Sir: I enclose a paper on the Eskimo dance house, from my notes written at Cape Prince of Wales in January when I had the pleasure of visiting that place for two weeks. While there I made a very careful study of the situation in regard to the possible crossing from Asia of the natives. From the beach at Kingegan, the Eskimo village, you can plainly see the East Cape of Asia. While the Diomed Islands seem to be very near, although they are twenty miles away. The natives cross and re-cross frequently, especially in the summer time, but during some winters the ice packs in the straits and freezes there and they are able to cross for some time with dog teams. I saw the natives go out on the floating ice for seals and white bear and I can see no difficulty in going on over to the Diomedes. Many natives are carried away on this floating ice from East Cape, the Diomedes and Cape Prince of Wales and frequently drift to the opposite shore. It is only a day's journey in their boats in the summer time and regular international trading has been carried on from those three points as long as Eskimos have lived on the Arctic shore. There has undoubtedly been a continuous passing of people between these points ever since the geological and climatic conditions have remained as they now are. Within one hundred miles of these straits we find the Athpascans who are allied with every Indian tribe south to Mexico. I cannot see any difference in physiognomy between the natives of America and those of Asia. Even the reindeer man from the tundra of Siberia have the same appearance as the Eskimo, and I have no doubt but that they are related, although I have not been able to give that matter any personal examination. I will undertake, after I get settled again, to give you some more information upon these matters, but I wish you would make a comparison, editorially or otherwise, between the "koz-ge" of Cape Prince of Wales and the "Kiva" of New Mexico. I know so little of the "Kiva" that I am unable to do it, and yet I know that there is a very great similarity between them.

Very truly yours,

JAMES WICKERSHAM.

ANCIENT BOAT FROM THE NILE.

A boat beside which Columbus's Santa Maria or the Northmen's ship are modern and up to date arrived at New York a short time ago. It was dug up out of the Nile, and crossed the ocean on the deck of the Hohenfels on its way to the Carnegie Institute at Pittsburg. The model of the boat follows the lines of the modern scow, though higher at

the bow and the stern, along the sides are a number of holes, undoubtedly for sweeps. The boat is said to be 4,000 years old, and is apparently modeled on much the same plan as the earliest representations of Egyptian ships in the temple carvings. These earliest drawings go back to a period about 3,000 B. C., and show ships capable of carrying a number of men and a cargo of cattle at the same time. Their chief peculiarity was in their rig of one mast with a square sail, the mast being made of two poles, stepped apart but joined at the top, like an inverted V. These ships were high at the bow and the stern, and carried from twenty to twenty-six oars. Whether this boat was a cattle ship, a war vessel, or a yacht, perhaps on the lines of Cleopatra's barge, the archæologists have not yet had a chance to decide. Several other boats of the same kind have been dug up recently in the Nile and presented to museums in Europe, where a large crop of theories as to their use, their age, and their meaning has consequently arisen.

THE OLDEST DISCOVERED SPECIMENS OF EGYPTIAN JEWELRY.

The most important group of gold work consists of four bracelets of the wife of King Zer, the successor of Menes. These are the oldest specimens of fine jewelry that have so far come to us from Egypt. The first consists of a row of facades with the royal hawk, alternately of gold and turquoise. The second bracelet has a gold centre-piece copied from the centre of a lotus flower; on each side is a group of turquoises and a large ball amethyst. The third bracelet is of spiral beads of a dark lazuli and gold, with small beads of turquoise; the fourth, of hour-glass beads of gold and amethyst.

As bearing on general history, a number of other seemingly unimportant objects are of greatest significance. On his earlier expedition Petrie had already found several fragments of pottery which were, beyond question, not of Egyptian origin, and which, in common with other famous archæologists, he pronounced Ægean (primitive Greek). This year new material has been added. In the tomb of the above mentioned King Zer were found many vases of the original offerings, burnt and encrusted with resins. A large number of them are Egyptian; and without doubt belong to this oldest period; eight, on the contrary, are of a red polished ware, with handles at the sides, and of forms quite unknown in Egypt. We hardly err, therefore, in assuming that these came from one of the islands of the Ægean Sea; and that the contact between Egypt and the earliest Greek culture may be traced back to the beginnings of the Egyptian history, that is, into the fourth millennium B. C.

Editorial.

MYTHOLOGIC ART IN PREHISTORIC AND HISTORIC TIMES.

The effect of Mythology on the art of all times has been noticed by many of the students of Ancient History; but the thought that this began in prehistoric times and has continued even to the present day, has escaped the notice of the majority. We present with this, cuts which illustrate the point. One of these represents a figure found on the north-west coast, and



CARVED IMAGE FROM BRITISH COLUMBIA.

illustrates the style of art which prevailed there.

It is well known that the Greeks embodied their mythology in their art, but the tendency continues to the present time, for there is scarcely a fountain in any of our cities which has not some figure or statue which carries us back to the Greek mythology. Our great expositions are full of such groups. The point which we make is that there was a native mythology in America which impressed itself upon the prehistoric art, and it would be well if the great exposition at St. Louis could secure some artist who would either embody this mythology in an original piece, or would reproduce some of the remarkable specimens of art that are found in Mexico and Central America. It may be that the work would be so novel to most artists.

that new lessons in archæology would have to be taken, but the novelty would be at least attractive, and would call attention to the stage of art which was reached by some of the natives of this continent.

The Cliff Dwelling at the Columbian Exposition was a travesty, yet it was visited by great crowds. The reproduction of the art works would be more instructive and nearer to the reality than any such huge artificial tent, though both forms of reproduction might be useful.

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THE COMING CONGRESS OF AMERICANISTS.

It was in 1878 that the Congress of Americanists met at Luxembourg in France. The Editor of this JOURNAL had the honor of presenting a paper on the Mound Builders which was translated into French and published in their first report, and afterward joined with Prof. E. T. Cox and other gentlemen in inviting the Congress to America.

The Governor of Indiana offered the hospitality of the state if they should come. No delegate was sent from this country and as no representative was present the invitation was not accepted. It is fortunate that the younger men who have taken up the study of archæology on both continents, have succeeded in the desired results, and that the Congress has been invited to the city of New York and will be received, where there are so many material and personal evidences of the progress archæology has made during the last twenty-five years.

Very few of those who began the study of the subject and were co-operating at that time are now living, and yet the science has made wonderful progress. The museums are full of tokens. Those at New York, at Cambridge, at Philadelphia, at Chicago, at Davenport, at Milwaukee, and especially the one at Washington will furnish material objects which cannot fail to interest the visitors from abroad.

The sad fact is apparent, that the living representatives of the race or races, whose hands have moulded and fashioned these relics are so far removed from the Atlantic shores; the few fragments that are left are far beyond the Mississippi River, and present but a faint shadow of the peculiar form of culture which formerly prevailed.

The mounds of the Mississippi valley are left in a dilapidated condition and scarcely represent the state of art and architecture which formerly prevailed. Still, there are, a few large mounds and a few village enclosures left in Ohio, Illinois, and a few effigies in Wisconsin, and a few fragments in Georgia and Mississippi left. The great Serpent Mound and Fort Ancient, the Cahokia Mound are still standing. The Cliff Dwelling-

ings and Pueblos are in a fair state of preservation. The ruined cities of Mexico are fast going to ruin.

The welcome will be extended to those who have taken up the study of American Archæology, and every effort should be made to open to their view the wonderful things which are disclosed on this continent.

Editorial Correspondence.

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE.

The Fifty-first meeting of the American Association for the Advancement of Science will be held at Pittsburg, Penn., June 28-July 3, 1902. Mr. Stewart Culin, of the University of Pennsylvania, will preside over the Section of Anthropology.

Students are cordially invited to attend, and contribute papers upon subjects connected with their fields of research. Several members of the Section have informally expressed the desire to devote at least one day to papers and discussions on anthropological museums and their cases, methods of installation, and technique; also that papers should be offered on the more important special collections in museums both in this country and abroad.

In order that a preliminary program for the Section may be distributed in advance of the meeting, titles of communications should be sent to the secretary as soon as possible. Abstracts of papers, or the papers themselves, may be sent later, at the convenience of the authors, who are reminded that no title will appear in the final program until the paper, either in full or in abstract, has been passed upon by the Sectional Committee.

Students will confer a favor upon the Sectional Committee by informing the Secretary of their intention to be present at the meeting. Address HARLAN I. SMITH, Sec'y. Sec. H., American Museum of Natural History, New York.

INTERNATIONAL CONGRESS OF AMERICANISTS.

The Thirteenth Session of the International Congress of Americanists will be held in the halls of the American Museum of Natural History, New York City, October 20-25, 1902. The object of the Congress is to bring together students of the archæology, ethnology, and the early history of the two Americas, and by the reading of papers and by discussions to advance knowledge on these subjects. Communications may be oral or written, and in French, German, Spanish, Italian, or

English. All debates are expected to be brief, and no paper must exceed thirty minutes in delivery. The papers presented to the Congress will, on the approval of the Bureau, be printed in the volume of the Proceedings. Members of the Congress are expected to send, in advance of the meeting, the titles, and, if possible abstracts, of their papers, to the General Secretary. The subjects to be discussed by the Congress relate to: I. The native races of America, their origin, distribution, history, physical characteristics, languages, inventions, customs, and religions. II. The history of the early contact between America and the Old World. All persons interested in the study of the archæology, ethnology, and early history of the two Americas may become members of the Congress by signifying their desire to Mr. Marshall H. Saville, General Secretary of the Commission of Organization, American Museum of Natural History, and remitting either direct to the Treasurer, Mr. Harlan I. Smith, American Museum of Natural History, or through the General Secretary, the sum of three dollars in American money. The receipt of the Treasurer for this amount will entitle the holder to a card of membership and to all official publications emanating from the Thirteenth Session of the Congress. Mr. Morris K. Jesup is President, and the Duke of Loubat Vice-President, of the Commission of Organization.

Phillips Academy, Andover, Mass., has recently established a department of Archæology. A fire-proof museum is in process of construction. The department begins with some 40,000 specimens and a liberal endowment.

Charles Peabody Ph. D. is the honorary director, and Warren K. Moorehead, A. M., is curator. The purpose of the department is to encourage the study of types now on exhibition in the various museums of the country, rather than to attempt large explorations. Duplicate specimens are desired and the curator will be glad to correspond with persons having such in their possession.

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DEATH OF DR. THOMAS WILSON.

Dr. Thomas Wilson, curator of prehistoric archæology in the Smithsonian Institution and the National Museum for years, died in Washington in the seventieth year of his age. Dr. Wilson was born in Pennsylvania, but at an early age moved to Iowa. During the civil war he was captain of a company in the Second Iowa Cavalry. After the war he went to Washington and practiced law, and later served for years in the consular service. He was a member of various scientific bodies and had been decorated by crowned heads of Europe for his service to science.

LITERARY NOTES.

FREE MUSEUM OF SCIENCE AND ART.—Department of Archæology and Paleontology, Philadelphia, May 1900. The pamphlet contains a por-

trait of Karl Herman Berendt, and a catalogue of his linguistic collections; also an article on the origin of ornament, by Stuart Culin; and an interesting illustrated account of the collections in the museum.

THE S. SCHOOL TIMES, Philadelphia, Pa.—This Journal in the past has furnished some very valuable articles on the discoveries at Nippur from the pen of Prof. Hilpricht. More such articles would be appreciated if the paper could secure and publish them.

THE JOURNAL OF THE POLYNESIAN SOCIETY, for Dec. 1901, has an interesting article on Polynesian numerals, by John Fraser, LL. D.; also a translation of the legend of the fountain of fish, by Edward Tregear, and an article on the Maori Kite made in the resemblance of a flying bird, by Elsdon Best; also an account of the Relics from the sand hills of the Patea district on the west coast. These relics consist of knives, pounders, stone bowls, lamps, stone axes, drills, fish hooks, sinkers, anchors, charms, images, wrought in stone and wood, by Rev. T. G. Hammond.

EDUCATION for April 1902, Frank H. Palmer, Boston managing editor, —This magazine continues to be as interesting as ever. It is full of practical thought, and always a versatile and varied table of contents.

BOOK REVIEWS.

REPRODUCTIONS OF MEXICAN CODICES.

BY FREDERICK STARR.

The Duke of Loubat has recently added a seventh number to his interesting and important series of *fac-simile* reproductions of ancient Mexican manuscripts. It is the *Codex Fejervary*, which was first printed in volume III of Lord Kingsborough's *Antiquities of Mexico*. This manuscript is now in the possession of the Free Public Museums of Liverpool and in this new reproduction it appears under the name of *Codice Fejervary-Mayer*. The original consists of a strip of paper folded screen-wise; there are twenty-two pages of pictures on each side of the strip and a twenty-third page, left blank, serves as cover to the folded book; the designs are in rather brilliant colors and are of good execution; the pages measure $6\frac{3}{4} \times 6\frac{3}{4}$ inches. The reproduction given in Kingsborough has notable faults; the pages are numbered in reverse order; the direction of painting and reading in the manuscript is really from right to left—Kingsborough did not realise this. Dr. Edward Seler, who has so well edited the *Tonalamatl of the Aubin Collection*, the preceding number in the Duke of Loubat's series, is to prepare a descriptive and explanatory text also for the present number; Mexican scholars will await its appearance with interest.

In this connection we may speak briefly of the work already done by this noble man in behalf of American studies. The series of reproductions of Mexican manuscripts includes:

- Codex Vaticanus: No. 3773.*
- Codex Vaticanus: No. 3778 (de los Rios.)*
- Codex Borgia (exvellettri).*
- Codex de Bologna (Cospiano).*
- Codex Telleriano-Remensis.*
- Tonalamatl Aubin.*
- Codex Fejervary-Mayer.*

These seven reproductions are models in their way, being as exact as modern methods can produce. They are far superior in every way to Kingsborough's. In two great folio volumes, with magnificent plates, the Duke or Loubat has published the choicest specimens illustrating American ethnography, in the Museum of the Trocadero; Dr. Harney wrote the descriptive text. The Duke has also reprinted Harney's valuable articles entitled *Decades Americanae*. He has borne the expense of printing the curious treatise, of Ignacio Borunda, upon Mexican writing—*Clave general de Jeroglificos Americanos*. He bore part or all of the expense connected with the publication of Dr. Seler's *Mitla Wall-Paintings* and the *Humboldt Manuscript* and Mrs. Seler's *Ausalten Wegen*, a delightful book of study-travel. He also endowed the chair held by Dr. Seler in the University of Berlin. He has borne the expense of Prof. Saville's more recent and highly important

excavations at Mitla. He has established prizes for the encouragement of American studies at Paris, Berlin, Stockholm, Madrid, and New York.

He has thus liberally supported and encouraged the work of other students; he has also himself been an author. Of several useful and valuable works which he has produced probably the best known, and to us the most interesting, is his great work on the medals of the United States, published in 1876.

Since this notice was prepared for the printer, further news regarding the Duke of Loubat has come to hand. He has recently been elected a member of the French Institute—Foreign Correspondent of the Academy of Inscriptions and Belles-lettres of the Institute of France. This great honor, given in recognition of his interest of American studies, is certainly richly deserved. This election took place in December last. Since that date, he has founded a chair of American studies in the University of Paris.

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MEMOIRS OF THE PEABODY MUSEUM OF AMERICAN ARCHEOLOGY AND ETHNOLOGY, HARVARD UNIVERSITY. THE HIEROGLYPHIC STAIRWAY—RUINS OF COPAN—REPORT OF EXPLORATIONS BY THE MUSEUM.

—By George Byron Gordon, Cambridge. Pub. by the Museum.

The work of exploration which was begun at Copan several years ago by the Peabody Museum of Cambridge, Mass., has resulted in some very remarkable discoveries, but none more remarkable than that of the Hieroglyphic Stairway. It has been known for a long time that Copan was the seat of a grade of civilization which is quite astonishing when we consider the time in which it prevailed, and the people among whom it existed.

This civilization is made known by the various works of art, and architecture, which attracted, at an early date, the attention of the various travelers who visited the region; but the more the locality has been investigated, and exploited, the more remarkable does it appear.

The archaeologists of the minimizing class, must be, by this time, nonplused, for, certainly their theory that the Maya tribes were a rude people, scarcely raised above the savages, has been repeatedly overthrown by the facts brought out from time to time, and now there is not a shred of argument left to warrant them in holding their theory longer.

We maintain that Central America shows as high a grade of sculptured art, and as advanced a style of architecture as could be found in the proud cities of Babylonia and Assyria long after the days of history. The style of their art and architecture was peculiar, and presents scarcely a single feature which can be found in the regions of the east. Everything seems to have been developed among the people who dwelt here. It is true that certain writers have argued that the Buddhists of India, reached the continent in some unknown way, and left their stamp upon this art, and even sat as models for the statues which are occasionally seen on the facades of the palaces.

The argument is however, based upon a few accidental resemblances. It, to be sure, has the effect to keep our minds open to further evidence, but the overwhelming evidence is, that the sculptured art, which embodied itself in the glyphs, the statues, and the ornaments on the facades of the palaces, was purely American and has no resemblance to the Asiatic art. These glyphs contain a great many human faces, the majority of them bearing resemblance to the faces of the natives themselves, though they are often distorted and grotesque in their appearance. There was a strange symbolism which embodied itself in the glyphs and in the statues; a symbolism which, came from a form of religion which is almost unknown, and yet sufficiently known to be pronounced unlike any other on the face of the earth.

The evidence of this is presented by the Hieroglyphic Stairway. Here was a pyramid which arose to the height of about eighty-five feet above the great plaza, upon which was once a great temple, the steps to which were carved into the most elaborate and picturesque figures, every step presenting a different series of glyphs, the whole making a legend or story which might be read by one who ascended it, and only terminating at the doorway

of the temple and thus presenting the strangest entrance to a temple that was ever known.

We read of Luther climbing up the stair case of the Sistine Chapel on his hands and knees, in his zeal among other devotees, but arising with the sense of the folly of so doing, and entering upon the work of reformation from the conviction that faith was better than this form of worship. But here was a stairway which required all the learning of the priests to interpret, for it told a strange story of the "nature divinities" whom the people worshiped, and contained specimens of art which were so numerous as to bewilder the ordinary mind. There were also statues finished in the round carved upon the steps, but differing from one another in attitudes and expression; the glyphs and the statues constituting a strange medley of art, but together making a story which was undoubtedly significant and sacred to the worshippers.

The Hieroglyphic Stairway might be compared to the stairway at Palenque which was guarded by the serpent balustrades, and above which was the temple with serpent pillars, but would be perhaps supplementary to it, for the same lesson was taught in glyphs which was impressed upon the senses by the awe inspiring serpent forms.

It is impossible to describe this stairway, or the statues hidden away among the glyphs; but the plates are very well made, and furnish material for study, so that the archaeologist is without excuse who thinks that American art is all of the same grade, and was the product only of a rude savagery such as the hunter Indians of the north always presented.

The ruined cities of the east have not ceased to awaken attention among travelers, but the American people ought to know that on this continent are "ruined cities" also, that deserve their attention, and there were forms of religion here that should be studied and compared to those which existed elsewhere; though the realm of thought which is opened by these strange figures, is very different from that with which we are familiar.

MEMOIRS OF THE EXPLORATION OF THE BASIN OF THE MISSISSIPPI.—Vol. V. "Kakabikansing"—By J. V. Brower, President of the Quivira Historical Society, with a contributed section by N. H. Winchell, Pres. of the Geological Society of America. Councilors of the Minnesota Historical Society, St. Paul, Minn., 1902, U. S. A.

This is an elegantly bound book; is printed on enamel paper; contains a chart of the Mississippi river at Little Falls, and portraits of Warren Upham and Josiah B. Chaney as frontis pieces, with an introduction; twelve full page plates of paleolithic quartz blades from glacial gravel beds and from mound builders' villages, sixteen pages of bibliography; twenty-eight pages of "explorations, finely illustrated by half-tones;" twelve pages of "differentiation;" sixteen pages on the "geology of the valley at Little Falls," by N. H. Winchell, without illustrations; eight pages of "conclusions based on ascertained facts and acquired knowledge," by J. V. Brower, illustrated; eight pages on "Primitive man of the Ice Age," by Warren Upham; two large folding maps of the mounds at Fort Pillager; and an index.

Kakabikansing is the Indian name for Little Falls. The Quivira Historical Society is "ordered and determined," as an association of explorers, authors, and ethnological students, for the prosecution of investigations, of which the officers shall be as follows:

Jacob V. Brower, president; L. Marie Blackman, vice-president; Ed. A. Kilian, secretary; John C. Keagy, chairman of executive committee. The Minnesota Historical Society is appointed custodian, and the Conservative a newspaper published at Nebraska City, Neb., is the official organ.

A pocket contains a map of the region between the Red River and Lake Superior, showing the location of each lake, Mille-Lac, and Little Falls, and the Upper Mississippi with Little Falls, at the lower part of the map.

The book is an elegant one and has the endorsement of the prominent geologists of Minnesota, and archaeologists Warren, Upham and others. Prof. Winchell speaks of the gratification that "one of our citizens has taken up and

carried through so important a scientific investigation, with such strictly scientific methods," and says that: "several years ago, after an investigation of the mounds and the mines at Isle Royal, I arrived, contrary to the then prevalent opinion, and my own expectation, at the conclusion that both the mound builder and the ancient copper miner was the ancestor of the present tribe of Aborigenes." "The Aborigenes who had formed the quartz chips, were at Little Falls during the flood stage of the Mississippi which prevailed after the retirement of the ice margin of the last continental glacier from the vicinity of Little Falls." He maintains that chips do not occur in the undisturbed gravels, while the river was swollen by glacial waters coming from the far north. "That makes the chippers post-glacial, but much earlier than the present Indian."

It is probable that the book will open again the subject of paleolithic man, notwithstanding the position taken by Mr. W. H. Holmes, that all the so-called paleoliths are either "rejects or accidental fractures." No bones of extinct animals and no other evidence of man's presence is given by the post-glacial deposits.

BOOKS RECEIVED.

GEOGRAPHICAL SOCIETY, of Philadelphia, officers, list of members Jan. 1902.—This society was organized March 1891. It has already published many valuable bulletins, a list of which is given in this Brochure.

A SHORT HISTORY OF FARIBAUT—F. W. Frink—privately printed.

THE AMERICAN AUTHOR, April 1902, edited by Mrs. M. P. Ferris. Published at Dobbs Ferry, N. Y.

ANNALS OF THE NEW YORK ACADEMY OF SCIENCES.—Editor, Charles Lane Poor. Pubs. New Era Printing Co., Lancaster, Pa.

PRIVATE LIFE OF THE ROMANS.—Harriet Waters Preston and Louise Dodge. Pubs. Benj. Sanborn & Co., Boston.

GREEK AND ROMAN MYTHOLOGY—Karl P. Harrington and Herbert C. Tolman. Pubs. Benj. H. Sanborn & Co., Boston.

OUTLINE LESSONS FOR THE STUDY OF ANCIENT GEOGRAPHY.—Francis M. Austin, A. M. Pub. Leach, Sherwell & Sanborn, Boston, New York, Chicago.

OCEANIC ORIGIN OF THE KWAKWITL-NOOTKA AND SALISH STOCKS OF BRITISH CO., Fundamental Unity of Same.—By Charles Hill-Tout, 1898.

JOURNAL OF THE ANTHROPOLOGICAL INSTITUTE OF GREAT BRITAIN AND IRELAND.—Vol. XXXI., 1901, January to June. Pub. by Anthropol. Ins. of G. B. & I., 3, Hanover Sq., London.

PROCEEDINGS OF THE AMERICAN PHILOSOPHICAL SOCIETY, Dec. 1 1901 Phil. Am. Phil. Society, 104 S. 5th street.

MCCLURE'S MAGAZINE, March 1902.—S. S. McClure Co., 141-155 E. 25th street, New York.

GRITDEUNGEN DER NORMANNEN IN AMERICA, 1902.—Strasburg, Munchen and St. Louis, Mo.

THE JOURNAL OF THE CINCINNATI SOCIETY OF NATURAL HISTORY—Jan. 10, 1902.

TRANSACTIONS OF THE Literary and Historical Society of Quebec.—Sessions of 1892 to 1898.

BRITISH Association for the Advancement of Science, Bradford Meeting, 1900—Report of the Ethnological Survey of Canada.

THE CHICAGO SEMINARY QUARTERLY.—Year Book No. 1902. Chicago Theological Seminary Press, 45 Warren avenue.

THE Origin of Totemism of the Aborigenes of British Columbia.—Charles Hill-Tout, 1901.

HARPERS' MONTHLY MAGAZINE, July 1901.—Harper Brothers, New York and London.

THE
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VOL. XXIV.

JULY AND AUGUST, 1902.

No. 4

DIFFERENT RACES IN AMERICA.

BY STEPHEN D. PEET.

We now take up the subject of the races. It was once the opinion that there were different races on this continent, some of them were identical with the races known to history, and the mounds were supposed to furnish evidence of this. The particular race which built the mounds was not known but the most popular theory was that they were either Phœnicians or were the members of the lost tribes of Israël. Whole books were written to prove this theory, one of them by the celebrated Adair, who was an Indian agent, and had an abundant opportunity to know about the Indians of the Gulf States. The great work of Lord Kingsborough, on which he spent his fortune, and which resulted in his financial ruin, and imprisonment for debt, was marred by a similar theory. Opposite to this theory, is the position which is taken by the members of the Bureau of Ethnology at Washington, which is, to the effect, that all the tribes in America belong to one race, which, should be called the Amerinds, a barbarous word coined out of two other words, viz: American Indians. This opinion, however, is not accepted by all; in fact, many of those who have had the best opportunities to know, take the ground that the continent was settled by different stocks that entered from the northwest, and spread out in different directions; the Eskimos toward the north and east along the Arctic coast; the Athapascans south-east into the interior; the Algonkins and Iroquois eastward toward the Atlantic; the Nahuas southward, ultimately reaching New Mexico and Mexico and where they became the founders of the Pueblos and the Toltec civilization.* This is the opinion of Mr. Edward H. Payne and Mr. L. H. Morgan who identified the Mound Builders with the Pueblo tribes. This diversity of opinion has had a tendency to keep the mound builder question open, as some hold that there were different races formerly dwelling in the Mississippi Valley, some of them having come into the valley at an

*The account of their migration is preserved in the picture writings of the Nahuas. There is also a tradition among the Muscogees that their ancestors migrated from the west into the Gulf States and began at an early date to build mounds. The Delewares and Iroquois also have a tradition that when they came into the Mississippi valley—a people called Alleghewi were living in villages but after long wars they were driven to the south. These traditions are confirmed by the study of the altar mounds and their contents and by other tokens.

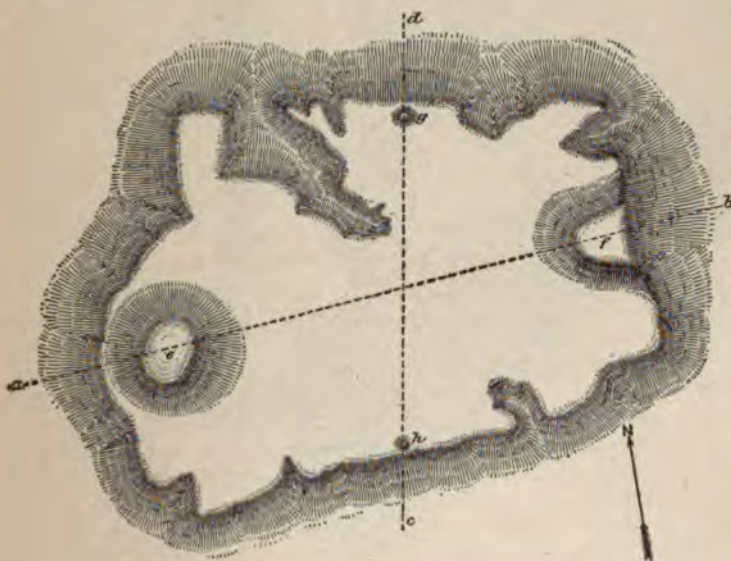
early date from one direction, and some from another, three or four different stocks being represented by the different classes of mounds and earthworks which have been identified though the subject is in that state of uncertainty that no one has been able thus far to say where these stocks originated, or at what time they first settled in the Mississippi Valley. There is one fact which has not received as much attention as it deserves. It is, that there was a succession of population in nearly every one of the districts into which the Mound Builders' territory has been divided. The succession began perhaps before the last glacial period, but continued even up through the time when the continent assumed its present condition, and did not cease until after the Discovery by Columbus. This succession has been traced not only in the relics which have been discovered, but in the skulls and skeletons, as well as in the mounds and earthworks, for the mounds were not built all at the same time, but at different times, and by different peoples.

It is claimed by Prof. F. W. Putnam and others, that the Esquimaux reached as far south as Cape Cod, and left their relics in the shell mounds found on the coast; also, by Rev. W. M. Beauchamp, that they once dwelt in New York state, for their relics have been found there beneath the soil. It is also well known that the Iroquois and Delawares claim that they were preceded by a race called the Allighewi, who have been identified by some as the Mound Builders of the Ohio Valley, though others think they were the Cherokees. Dr. Horatio Hale held that the great Dakota stock once dwelt on the Atlantic Coast, and a portion of them migrated through the Mound Builders' territory and finally reached their home on the Missouri and upper Mississippi rivers. The evidence is that at one time the southern Mound Builders moved northward and took possession of the valley of the Ohio, and built the great mounds at Cahokia in Illinois, and at St. Louis, as well as those in Marietta, Ohio. Since the Discovery, several tribes have passed over the same region, among them may be mentioned the Cherokees, the Eries, the Iroquois, the Shawnees, the Delawares, and the Hurons; all of these having used the mounds as burial places, and left their relics in them, but the difficulty has been to separate the relics from one another, and identify the tribe by the relics. The archæologists have also been puzzled over the finding of certain highly-wrought and finely finished relics in the state of Ohio; relics that give the idea that a people or a tribe once dwelt there who had reached a much higher stage of art than any of the Indian tribes of the north, and yet they do not seem to have been left by any white race.

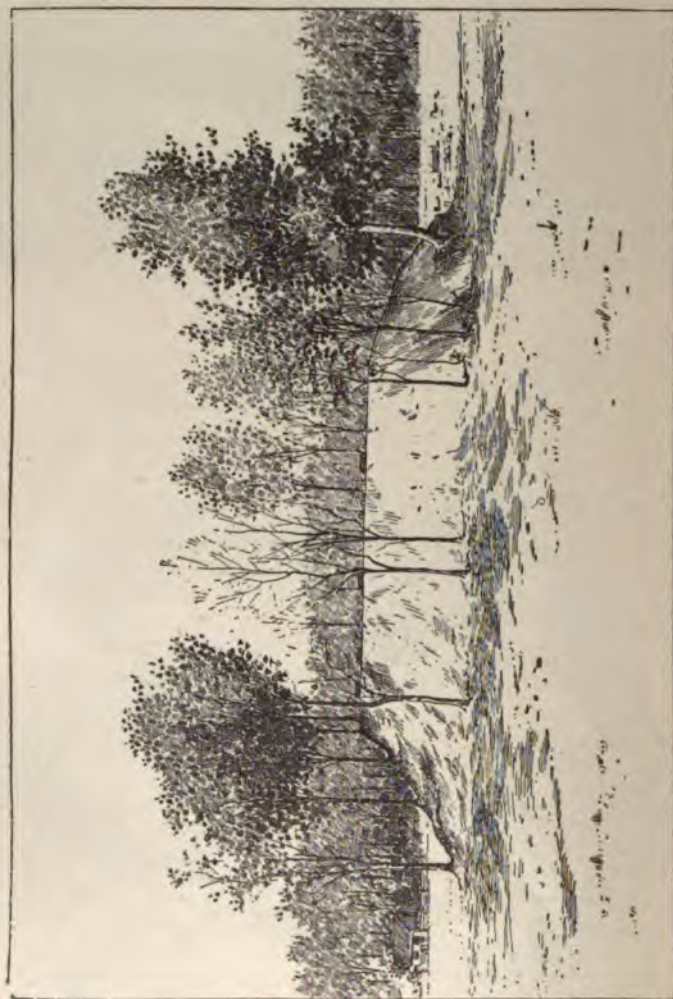
These relics have been found in the larger mounds, such as are situated in the Scioto valley in Ohio, and in the Etowah valley in Georgia. It is also worthy of notice that many burial



PYRAMID MOUND IN ILLINOIS.



PYRAMID MOUND IN MISSISSIPPI.



PYRAMID MOUND AT ETOWAH.

mounds of Ohio present a succession of burials, some of which belong to the early mound builders, others to the nomadic tribes, such as the Algonquins, while the large platform mounds found on the Tennessee river are stratified in such a way as to show that they were built at different times, as a succession of council-houses or great houses had been built upon them.

Another fact is worthy of notice. Each mound building tribe followed the kind of life which was best suited to the region which had been selected for its own habitat. Those who dwelt in the forests naturally took to woodcraft, and to the mingled life of hunting, fishing, and partial land tilling; those who dwelt on the Ohio river where everything was favorable to permanent and stable life, naturally took to the cultivation of the soil, and the establishing of villages, though they were obliged to surround their villages with earth-works as a matter of defense; while those who dwelt in the prairie region of the west naturally followed the nomadic life, occupying their villages in the winter, but moving them in summer in order to follow the herds of buffalo and wild animals to their feeding grounds. It is noticeable that the people who dwelt in the cypress swamps of Arkansas built villages on the sand ridges, while drawing their subsistence from the swamps, and the people who dwelt in the mountain regions of Tennessee and Kentucky "called the Stone Grave" people, established themselves on the rivers and built their fortified villages, in which are the remains of their council-houses, their temples as well as their burial places, and private houses and hearths while the Gulf states present the remains of a people who differed in many particulars from all others. These were visited by the early explorers under Ferdinand de Soto, and were found to be living in large villages, and to be agriculturalists, their fields of corn extending from village to village, but their houses generally being concentrated into a small compass.

Another thought arises in this connection. The magnitude of the mounds and earthworks on the Ohio River and the Gulf States, impresses nearly everyone with the conviction that the people who erected them were more industrious, energetic and better organized than the hunter tribes farther north, the contrast between the two classes of earthworks suggesting the idea that they were erected by different races. The largest of the earthworks were situated in southern Ohio, and constituted the village enclosures of an agricultural tribe which formerly dwelt there, but was driven off by the combined forces of the Iroquois and Algonkins, fierce battles being fought in their territory. These villages were surrounded by earth-walls, which perhaps were surmounted by timber stockades, making a series of "walled towns" which must at one time have presented a very imposing appearance.

In some of the valleys, especially those of the Scioto and Miami Rivers and their branches, several villages were cluster-

ed together, making a busy scene when they were occupied, and the rich fields were under cultivation. These village enclosures were all connected with the river banks, agricultural fields and the places of religious gatherings where their sacred dances were conducted, by so-called "covered ways," showing that the people were constantly besieged by enemies and so needed the protection of earth-walls.

There is no place on the continent which is more suggestive of conflict than southern Ohio. The Pueblos of the west were built in stories, and in such a way that large villages could be contained in a single great house, the lower story presenting a dead wall without door-ways, so that no lurking foe could gain entrance to the village except by the aid of ladders which were drawn up at night, the architecture of the village suggesting that the people who dwelt in them were surrounded by hostile forces.

The same is true of the Cliff Dwellings, for they were placed in the most secure positions amid the cliffs and were protected by towers, which were either situated above the cliffs or in the valleys below.

The villages of the Mound Builders also convey the impression that hostile forces were besieging them, for on every hill-top adjoining the valleys where the villages were situated, were high conical mounds on which were placed sentinels by day and signal fires were lighted by night, so that no attack could be made without an alarm being sent from village to village, and from valley to valley. These village enclosures and high conical mounds excite our wonder especially when we consider the poor appliances for constructing them. There were no steel spades or shovels known to the people; no tram-ways or cars for carrying the dirt of which they were built, as no iron-bound wheel has ever been found, and no evidence that the wheel or axle was known to the people. All that the builders of the earth-works had to help them in this work were the rude stone axes, the few copper spades, a few stone hoes, a number of baskets woven out of reeds, and such other contrivances as a rude people had devised. The work of constructing the walls which surrounded the villages, and building up the lofty lookout mounds was very difficult under the circumstances, but was accomplished by the combined forces which were undoubtedly directed by their chiefs or by such overseers or officers as had been appointed.

1. The evidence is that the masses were governed by the ruling classes exactly as they were in the southern states among the Muscogee tribes who built the pyramid mounds which are so numerous in that region. The view which is presented by the great valley is a very interesting one, for it suggests that **here** was a state of society, and a form of religion, quite different from that which prevailed among the hunter tribes to the north, east, and west of the region, and was like that which

existed among the so-called civilized races of the south-east where the masses were under the control of kings and priests.

We should say that there is in this region a greater variety of tumuli or burial mounds than is found any where else on the continent. Some of these are stratified and show a succession of burials. They suggest to us that the region was occupied by different tribes, each tribe having its own method of burial and its own class of relics, and its own customs and ways. This renders the region an interesting field for study,



MOUND NO. 2, MOUND CITY.

for it confirms what we have said of the migration of tribes through this same valley.

We are to notice further that there are altar mounds in southern Ohio, and that the altars contain a great variety of relics, great numbers of which show a high degree of art. What is remarkable about the altars is that they are always found at the bottom of the mounds, thus showing that the people who first occupied the region, and began the process of mound building, were far more advanced than those who followed them, and for this reason they have been called the "mound builders," *par excellence*.



MOUND NO. 3, MOUND CITY.

In studying these altar mounds and the so-called temple mounds which adjoin them, we find that they were generally close by some village enclosure, and probably mark the places of sacrifice and religious ceremony, which the early mound builders were accustomed to observe. This confirms the position we have taken that the earth-works which surrounded the village enclosures, were symbolic of sun-worship, as they abound in circles and squares, and in connection with them are crescents and crosses, giving an idea that there was a recognition of the four points of the compass, and motion of the heavenly bodies, as well as the phases of the moon. All of them were

objects of worship, and furnished motives for the people to observe religious ceremonies at certain periods of time. This habit of sacrificing to the heavenly bodies, and making offerings to them, at particular periods, is evident from the fact that in many localities relics have been found, partly burned, upon the altars, and even human bodies have been partially cremated, so that we are obliged to acknowledge that they were a very religious people and were under the direction of their priests who kept the calendar, and ordered the ceremonies.



MOUND NO. 18, MOUND CITY

The peculiarity of these altar mounds is, as we have said, that they were near villages, sometimes within them, which villages were surrounded by circular walls, the altars themselves being in the shape of circles and squares, and sometimes surrounded by crescents.

It is true, also, that there were many dance grounds on the high lands, overlooking the beautiful villages, all being surrounded by earth-works in the form of circles and crescents, and connected with the village enclosures by covered ways, or



MOUND NO. 6, MOUND CITY.

parallel walls; thus showing that the builders were an industrious and religious, and at the same time a peaceable people and depended upon their earth-works and village enclosures for defense. All this throws much light on the village life of the people that prevailed, and makes us realize how permanent and peaceful their villages were.

The impression formed by the study of the earth-works and relics left by this early people, is very different from that formed from the study of the so-called stockade or palisade villages which are so numerous in the State of New York, and to a certain extent in northern Ohio. The impression is, that there was a succession of tribes, that the early people were driven

away by wild tribes who came in and built forts and stockade villages.

We do not undertake to solve the problem or to say who the people were who built these village enclosures, and these altar mounds; but we associate them with the great stone forts and the high lookout mounds which are seen upon the hill-tops overlooking the valleys, and conclude that there was formerly a confederacy of tribes which was well organized and governed by permanent officers, who might either be called kings and priests or chiefs, and medicine men; and one object



MOUND NO. 10, MOUND CITY.

of building the high conical mounds was, that the people dwelling in a village in one valley might send signals to those living in another valley, in time of attack, that all might escape to the great forts which were in the vicinity, and were so well provided with natural defenses.

The picture is certainly an interesting one, and proves that the "mound builders," so called, of the Ohio valley, were much more advanced and perhaps better organized, and governed, than were the wild tribes which dwelt in the stockade forts farther north, or the nomadic tribes which roamed over the prairies of the west and were mainly hunters.

The clue to all this picture is furnished us by the village



PAVED ALTAR AT MOUND CITY.

life that prevailed and filled the villages with such a busy scene. In proof of this, we shall speak of the altar mounds and their contents; but before doing so shall merely refer to the opinion of those gentlemen who first entered into the work of exploring the mounds and enclosures, and exhumed from them so many highly wrought relics of various kinds; Squier & Davis. The following is their description of the different earth-works and mounds:

"In connection, more or less intimate with the various earth works already described, and the tumuli or mounds; together these two classes of remains constitute a single system of works, and the monuments of the same people. While the enclosures impress us with the number and power of the nations who built them, and enlighten us as to the amount of military knowledge and skill which they possessed, the mounds and their

contents serve to reflect light more upon the customs and conditions of art among them.

Within these mounds we must look for the only authentic remains of their builders; they are the principle depositories of ancient art; they cover the bones of the distinguished dead of remote ages, and hide from the profane gaze of invading races the altars of the ancient people.

In respect to the position of the mounds, it may be said that those of Ohio, occur within or near enclosures; sometimes in groups, but oftener detached and isolated. The altars or basins found in these mounds are almost invariably of burned clay.

"The great size of the foregoing structures precludes the idea that they were temples in the general acceptance of the term; as has already been intimated they were probably like the great circles of England; the squares of India, Peru, and Mexico, within which were erected the shrines of the gods of the ancient worshipers, and the altars of the ancient religion. They may have embraced consecrated groves, and as they did in Mexico, the residences of the ancient priesthood. In Peru, none except the blood of the royal Incas, whose father was the son, were permitted to pass the walls of their primitive worship, and the Imperial Montezuma humbly sought the pardon of his insulted gods for venturing to introduce his unbelieving conqueror within the area consecrated by their shrines. Analogy would therefore seem to indicate that the structures (circles and squares) under consideration, were nothing but sacred enclosures. We find within these enclosures, the altars upon which the ancient people performed their



SCULPTURED PIPE FROM ALTAR MOUND NO. 8.

sacrifices. We find also pyramidal structures, (platform mounds) at Portsmouth, Marietta, and other places which correspond entirely with those of Mexico and Central America, except that of being composed of stone, they are constructed of earth; and instead of broad flights of steps, they have graded avenues and spiral pathways leading to their summits."

See Ancient Monuments page 157.

The first locality that we shall speak of is the one called the "Mound City;" it is situated in Ross county, Ohio. The most striking feature of this work is the unusual number of mounds which it contains; there are no less than twenty-four within its walls. All of these have been excavated and found to contain altars and other remains which put it beyond question as a place of sacrifice. One mound is 17 feet high with a broad base nearly 100 feet in diameter.

These altar mounds were evidently the places of sacrifice of the people who dwelt in the villages of the Scioto Valley, and were probably the places of sacrifice for the entire tribe, rather

than one clan, as the relics offered were more numerous than one clan would be likely to present.

As proof of this we refer to the fact that within a distance of twelve miles there are no less than six village enclosures, and a great number of burial mounds scattered indiscriminately over the surface, and the great fortified enclosure on the north fork of the Paint Creek was but a few miles away, while lookout mounds were situated on the hill-tops surrounding the valley, showing that the people were banded together for defense as well as for worship.

That altar mounds were connected with the village enclosures and were the places for sacrifice for the people dwelling in them is proved by the works which were discovered on the north fork of Paint Creek, an enclosure that contained 111 acres, and near the centre of which was a smaller enclosure which contained the altar mounds. This semi-circular enclosure was about 2,000 feet in circumference; within it are seven mounds, three of which are joined together, forming a continuous elevation 30 feet high, 500 feet long, 180 feet broad at the base. All the mounds were places of sacrifice containing altars.

The first discovery was made at what is called Mound city, a small enclosure situated in the Scioto valley not far from the city of Chillicothe, in the region where village enclosures are numerous, and where there are high lookout mounds on the hill-tops and forts not far distant, giving us the idea that it was the home of a numerous people, all of whom dwelt in walled villages and were confederated together for mutual defense, and gained subsistence by cultivating the soil in the rich bottom lands and were happy and prosperous.



ENCLOSURE ON PAINT CREEK.

Mound City contained twenty-six altar mounds which varied from 7 feet high and 55 feet base to 11 feet high 140 feet base, all of which contained an immense number of articles, many of which were wrought into the shape of birds and beasts, and were the finest specimens of art which have been discovered.

The chief impression about the people is that they were very religious, and so under the control of chiefs and priests, that nearly everything was done from a religious motive; even their dances and amusements were in reality religious ceremonies. In this respect they resembled the mysterious people called Cliff Dwellers, and their survivors the Pueblos of the far west. In proof of this we would refer to the great number of altar mounds and the wonderful relics which they contained,

all of which show that the people had not only reached a high stage of advancement in sculptured art, but they were willing in the time of emergency to part with their most precious relics on which they had expended so much labor and care, in sacrifices to their divinities. Such is the impression we have gained, both from the examination of the works themselves, and from the testimony of the various explorers who have dug into the mounds and discovered these altars and their relics.

The following is a description of the altars and relics taken from them by Squier & Davis the authors of *Ancient Monuments*:

A large number of these altars were found in an enclosure called Mound City, on the banks of the Scioto river. One of these is 7 feet high and 55 feet base; it was stratified and contained an intruded skeleton near the top; the altar was perfectly round and contained pottery vases of excellent finish; copper disks; a layer of silvery mica in sheets overlapping each other; and calcined bones.

Another mound No. 2 was 90 feet in diameter, $7\frac{1}{2}$ feet high; it was stratified and contained an intruded skeleton at the top; the altar measured 10 foot in length and 8 feet in width, height is 18 inches; among the ashes was a beautiful vase. In the mound 3 feet below the surface were found two well preserved skeletons; many implements of stone, horn and bone; sev-



SCULPTURED BIRD FROM ALTAR MOUND NO. 8.

eral hand axes and gouges of stone; articles made from the horns of the elk; one from the shoulder blade of a buffalo; a notched instrument for distributing paint and lines on the faces of the warriors.

Another mound No. 4 was 60x60 feet base, 6 feet in height and an altar, the base of which sank below the original surface of the soil.

Another mound No. 3, egg-shaped, measuring 140 foot in length, 60 foot wide, 11 feet high, contained a double altar, one within another. The remains found in this mound consisted of a quantity of copper; many implements of stone; a number of spear heads beautifully chipped out of quartz and garnet; a quantity of fragments of quartz and crystals of garnet; obsidian arrow point; a number of fine arrow-heads of limpid quartz; two crozier-gravers or chisels, one measuring eight inches in length; copper tubes; a couple of carved pipes made out of marble, one of them the figure of a hand resembling the tucan.

Another mound No. 8, contained an altar 6 feet 2 inches by 4 foot, and in the altar about 200 pipes, much broken up by the heat, composed of red porphyry stone resembling the pipe stone, all of them carved in figures of animals, birds and reptiles, all of them executed with strict fidelity to nature, and with exquisite skill, among them an otter holding a fish in its mouth; the heron also holds a fish; the hawk grasps a small bird in its talons, tears it with its beak; the panther; the bear; the wolf; the beaver; the squirrel; raccoon; hawk; heron; crow; swallow; buzzard; paroquet; mouse; and other birds; the turtle; frog; toad; and rattle-snake, are recog-

nized at first glance. But the most interesting and valued are a number of sculptured human heads, no doubt faithfully representing the physical features of the ancient people by whom they were made.

Another mound No. 18, has three strata an intruded burial, and an altar which contains no relics but at a depth of $4\frac{1}{2}$ feet a pavement 6×4 feet was reached, upon this pavement a skeleton upon which a fire had been built, partially cremating it.

Another mound No. 7, measured $17\frac{1}{2}$ feet high, 90 foot base; it was stratified at the depth of 19 feet, was found a smooth level floor of clay, and a layer of silvery mica formed a rounded sheet one foot in diameter and overlapping each other like the scales of a fish; the entire length of this crescent was 20 feet and greatest width was 5 feet. This crescent suggested the idea that it was used as the symbol of the moon and was dedicated to that luminary.

Mound No. 9, was found in the great work on the north fork of Paint Creek, and contained an altar, within which were found several instruments of obsidian; several scrolls cut from thin sheets of mica, used as ornaments of a robe; a trace of cloth; a number of bone needles; graven tools; a quantity of pearl beads. Another mound contained an altar that had a casing of pebbles and gravel paved with small round stones, a little larger than a hen's egg; and upon the altar ten well wrought copper bracelets encircling some calcined bones, conveying the idea that the body had been cremated.

Another mound No. 10, in the same enclosure, has two sand strata, but instead of an altar there are two layers of discs chipped out of stone. They were placed side by side, a little inclining and one resting a little above the other. Out of an excavation of 6 feet long by 4 feet wide, not far from 600 were thrown. Supposing it to be square we have not far from 4,000 of these discs represented here.

It should be remarked that while all these have the same general features, no two are alike in the size and shape of their altars, or character of the deposit made on them. One mound covers a deposit made almost entirely of pipes; another of spear heads or of galena, or calcined shells or bones.

We pass from this region to the stone graves of Tennessee. These bring us into contact with another class of mounds, and another race or tribe of people. Gen. Gates P. Thruston is an authority on this subject.

The examination of the stone graves in Kentucky and Tennessee, confirms what has been said about distinct races having existed in the Mississippi valley. He says:

"They present unmistakable evidence of a state of society above the social condition of the pre-historic tribes of Canada and the northeastern states, including New York, Pennsylvania and Virginia. This well recognized fact seems to separate the culture of the Mound Builders from that of the ancient tribes of the northeast, the Iroquois, the Hurons, and the Indians of the Algonkin stock by well defined lines of distinction, indicating that the tribes of the north were more nomadic and lived in a more barbarous state.

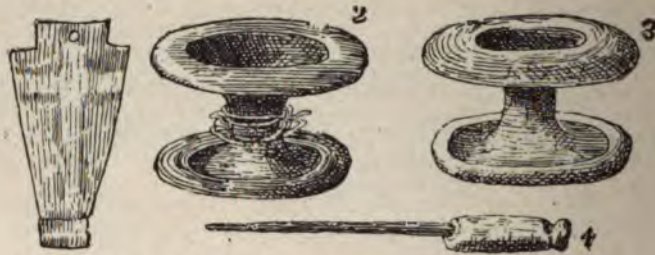
Unmistakable evidences are also presented in the preceding pages of contact, intercourse, or relationship, between the aborigines of the Mississippi Valley, and the ancient peoples of the southwest and of the Pueblo districts. The similarity in the forms of the crania found in the ancient graves within the mound area, and the crania of the ancient inhabitants of Mexico, Central America, Peru and the Pueblos, suggests a common origin. The broad headed or brachycephalic type is predominant. It appears to distinguish the cranial types of the old peoples of the south and southwest from the long or oval crania of the northern tribes. The short, broad skulls seem also to have represented the ethnic tendencies toward progress and development that characterized the ancient Mexicans and the Indians of the village or semi-village class."

Prof. Putnam, in speaking of the diversity of races, says:

"We find that the prevailing form of the skulls from the older burial places across the northern portion of the continent, from the Pacific to the Atlantic, is of the long, narrow type (dolichocephalic), while the skulls of the old peoples of Central America, Mexico, and south-western and southern portions of the United States, are principally of the short, broad type (brachycephalic). Following the distribution of the long and short skulls, as they are now found in burial places, it is evident that the two forms have spread in certain directions over North America; the short, or broad-headed race of the South spreading out toward the East and Northeast; while the long, or narrow-headed race of the North has sent its branches southward, down both coasts, and toward the interior, by many lines from the North, as well as from the East and West. The two races have passed each other here and there; in other places they have met; and, probably, nowhere, is there more marked evidence of this meeting than in the Ohio Valley, where have been found burial places and sepulchral mounds of different kinds and of different times."

Mr. Thruston speaks of the art of the stone-grave people as furnishing analogues and identities which connect the antiquities of Tennessee with the ancient arts and industries of the Mexico and Pueblos. He says:

"The remarkable and mythological figures upon the shell gorgets and



SPOOL ORNAMENTS FROM TENNESSEE.

copper plates surely show unmistakable evidences of a Mexican origin or affiliation. The tube pipes from the valley of the Cumberland, the large ear ornaments, the images, the idols, the grotesque forms, the long ceremonial flints—all seem to connect the mound tribes with the arts, culture, or religion of the peoples of the west and southwest, and to separate them from the tribes of the north and northeast. The better class of pottery from the graves and mounds, and the ancient ware of the Pueblo districts of New Mexico and Arizona, also show decided marks of resemblance.



COPPER EAGLE FROM ETOWAH MOUND.



EAGLE MAN FROM ETOWAH MOUND.

APPLICATION OF THE LAW OF VARIATION IN THE EVOLUTION OF MAN.

BY CHARLES H. DUNCAN.

In studying the Evolution of Man, there seems to be one point, and a very important one, that apparently has wholly, or in part at least, escaped the attention and application, it deserves. I refer to the application of the Law of Variation as advanced by Darwin. The deductions of this application appear to be logical and enable us to more readily understand many of the phenomena that present themselves in the Evolution of Man from his primitive state.

The Law of Variation, one of the factors of organic evolution, as advanced by Darwin, is: "All species of animals and plants exhibit tendencies to variations, from the parent stock. These variations, however slight, are of importance and through heredity are transmitted to succeeding generations. It is of importance to remember that no two individuals are alike in all particulars."

Now one step further in this Law or Variation. It is proposed here to demonstrate from well-known physiological phenomena supported by numerous observations that: (1) Variety of food is necessary for the highest intellectual advancement or mental activity of the human race. (2) The more local the food supply and the less variety of food of a people or nation, the less is their intellectual development, and the less variation is there, from the parent stock.

Variety of food and mental capacity are inseparable and since the fact that they are inseparable is so persistent, and confronts us on all occasions with such startling regularity in every quarter of the globe, and in all ages, is it not reasonable to assume at least, for the sake of discussion, that variety of food may be the cause and mental activity or inactivity, as the case may be, the effect?

OBSERVATIONS FROM EXISTING PEOPLE.

The people who live on any one food, as fish for example, are far down in the scale of intellectual development, and physically they have the same characteristics; the same cast of countenance. The Indians of the Northwest and the Eskimos are good illustrations of this. The people who live by agriculture are more advanced mentally, for their food supply is more varied, but still there are limits to its variety, and there are limits to their mental capabilities.

Those people whose merchants traverse their own country

and bring back articles of food other than those grown in their immediate vicinity, are still further advanced mentally, as for example the Chinese. They are a cultured people, but seem to lack the ability of developing the possibilities of their knowledge. In fact they have always fallen just short of accomplishing great ends. Their merchants traverse the empire of China, and their food supply is limited to China almost exclusively. So, in accepting the above theory, we would naturally infer that their mental capacity would be limited. This is so. They invented gunpowder but used it only for fire crackers. They invented the compass but used it merely as a toy; they first invented movable type, but never developed its possibilities on the printing press. They have raised cattle from the earliest times, but travelers tell us that never have they been known to milk their cows.

OBSERVATIONS FROM HISTORY.

The Nahuas or Aztecs. When Cortez found them their merchants traversed their own country and penetrated into North and South America. Their food was more or less varied but limited to restricted districts. The student of Anthropology knows their civilization, and culture were high, but remember, not the highest. Did not their advanced mental condition result from the fact that their food was more varied and came from sections of their country other than their own immediate vicinity? This is a question worthy of serious consideration. It is, to say the least, remarkable that the most enlightened people of early times were those who were so situated geographically that their food from a distance came to them the easiest. Who can say that the early Egyptian culture was not due to the fact that their food floated to them from the more remote districts of the upper Nile, and from across the Mediterranean or was brought to them by their caravans that penetrated far into the east? Accepting the above theory, that variety of food is necessary for the highest mental capacity we would naturally expect to find them superior intellectually to their contemporaneous neighbors. They were. In fact our first knowledge of astronomy dates back to the early Egyptians, and their knowledge of engineering in building the pyramids has been the wonder of all ages since.

The Romans were so situated geographically that their food from a distance came to them very easily; therefore, we would expect to find them among the earliest people to show enlightenment. That their food was *most varied*, and was brought to them from the more remote quarters of the then known world, is recorded and dwelt on at length by historians of that period who tell us of their sumptuous and enormously costly banquets. The same thing may practically be said of the Greeks. We find to-day the most enlightened race of man in Europe and America. They eat a very great variety of food; they sip their coffee from Rio in the morning, and in the evening their tea

from Ceylon; their sugar and fruits come from the tropics and their spices from India, etc.

If there is truth in the supposition that variety of food is necessary for the highest mental development of the human race and it appears altogether probable there is, for the deeper we look into the subject the more convincing it becomes, who can say what the future generations may amount to when it is more fully understood and followed to its limits?

OBSERVATIONS FROM PHYSIOLOGY.

Again, referring to the law of variation, let us ask ourselves the question: What would be the effect of a great variety of food judiciously given to the mother on the unborn child? The varied taste of the mother at this time is well-known to all. Her mind will dwell for days and days upon certain articles of food, and will not be satisfied until she gets them, and this, at the very time when the highly specialized cells of the foetus are fast developing. This special craving of the mother for variety and for almost forgotten articles of food; this craving for chalk or even eating slate pencils at this time, has been recorded by many of the early writers, and noted by many of our modern observers. Nature urges the mother to eat these impossible foods to supply material for the bone of the growing foetus. When this supply is not sufficient the child must get the various ingredients necessary to make up its bone from the mother and we find one or more of the mother's teeth sacrificed to help supply the calcareous material necessary. Sometimes this calcareous material is derived from her bone to a greater or less extent and the osseous elements of her blood are drawn on. Since then this craving for calcareous material for the bone of the off-spring is accepted and that at the other extreme that strong, though intangible mental impressions stamp the physical body of the child is accepted, (Piersol & Palmer)* who can say that the cravings for a variety of other foods at this period do not point to the fact that they are just as essential for the rounding out of those other far more complicated structures or faculties of the off-spring, or that the physical body of the child is not affected by the tangible foods that go to make up its composition as well as by intangible mental impressions which we know do stamp the physical body of the child?

As a matter of physiological observations we find, that when the mother lives on the very same limited articles of food, as is the custom with the Chinese mothers, the child must draw on the maternal stock for the various materials necessary with which to manufacture its most delicate and complicated organisms or highly specialized cells. It has, in fact, no other means of supply, and we find that when the child does draw on the maternal stock the most, it varies little from the physical make up of its mother, and there is a striking resemblance between the whole members of the same family, tribe and class. *They*

all resemble their common ancestor. If we accept this theory that variety of food is necessary for a greater variation of the off-spring, it is easy to go a step further and accept the theory that variety of food is necessary for a higher intellectual development, since nature, (the mother's craving at this time for variety of food) is more nearly satisfied and since it is borne out by observations that variety of food and intellectual development has gone hand in hand all over the world and in all ages. How easy it is accepting this theory, that variety of food is necessary for a greater variety in the off-spring and for a higher intellectual development to account for the intellectual inferiority of those splendid specimens of physical manhood the Wolofs and Zulus of Africa, and of the Russian Peasants or any other people or tribe that live on the products of food from a limited area.

The effect of food on the physical body is in direct proportion to the building up process in the manifestations of life, since the building up process or Anabolism is maximum in the foetus we would expect the foetus to be most effected by food. Here nature urges the mother to eat a variety of food, the very thing as shown above that causes a variation in the off-spring. Darwin's law of variation is "all species of animals and plants exhibit tendencies to variation from the parent stock." Does not this application of the law of variation make clear, in a measure, how this variation is brought about in the evolution of man?

*Again let us turn to embryology and in the light of the above study the foetus with a view of determining if possible, how, where, and when are hereditary tendencies transmitted to the off-spring and at what period of its development do the tendencies to variation set in.

Remembering that observations and physiology as cited above seem to indicate that variety of food for the mother causes a fuller development of the mental faculties of the off-spring.

It is only when the placenta functionates that the various nutriments in the mother's blood are brought to the foetus direct by osmosis. That there is no special variation of nutrition in the mother's blood before this is evidenced by the fact, that the time when the craving of the mother for variety of food begins, is co-incident with the time when the placenta is beginning to functionate (from the second to fifth week.) Before the placenta began to functionate the yolk sack functionated or supplied the nutriment and elements necessary for the growing foetus. There are several stages in the development of the embryo when it is entirely separated from the mother. During the period the yolk sack is functioning at its maximum the embryo is nourished by secretions from the reproductive organs of the mother and is independent of direct communication with the mother's blood as we find it later. It is only when the yolk sack begins to atrophy that the placenta begins to functionate. Before the placenta begins to functionate, the influence of variety of food has not begun on the embryo for the mother's blood is not brought to the embryo yet. Then there is no tendency to variation up to this time if not then there must be tendency to *similarity* or *heredity* at this point. Now heredity is transmitted through the male reproductive element. Then logically, heredity is transmitted through the female reproductive element. The yolk sack is an integral part of the female reproductive element from the female reproductive organ.

Especially is this confirmed when we know that the nuclei or starting point of the various organs has begun before the yolk sack atrophies, or the

placenta begins to functionate at its maximum. Then the placenta merely supplies the already started germs of the various organisms of the foetus with nutritions for their development. Yolk sack gives them their origin. The more varied the nutriments, observation proves the fuller or more perfect is the mental development or the greater is the mental capacity of the individual. There is a period when the yolk sack is approaching complete atrophy and the placenta is beginning to functionate that they are both operating at the same time, showing that variation tends to set is right at or immediately after the starting cell of the various organism takes its origin.

Summing up then we find the yolk sack begins to atrophy at about the fourteenth day and practically ceases about the fifth week. Although the liquid substance in it does not entirely disappear until the fourth or fifth month. Hereditary tendencies from the mother are a maximum in the earliest stages of pregnancy and begins to diminish about the fourteenth day and practically ceases about the fifth week and totally ceases about the fifth month. Tendency to variation in the foetus begins at about the fourteenth day and increases as the placenta begins its full normal function and continues as long as metabolism is manifested.

There are other forces at work that tend to modify to a greater or less extent the application of the law of variation, but we cannot get away from the fact that the modifying influence of variety of food is present whenever there is a higher development in the mentality of a people.

If we accept the above observations, supported as they are by what we know of the laws of physiology, then let us ask the question: How long has this factor been in operation, and how far reaching is its affect, as affecting primitive man and his near relative, the monkey? It would be preposterous to suppose that variety of food affected man's mentality within a limited period of time only, and since man is identically anatomically typified in the monkey, (Professor Owen says: "Every tooth, every bone strictly homologous,") is it unreasonable to assume that this factor did affect the monkey also, especially since we know the monkey is affected by other physiological laws, and since we know that many of our most important truths relative to man have been discovered by experimenting on even lower forms of vertebrates?

All anthropologists to-day agree in Monogenesis or Polygenesis—in other words, it is agreed that man and the monkey came from the same origin. The evidence above seems to prove that variety of food did play a most important part in the evolution of man from his common ancestor with the monkey.

Let us recapitulate. Man, mentally and physically, to-day is affected by variety of food. Man, mentally and physically, in the earliest period of his existence was affected by a variety of food. If not, when did this influence begin or leave off? Man in his earliest existence was identical with the monkey in his earliest existence. Is it not reasonable to suppose the difference between man and the monkey to-day was brought about by variety of food?

The author does not assume that this had all to do with evolving man from his common ancestor, with the monkey,

but that this factor has not been given due consideration, and by accepting it we explain many of the phenomena to-day unexplained.

We have heard much of the missing link. There has been no missing link in the light of the above. It has taken ages for the modifying influence of variety of food on the mental powers of man to accomplish the present high state of his mentality. To those searchers for the missing link I would put them the hypothetical case of a mountain that was subjected to a wind sufficiently strong to level it to the ground in a stated period of time. What wind levelled the mountain? There is no one wind that blew down the mountain. It has taken ages to accomplish this. There may be specimens of skulls found in nearly all stages of development between man and the monkey, but as to which is the missing link? Which wind blew down the mountain?

The above furnishes food for reflection, for it certainly appears that man in whatever sphere or condition we find him in history, needs a variety of food and foods grown in other countries than his own to have the fullest rounding out of his mental capabilities. In fact it appears reasonable to state that man's intellectual capacity varies in a direct ratio to the variety of his food and to the distance from which it comes.

"Physiologists* admit*and observations prove that the maternal emotions do affect the development of the exterior of the foetus. Likewise may the mental development be altered in its complexion delicate organization. Idiocy may so result. The mind influences and modifies the body in ways unexplained."

"There is certainly more than co-incidence in the fact of fright and shock, and the subsequent malformation or making of the foetus. The well known elephant man of England and the turtle man exhibited in the United States, with other instances, are familiar evidences of this statement."

The author is well aware that there are some physicians to-day, who do not accept the statement that mental impressions of the mother stamp the physical body of the child. Even those who do not give credence to this fact warn the mother against undue mental excitement, as great anger and great fear, as portending evil results to the off spring. Every careful physician does this very thing, and in doing so, whether he acknowledges it or not, accepts the fact that great anger and great fear do affect the child. The greater the mental impression of the mother the greater will be the effect on the child. This is reasonable. Still we cannot understand or explain how it is done, and are we to reject the preponderance of evidence supporting the fact that great mental impressions do stamp the physical body of the child simply because we do not understand and cannot explain how it is done? Small indeed would be the sum total of the knowledge of any man if he rejected everything he could not explain. If physically we reject this we must deny that mental impressions do affect the mother physically at all, which I believe few scientists at the present day are willing to go on record as so doing.

Again, "Shock is a profound impression made on the nervous system accompanied by a diminution of the heart action, caused by some severe physical injury or mental impression."

Then, severe mental impressions profoundly affect the nervous system and blood vessels of the mother. The nerves and blood vessels affect every organism of the mother's body. The child is affected by the physical organs of the mother. The child is affected physically by mental impressions of the mother. The principal argument advanced by those that

disclaim that mental impressions do affect the child physically is that there is no nerve connecting the child and the mother. Neither is there any nerve connecting the nursing child with the mother yet we know, that when the mother is subjected to great anger or fear the nursing child is thrown in convulsions and sometimes dies. The unborn child is connected with the mother as directly as it is possible for it to be and are we to say it is not physically affected by mental impressions of the mother simply because there is no nerve connection?

*Drs. Piersol & Palmer in American Text Book of Surgery.
 Dr. Meadows—London Obstetrical Society, Vol. VII.
 Drs. Barker & Busey in Transaction of American Geneological Society, Vol. XI.
 Dr. Dauby—Encyclopadia of Diseases of Children, Vol. I.
 Dr. Parvin—Text Book of Obstetrics—gives nine striking examples of this.
 That this was long ago observed is proved by citing the scriptures.—Gen. xxx. 37-39 verses.

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THE ESKIMO DANCE HOUSE.

BY JAMES WICKERSHAM.

One of the first men, Seutilit, which means "the first one," lost one of his family by death, for whom he grieved greatly. After his grief had somewhat worn off he danced and sang and this was the first "kozge" known to the Eskimo at Cape Prince of Wales. There were many people in their villages then, and this kozge was situated in the lower town of Kingegan. Seutilit directed where the drummers and singers should be situated, and directed that the east end should be reserved as a seat of honor for guests. There, the old men sat with the drummers and singers in front of them, and there the old men received presents. On the north and south walls of the room, sit old men who are called "kate-ud-ruck," while those on the east and west, are called "katenyuck." He directed that the dance should be called "Sa-yo-to-uk." From this beginning many kinds of dances have been established in the Eskimo kozge, and it was directed that no person should dance during the winter after a death in his family.

We were invited by Ok-ba-ok, the young chief, to attend a "you-wy-tsuk" dance in his kozge in the evening. When we had pushed ourselves up through the round hole in the floor we found the drummers (six in number) ranged in a line facing west, and facing the entrance hole. Back of the drummers sat another line of singers on a raised seat. As we appeared we were asked to come round behind the singers and a space on the raised seat against the wall, in the centre of the east wall was cleared for us as the most honored guest. The west side of the koz-ge was cleared, and everybody faced that way. Soon after we were seated the singing and drumming began. Everybody gazed at the entrance and soon a fur hood appeared and a prominent citizen entered followed by his wife and small boy. The music grew louder, and the visitors began to dance, facing to the east, and thus toward the music and audience. Each dance lasted for one or two minutes, and two such songs

and dances were performed when each new arrival desisted and took his place against the west wall. They were dressed in their finest spotted deerskin clothes; the man wore his labrets and had a black stripe across his nose; his wife had a black spot (round, and about the size of your thumb nail), in the centre of her forehead, while the boy, in addition to his other fur clothing, sported a large fox tail fastened to the back of his waist and dangling to his heels. After these first visitors had danced their two short dances, and returned to the west side of the room, and after a half a minute breathing spell, the song began again, and the drums to beat, and another trio appeared, danced twice, and returned to the west side. They, also, were as were all those so received, dressed in their finest clothes. Time after time a man and woman, and generally a child, appeared, and were all received exactly alike with two songs and music, danced their two dances to the music and songs and then took their seats in the west. One time three girls came in alone. Each time a trio came in and as the song began one of the drummers or one of the singers, stripped to the waist, stepped forward, and danced with the incoming visitors. Often a mother, father, or child, seated in the audience came forward, and danced with the visitors. The action of the drummer, or singer, or relative, in dancing with the visitors, was to do them special public honor. About a dozen sets of visitors came in with the songs, music and honors mentioned. As soon as they turned to the west wall, each man took his seat on the high bench along the wall, while the women and children stood, or squatted on the floor. As the last trio was seated, the music began again, and up through the floor popped three boys, dressed in the worst old clothes they could find, and masked, one as a white man, one as a negro, and the other as an eskimo. Their antics and grotesque dress; their bad singing, and worse dancing, greatly amused the audience and visitors. After their two songs, they quickly disappeared before their identity was known.

Then came the feast, to the visitors only. Pans of walrus and whale meat and other foods were passed by the drummers and singers to the visitors. The pan first went to the husband who helped himself, (using his fingers as forks and spoons) and then passed what was left to his wife and child. All that these left, was put to one side to be taken home. After fifteen minutes spent in feasting, that gastronomic performance closed. The drummers and singers took their places and struck up the music. The visitors first received, then danced; two short songs were sung and they were again especially honored by the same person or persons who assisted them on their appearance, whereupon, the husband left, by the round hole, followed by the child, and then the mother, who carried the pans and remaining food. All were danced out exactly in the order, and with the same music with which they

came in, and after the last trio had disappeared, the dance was ended, and the audience dispersed and went home.

There are two koz-ge's in the village of Kin-ne-gan, at the Cape Prince of Wales, one in the upper village and one in the lower. They are alike except that the lower village is much the largest. The one in the lower town, is twenty-four feet square on the inside; it is reached by a covered entrance ten or twelve feet wide, and forty feet long, extending under the koz-ge floor, whence you emerge by rising through a hole eighteen inches in diameter, into the room. This hole-door is somewhat ornamented by flat ivory pieces, inserted in the floor-puncheons about two inches back around the whole. The edge is rounding from these ivory strips to the whole; opposite, and where each person's face rises from the hole, on the east side, there is inserted in the floor a carving of a whale, made of a small hard stone with blue and white spots in it.

The koz-ge is the man's house, and is only visited by the women on such occasions as when they hold public dances and invite the women. In it, all public meetings are held, such as dances and feasts. At other times, it is used by the men as a club room, a work shop, and a gambling house. They bring thither their sleds to mend; they make harness, for their dogs; repair their whaling and fishing gear; build new sleds; smoke; tell stories and plan the next day's hunt. They trade, sleep, work, gossip or gamble there without the prying eyes or sharp tongue of the wife discovering or decrying their short-comings. It is a club-house, gymnasium, work-shop, theatre, church;—and it is the only place of public assembly in the village, and is built and maintained by the community. Here they conduct their various dances to propitiate the influences controlling the wind and weather, that they may be successful in hunting seal, walrus, bear, and whale. Here they receive visitors and tender receptions; not only to their tribal friends but to those from other tribes. Many dances are performed of different kinds, names, and for different purposes. The women are not found in the koz-ge except when invited to a dance or feast. The woman lives in her house—but is only tolerated at this public room.

THOMAS JEFFERSON ON PRE-HISTORIC AMERICANS.

BY HENRY BURNS GEER.

In Jefferson's "State of Virginia," a work written by Thomas Jefferson about 1781, and published in London in 1787, a copy of which the writer is so fortunate as to possess, is found the following discourse on Indian Mounds, and their probable origin.

Says Mr. Jefferson: "I know of no such thing existing as an Indian monument; for I would not honor with that name arrow points, stone hatchets, stone pipes, and half shapen images. Of labor on the large scale, I think there is no remain as respectable as would be a common ditch for the draining of land; unless, indeed, it be the barrows, of which many are to be found all over the country. These are of different sizes; some of them constituted of earth, and some of loose stones. That they were repositories of the dead, has been obvious to all; but, on what particular occasion constructed, was matter of doubt. Some have thought they covered the bones of those who have fallen in battles fought on the spot of interment. Some ascribed them to the custom said to prevail among the Indians, of collecting, at certain periods, the bones of all their dead, wheresoever deposited at time of death. Others, again, supposed them the general sepulchres for towns, conjectured to have been on, or near these grounds; and this opinion was supported by the quality of the lands in which they are found; (those constructed of earth being generally in the softest and most fertile meadow grounds on river sides,) and by a tradition, said to be handed down from the aboriginal Indians, that, when they settled in a town, the first person who died was placed erect, and earth put about him, so as to cover and support him; that, when another died, a narrow passage was cut to the first, the second reclined against him, and the cover of earth replaced, and so on."

There being one of these in my neighborhood, I wished to satisfy myself whether any, and which of the opinions were just. For this purpose, I determined to open and examine it thoroughly. It was situated on the low grounds of the Rivanna, about two miles above its principal fork, and opposite to some hills, on which has been an Indian town. It was of a spheroidical form of about forty feet diameter at the base, and had been of about twelve feet altitude, though now reduced by the plow to seven and a half, having been cultivated about a dozen years. Before this it was covered with trees of twelve inches

diameter, and around the base was an excavation of five feet depth and width, from which the earth had been taken, of which the hillock was formed. I first dug superficially in several parts of it, and came to collections of human bones, at different depths, from six inches to three feet below the surface. These were lying in the utmost confusion, some vertical, some oblique, some horizontal, and directed to every point of the compass, entangled, and held together in clusters by the earth. Bones of the most distant part were found together; as, for instance, the small bones of the foot, in the hollow of a skull; many skulls would sometimes be in contact, lying on the face; on the side; on the back; top or bottom; so as, on the whole, to give the idea as of bones emptied promiscuously from a bag or basket, and covered over with earth without any attention as to their order. The bones of which the greater number remained, were skulls, jaw-bones, teeth, the bones of the arms, thighs, legs, feet, and hands; a few ribs remained; some vertebræ of the neck and spine, without their processes, and one instance only, of the bone which serves as a base to the vertebral column. The skulls were so tender, that they generally fell to pieces on being touched. The other bones were stronger. There were some teeth which were judged to be smaller than those of an adult; a skull, which on slight view, appeared to be that of an infant, but it fell to pieces on being taken out, so as to prevent a satisfactory examination; a rib, a portion of the jaw of a child, which had not yet cut its teeth. This last furnishing the most decisive proof of the burial of children here; I was particular in my attention to it. It was part of the right half of the under jaw. The processes by which it was articulated to the temporal bones, were entire; and the bone itself firm to where it had been broken off, which, as nearly as I could judge, was about the place of the eye-tooth; its upper edge, wherein would have been the sockets of the teeth was perfectly smooth. Measuring it with that of an adult by placing their hinder processes together its broken end extended to the penultimate grinder of the adult. This bone was white; all the others of a sand color. The bones of infants being soft they probably decay sooner, which might be the cause so few were found here.

I proceeded then to make a perpendicular cut through the body of the Barrow that I might examine its internal structure. This passed about three feet from its centre, was opened to the former surface of the earth and was wide enough for a man to walk through and examine its sides. At the bottom, that is on a level with the circumjacent plane, I found bones; about these, a few stones brought from a cliff a quarter of a mile off, and from the river one-eighth of a mile off; then a large interval of earth; then a stratum of bones, and so on. At one end of the section were four strata of bones plainly visible; at the other three, the strata in one part ranging with those in another. The bones nearest the surface were least decayed. No

holes were discovered in any of them as if made with bullets, arrows, or other weapons. I conjectured that in this Barrow might have been a thousand skeletons. Every one will readily seize the circumstances above related, which militate against the opinion that it covered the bones only of those fallen in battle; and, against the tradition also, which would make it the common sepulchre of a town in which the bodies were placed upright and touching each other. Appearances certainly indicate that it has derived both origin and growth from the accustomed collection of bones and deposition of them together; that the first collection had been deposited on the common surface of the earth, a few stones put over it, and then a covering of earth; that the second had been laid on this, had covered more or less of it, in proportion to the number of bones, and was then also covered with earth, and so on.

The following are the particular circumstances which give it this aspect: 1, the number of bones; 2, their confused position; 3, their being in different strata; 4, the strata in one part having no correspondence with those in another; 5, the different state of decay in these strata, which seem to indicate a difference in the time of their inhumation; 6, the evidence of infant bones among them.

But, on whatever occasion they have been made, they are of considerable notoriety among the Indians, for, a party passing, about thirty years ago, through the part of the country where this Barrow is, went through the woods directly to it, without any instructions or inquiry, and having stayed there sometime, with expressions which were construed to be those of sorrow, they returned to the high road, which they had left about half a dozen miles away to pay the visit, and pursued their journey.

There is another Barrow much resembling this in the low grounds of the south branch of the Shenandoah where it is crossed by the road leading from the Rockfish gap to Staunton. Both of these have, within these dozen years, been cleared of their trees and put under cultivation; are much reduced in their height, and spread in width by the plow, and will probably disappear in time. There is another on a hill in the Blue ridge of mountains, a few miles north of Wood's Gap, which is made up of small stones thrown together. This has been opened and found to contain human bones, as the others do. There are also many others in many other parts of the country. Great questions have arisen, from whence came those aboriginal inhabitants of America? Discoveries long ago made, were sufficient to show that a passage from Europe to America was always practicable, even to the imperfect navigation of ancient times. In going from Norway to Iceland; from Iceland to Greenland; from Greenland to Labrador, the first trajet is the widest, and this having been practised from the earliest times of which we have any account of that part of the earth,

it is not difficult to suppose that the subsequent trajects may have been sometimes passed. Again, the late discoveries of Capt. Cook, coasting from Kamchatka to California, have proved that, if the two continents of Asia and America are separated at all, it is only by a narrow strait; so that from this side also inhabitants may have passed into America. And, the resemblance between the Indians of America and the eastern inhabitants of Asia, would induce us to conjecture that the former are the descendants of the latter, or the latter of the former; accepting, indeed, the Esquimaux, who, from the same circumstance of resemblance, and from identity of language, must be derived from the Greenlanders and these, probably, from the northern part of the old continent.

A knowledge of their several languages would be the most certain evidence of their derivation which could be produced; in fact it is the best proof of the affinity of nations which ever can be referred to. How many ages have elapsed since the English, the Dutch, the Germans, the Swiss, the Norwegians, Danes, and Swedes, have separated from their common stock? Yet, how many more must elapse before the proofs of their common origin which exists in their several languages, will disappear? It is to be lamented then, very much lamented that we have suffered so many of the Indian tribes already to extinguish without having previously collected and deposited in the records of literature the general rudiments, at least of the language which they spoke. Were vocabularies formed of all the languages spoken in North and South America, preserving their appellations of the most common objects in nature, of those which must be present to every nation, barbarous or civilized, with the inflections of their nouns and verbs, their principles of regimen and concord, and these deposited in all the public libraries, it would furnish opportunities to those skilled in the languages of the old world to compare them with these now, or at any future time, and hence to construct the best evidence of the derivation of this part of the human race.

But, imperfect as is our knowledge of the tongues spoken in America, it suffices to discover the following remarkable fact: Arranging them under the radical ones to which they may be palpably traced, and doing the same by those of the red men of Asia, there will be found, probably twenty in America to one in Asia of those radical languages, so called because, if they were ever the same, they have lost all resemblance to one another. A separation into dialects may be the work of a few ages only; but for two dialects to utterly recede from one another until they have lost all vestiges of their common origin must require an immense course of time; perhaps not less than many people give to the age of the earth. A greater number of those radical changes of language having

taken place among the red men of America, proves them of greater antiquity than those of Asia.

From the figurative language of the Indians, as well as from the practice of those we are still acquainted with, it is evident that it was, and still continues to be, a constant custom among the Indians, to gather up the bones of the dead, and deposit them in a particular place. Thus when they make peace with any nation with whom they have been at war, after "burying the hatchet," they take up a belt of wampum, and say: "We now gather up all the bones of those who have been slain, and bury them, etc." See all the treaties of peace. Besides, it is customary when any of them die at a distance from home, to bury them, and afterwards to come and take up the bones and carry them home. At a treaty which was made at Lancaster with "Six Nations," one of them died and was buried in the woods a little distance from the town. Sometime afterwards a party came, took up the body, separated the flesh from the bones by boiling and scraping them clean, and carried them to be deposited in the sepulchres of their ancestors.

From this discourse of Mr. Jefferson's it would appear that he believed the "Barrows"—as he terms them—to have been constructed by the aboriginal or pre-historic Indians; the predecessors and the ancestors of the Indians found in this country at the advent of the white man.

The writer has also personally excavated and inspected "Barrows" similar to those of which Mr. Jefferson wrote—"Indian Mounds"—as they are usually called, and has found the bones in stratas similar to those described in the foregoing paper. And again, I have seen individual sepulchres opened in which the skeletons were found in a sitting posture and facing the east in every instance. In many instances pottery, stone implements and arrow points were deposited with the remains and flat stones laid about and above, thus forming a rude enclosure. In the valley and on the hills along the west shore of the Mississippi river between St. Louis, Mo., and Cairo, Ill., there are many mounds of the character mentioned above.

RELICS OF A BY-GONE RACE.

INTERESTING DISCOVERIES OF AZTEC REMAINS IN MEXICO

So little is really known of the Aztecs and so fragmentary is their history as it has come down to us in the form of rude picture and chiseled stone, that any addition to the collection of archæological remains of this once great people is sure to awaken curiosity.

During the present year a discovery of Aztec relics of surpassing antiquarian value was unexpectedly made by workmen

engaged in the excavation of a drain in the city of Mexico. The "find" proved an absorbing topic of discussion in the capitol, and is now preserved in the National Museum.

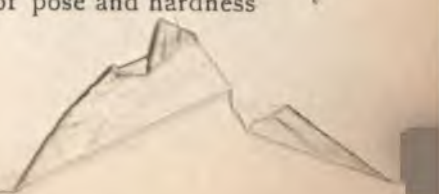
La Calle de las Escalerillas, or "the Street of the Stairs," where the discovery was made, in ancient days formed a portion of the site of the great Aztec temple dedica'ed to the God of War. While the workmen were engaged in digging up the street they unearthed two figures of gold representing the God Ehectcatl, the deity of air. One of these figures was painted in red, yellow, and black; the colors still remaining bright and fresh. Near these two idols were found; two golden disks, polished and engraved in a remarkable manner; four gold ear pieces; a small gold idol also representing the God of the Air; a number of beads; many small idols made of jade and obsidian; sacrificial knives; large incense bowls; and various other articles.

Upon the day following these discoveries still other relics were unearthed. Among them was a gold ornament of the God Ehectcatl; an ear-ring of the same idol; a gold disc breast ornament; two earthenware vases of most artistic handiwork brightly colored and enameled the colors still retaining their lustre; two terra-cotta incense bowls and a funeral urn.

Most remarkable of all, however, was the discovery of an Aztec sacrificial altar found twenty feet below the street level. This, on account of the gruesome death's head-carvings upon the front has been designated "The Altar of Skulls." A good photograph of this altar which was undoubtedly used in the religious ceremonies of the people when human sacrifices were supposed to appease the wrath of the heathen gods, is given herewith.

EARLY AMERICAN ART.

The horizon was here limited to historic painting. There was no mystic background to American life inhabited by races of giants, goblins and nymphs, no time-honored mythology, vanished Hercules or Venus to tempt or inspire the painter's invention. And the beauties of Nature—storm-riven skies, wooded hills, grassy meadows, rippling lakes, sun-kissed foliage, birds and flowers had not yet been invested with artistic dignity and subjective importance. Artists attached themselves to the most thrifty communities where coin and great men were most abundant. As soon as the Revolution was over a score of European artists hastened hither to embalm in oil the great Washington and his fellow patriots. Pride of blood was strong in Copley's day and joined to it was the traditional haughty bearing of the colonial man of parts and English gentleman. It gave his pictures a stiffness of pose and hardness



of line and form. Plebeianism had no share yet. Republicanism had not yet taken full possession of the new world. He was therefore true to public opinion. But true to native instincts and taste he introduced modern costumes into historical pictures instead of the traditional mediæval dress. Stuart and Trumbull followed the example and established the practice. This was one touch at least that was original and truly American.

A reaction amounting almost to revolution was taking place in European art at the opening of the nineteenth century. The change was vital. It was not only from a proscribed idealism to realism, but in the treatment of every-day people and the heroic achievements of real human beings as art subjects. Hector and Apollo gave way to real flesh and blood beings fired with patriotism, love and devotion and to Nature's beauties of earth, sea and sky. Human virtue, goodness and greatness were put on canvas instead of superhuman qualities and achievements attributed to gods and deities.—*Extract from Education, May, 1902.*

"LITTLE ORPHAN" ISLAND.

One of the curious places in China, is the island which is represented in the cut. This island is covered with buildings



The "Little Orphan" Island on the Yang-tse River.

arranged in terraces, one above the other, with a tower or temple on the summit of the rock. It suggests one method of defense which was common even in this country. The isolation of the island, surrounded by water as it is, the steepness of the cliff, and the added factor of the walled terraces, makes it well nigh impregnable, and yet it is too small for a gar-

ison of any size. The houses are built in terraces upon the sides of the rocks, and resemble in this respect the cliff fortresses in America.

RECENT DISCOVERIES IN THE EAST.

PICTOGRAPHS NEAR DORDOGNE.—"A picture gallery in a cave passage 300 feet in length, containing carefully drawn, and well preserved, rock engravings of animals, including the mammoth, has been found near Dordogne, in France. There were 109 figures in good condition; rendered with extreme care that will allow a separate study, for many points in detail, the evident work of artists, reproducing with fidelity, and technical skill, the animals which they saw."—*La Nature*, Paris, Oct. 5th, 1901.

THE MUMMY OF MERENPTAH.—In 1898, there were found, in a walled up chamber of a rock tomb, near Thebes, in Egypt, a large number of Royal mummies. Among these were the bodies of the illustrious Pharaohs, Thothmes IV., Amenophis III., SiPtah, and the well-known heretic king, Amenophis IV. It is a matter of the utmost interest that the body of Merenptah has been found. He was the successor of Ramses II., who was supposed to be the Pharaoh of the oppression, and Merenptah was supposed to be the Pharaoh of the Exodus. Neither of these were found in their tomb, built by Ramses; but the body of Ramses was secreted in the pit at Der-el Pahri, where it was discovered in 1881, but the mummy of Merenptah, was taken from the tomb to that of Amenophis II., where it has since reposed undisturbed. This solves the problem as to the Pharaoh of the Exodus.—*Condensed from Sunday School Times*, Feb. 8, 1902.

MIGDOL.—The Frontier, city of Egypt, will be explored by M. Cledat, a member of the French Archæological Institute. (See Exod. XIV. 2.) Migdol is known at present as Tell-el-Herr. It was near Pi-hahroth.

THE MINOTAUR.—The seventh annual report of the British School at Athens, is devoted chiefly to the excavation in 1901, by Dr. Arthur J. Evans, on the site of the Ancient Palace at Knossos, in Crete. Some seals and impressions of seals were discovered, of which, several bear the representation of a man with a bull's head, clearly the Minotaur. Among the finds at Zakro, in Crete, were nearly 500 nodules of clay bearing impressions of intaglios, two of which are of the Minotaur type.

JEWELS OF AN EGYPTIAN QUEEN.—Jewels of an Egyptian Queen have been found by Prof. Flinders Petrie, in the tomb of King Zer, about 1500 B. C. They consist of fourteen turquoise hawks and thirteen gold hawks; groups of beads in the form of a rosette, fastened together with the finest wire; a bracelet, somewhat similar, but the dark purple of the lapis

lazuli is of a tint which, Prof. Petrie tells us, he has never before found in Egyptian jewelry; a bracelet of gold and amethyst beads shaped like an hour-glass. The workmanship, throughout, is of the finest order, and speaks eloquently of the skill of the Egyptian workman who fashioned a Queen's ornaments over six thousand years ago.

RECENT DISCOVERIES IN EGYPT.—The gorgeous burial chamber of King Menuhetep I., in Upper Egypt; the tomb lies somewhat west of Thebes, that city which has been such a treasure-mine to explorers. The mural decorations are elaborate and profuse. In the walls are niches containing statues of the King and various members of his family. An enormous statue of King Menuhetep, himself, was found. It was of sandstone, over seven feet in height, and represented the king seated, clad in a simple tunic, but wearing the crown of Upper Egypt. This crown was painted red. The face, and body, were painted black, excepting the eye-balls which, painted white, gave the face a somewhat startling appearance.

Other statues found, were those of king Menuhetep's wife, life size, and of a priestess, evidently a member of the royal household. This, alone, proves that the tomb was builded in the days of extreme antiquity, when women occupied a high place.

A box found in the tomb, contained funerary offerings belonging to the deceased queen. There was a golden bracelet formed of beautiful engraved beads, alternating with lazuli, the whole fastened together with braided gold wire. There was also a metal mirror and other toilet articles. A curiously carved bit of ivory was evidently used as a part of the queen's personal adornment.

AN ANCIENT WOMAN WARRIOR.—A Viking tomb contains the skeleton of a woman, evidently a woman warrior; a complete set of arms, and a skeleton of a horse. The old Norse sagas speak of women warriors.

THE SAHARA DESERT.—Some interesting facts in reference to the pre-historic submersion of the Sahara Desert have been communicated to the French Academy of Science. M. Chevalier has discovered near Timbuctoo, the fossil remains of two marine animals, which, are still to be found on the Senegambrian coast. The fossil of a sea-urchin has also been unearthed at Zan Saghair.

GOLGOTHA.—The quarterly statement for April for the P. E. F., contains a contribution on the question of Golgotha being identified with a rock which resembles a skull, by Sir G. W. Wilson, which maintains that the legend is of recent growth, and probably of western origin.

RUNIC INSCRIPTION.—Prof. Sophus Bugge, has written an account of a Norwegian runic inscription, discovered in 1817, on a farm in Ringerike, Norway. The character of the Runes indicate that the epitaph was cut between 1010 and 1050,

within a half century of the discovery of the Western Continent. The name of Vinland is presented, and, it is supposed to be the earliest document known to us, containing reference to America.

THE HOUSE OF THE DOUBLE AX.—*The Nation*, for June 5, 1902, has an article on the discovery, by Arthur Evans, in old Knossos, of the Hall of the Double Axes. The excavation in exploring this hall, and the adjacent "Hall of the Colonnades," shows that one side of the great parallelogram was a building of three stories, the level of whose floors was about twenty-five feet lower than the upper-most story, and covered fully five acres. There is a private stair case which gave access to upper rooms. Impressions made from a Babylonian cylinder, were found: well-paved floors; stone shafts; terra cotta drain-pipes; graffiti; vases decorated with lilies; tripod of offerings; bright colored frescoes, etc. This brief note gives only a hint of the wonderful things that have been discovered.

PRE-DYNASTIC PERIOD OF EGYPT.—Dr. G. A. Reisner maintains, in opposition to Petrie, that in the Necropolis, on the eastern shore of the Nile, in Upper Egypt, opposite Memphis, the bodies were placed in the tomb in a sitting position, and, that the dismembering the skeletons, was done by the grave-robbers, who rifled the tombs. Here, along-side the graves, of the earliest period, 5000 B. C., are some which belong to the old and middle kingdom. In these was much gold jewelry. Reisner also explored ruins of a city with houses and palaces belonging to the middle kingdom. The houses were built of unburnt tile; in some of them was found a large papyrus belonging to the new kingdom, 1600 B. C. It is similar to the well-known Ebers papyrus, and is nothing less than a medical hand-book.—*Condensed from Sunday School Times, Feb. 8, 1902.*

PRESENT CONDITION OF POMPEII.—The disaster that happened on the Island of Martinique, reminds us of that which happened at Pompeii, in 76, A. D. The destruction of this city, was as sudden as that of St. Pierre, but the buildings were left standing, buried entirely out of sight, by the falling volcanic ashes. The wood work was not set on fire, but was charred, and so preserved. The city has been excavated, and now stands open to the view, exactly as it was when it was overwhelmed, except that the tops of the houses, are all removed. *The Scientific American* for May 31, 1902, has a picture which represents the city as it was; it is taken from a model of the city. The following quotation will give an idea of the city as it was:

"The Forum was given up to the temples, markets and buildings, connected with the administration of the city. The principal buildings, were the Basilica; the temple of the Apollo; the Market Buildings; City Treasury; the Temple of Jupiter; the Sanctuary of the City Gods; the Temple of Vespasian and the Voting Place. The baths of Pompeii, were naturally on a small scale, but owing to their excellent preservation, and the

certainly with which the use of various rooms can be assigned, we derive from them most of our information regarding the arrangements of ancient baths. The amphitheatre lies at a distance from the other excavations. The length is 444 feet; breadth 342 feet; and, is small, compared with other amphitheatres, but was naturally large for the town, so, that only a part of it was provided with seats. The houses of Pompeii are worthy of special study. They face the streets, which are usually the average width, being ten to twenty feet. There were sidewalks with curbing, and broad ruts were made by passing wheels. Only the principal streets were wide enough for two vehicles to pass."

SUBMARINE ROMAN REMAINS OF THE ITALIAN LITTORAL.—It has been left to the British Association to undertake this task, and, under its direction, Mr. T. R. Gunther, of Magdalen College, Oxford, has been engaged for some months in making a detailed survey of the Roman structures beneath the sea. From his notes it appears that the sea level has risen about 20 feet since the era of their construction, and has covered many villas and piers, and, probably, also a road, which seem to have existed along the coast of Posilipo. Mr. Gunther's survey will be one of great practical value, apart from its scientific interest, because many boats run upon those old foundations annually; and, only last year, a steam vessel, of the Italian navy, struck on one of them. This danger, however, is chiefly to pleasure boats; and owners of yachts, need to be especially careful, when running along the coast, in steam launches. No less than three of these crafts have had narrow escapes in recent years. A careful record of the tides have been kept for sometime; observations being made several times a day. The figures show the rise and fall to be greater than has been generally supposed, and also, that the level of the Mediterranean is less influenced by the action of the wind than has been supposed by some observers.—*N. Y. Evening Post*.

GEORGE FREDERICH GROTEFEND.—Grotefend was born June 9, 1775, in the city of Munden, kingdom of Hanover, Germany, and began his school life in Ilfeld, and, later carried on his university studies at Gottingen. The aim of these protracted studies, was a preparation for the work of schoolmaster in the department of classical philology. In 1787, on the recommendation of Heinrich Heyne, Grotefend, became assistant master in the Gottingen Gymnasium, and began there to teach Greek and Latin classics.

* In 1802, Frorillo, the Gottingen librarian, called Grotefend's attention to the inscriptions of Persepolis, which has been seen by numerous priests and traders, and had finally been carefully copied, in 1765, by Niebuhr. Several scholars in northern Europe, had tried to decipher them, but had only succeeded in making out a sign here and there, without securing the consecutive sense of any passage.

He began, with the assumption, already held by his prede-

cessors, in the work of decipherment, that these Persepolis inscriptions, were written in three languages, and that the first inscription, in each group of the three, was in ancient Persian. He further reasoned that, the inscriptions, would contain the names of the kings who had set them up, and that these kings would prove to be members of the archæmenian dynasty. His first step was to select from Niebuhr's copies, two inscriptions on which he began work. After some hesitation, he selected the two numbered B and G by Niebuhr. He followed Tychsen and Munter, who had previously attempted to decipher these texts, in the following points:

1. The wedge, occurring at regular intervals, which is placed diagonally from left to right, is intended to divide the words.

2. There is a word which appears frequently in these little texts, both in a shorter and a longer form. In the shorter form, Munter had guessed that it meant "king;" and, in the longer form, Grotefend ventured to suppose that it meant "kings."

Grotefend's conjecture was that (a) meant "king;" while (b) was the plural, and meant "kings;" the whole expression signifying "king of kings." But another glance at the plate will show that this word occurs also, in the first line of both inscriptions, followed immediately by the same words, namely, (c).

Later investigation has shown that the names were correctly identified, and, that the the alphabetical characters, were, in nearly every case, correctly surmised.—*Sunday School Times*, Jan. 25, 1902.

BELL FOUNDED.—The art of bell founding is one of the most ancient. It existed among the Chinese perhaps earlier than the christian era. It carried, to a great extent, among the Russians. Whether there was such a thing as bell founding, among the American tribes, is uncertain, though little bells, resembling the French Harvis bells, have been found in the mounds and graves along with other pre-historic relics, which convey the idea, that the making of copper bells, was known in pre-historic times.

Like most other arts and crafts, bell founding, was for some centuries, almost exclusively confined to the monks. St. Dunstan, was a skillful workman, and was said by Ingulphus, to have given bells to the western churches. Later on, when a regular trade had been established, some bell founders wandered from place to place; but the majority settled in large towns, principally London, Gloucester, Salisbury, Norwich, Bury St. Edmunds, and Colchester.

A MODERN ROCK-CUT FIGURE.—The Lion of Gun Hill, Barbadoes, West Indies—a surprising piece of statuary carved out of the solid rock, by a military officer, stationed at Gun Hill, thirty years ago.

ANTHROPOLOGICAL NOTES.

BY ALEXANDER F. CHAMBERLAIN.

IMPERIALISM AND ARCHAEOLOGY. A question of considerable importance has recently come up in Egypt in connection with the "improvement" of that country under European auspices. The great Nile dam at Assuan, while benefiting the country from an agricultural and an industrial point of view, seems likely to destroy some of the famous archaeological monuments or at least to seriously endanger them. The temple of Isis and other ruins on the island of Philæ would be in part submerged if the Willcock's dams were built as proposed. Various protests have been made against such new-century vandalism. M. Garstin proposes to remove the monuments, stone by stone, and set them up again on the neighboring island of Bigeh. Sir Benjamin Baker thinks the whole island of Philæ could be raised some ten meters, which would insure the safety of the ruins. In the *Nineteenth Century*, Mr. Frank Dillon declared that the destruction of Philæ would stigmatize as infamous the English occupation of Egypt. The matter seems to have been compromised by lowering considerably the height of the dam at Assuan. The question involved is likely to occur in other parts of the world where "imperialistic" methods are in vogue.

SACRED LANGUAGE. At a recent meeting of the Société d'Ethnographie of Paris, as reported in the "*Revue Scientifique*" (4 e S., Vol. XVII. 1902, p. 282,) M. E. Soudi, maintained the curious and imaginative thesis that there exists a "langue sacrée," a neglected "sacred language," which created art and ornament. All over the world, from India to Brittany; from Africa to America, its traces are discoverable. The simple straight lines or spirals graven on tumuli and rocks; the so-called geometric ornamentation of archaic Greek vases; the frame of Etruscan mirrors; the field of Gaulish medals; the holes or 'cups' hollowed in Celtic stones, reveal it. The customs of the ancients and of those who have preserved them traditionally in various countries; the temple architecture of all cults from Edfu to the Parthenon; from Babel to Palenque; from Angkor to Notre Dame; the humblest objects belonging to the savage and the richest products of our civilization 'conceal an ideographic language, a real cosmoglyphy, the study of which may explain to us the system of creation and reveal to us the origin of man and his universal civilization.' These same ideas were previously put forth at greater length in a volume entitled '*La langue sacrée. Le mystère de la création*' (Paris, 1897,) containing 677 pages and illustrated with 900 figures. This is but one of the many elaborate and useless attempts to read religious, mystic, or magical ideas into things

which have had, so often, a simple and common-place origin in the every-day life of men and women.

PELASGI. In a book published in 1894, entitled "Gli Hethei Pelasgi," Father de Cara sought to identify the much discussed "Pelasgians," with the more discussed "Hittites," who wandered from Syria to western Asia Minor, Greece, Italy, etc. The very name *Pelasgi* he interpreted to mean "wandering Hittites." The track of the Hittite-Pelasgians was marked by certain fortification styles, methods of metal-working, and many names left *en route*. From an etymological equation, Hethi-Khatti-Ati-Asia, de Cara elaborated other derivations. So, from the Hittite root-word were ultimately derived:

Adria	Brettii	Latinum	Picentini
Alatri	Etrusci	Latium	etc.
(Attica	Ferentinum	Oenotria	
Athenæ	Italia	Macedonia	
Ausonia	Kamilla	Palatium	

Against such deductions as these A. Pirro protests in his article "I Pelasgi a proposita di una nova teorica del padre de Cara," in the "Rivista di Storia antica," (Messina, Vol. V. 1900.) In a brief recension of Pirro's paper in the "Internat. Cbl. f. Anthropologie" (Stettin, Vol. VII. 1902, p. 31,) Prof. Walter styles De Cara's methods "quite unscientific." Sergi, in his recent work on "The Mediterranean Race," (London, 1901,) appears to have taken de Cara more seriously.

DEGENERATION. In a paper read at the International Congress of Prehistoric Anthropology and Archæology (Paris, 1900,) Dr. Silva Telles, of Lisbon, discussed the question of "The Degeneration of Human Races." Dr. Telles has studied the Portuguese in Africa from the point of view of somatology and reaches the conclusion that a considerable number of degenerative changes have taken place. In the third generation he notes the following peculiarities: Brachycephaly, disharmony of cranium and face, more marked lumbar curve, growth irregularities, upper alveolar prognathism, shorter and higher calves, slight flattening of feet, etc. These phenomena, he thinks, reveal an ethnic degeneration and not a persistent race transformation. The "ethnic settling" of the Portuguese in the tropics Dr. Telles regards as quite impossible. In the discussion of this paper Dr. Papillault considered the conclusions of the author on the question of acclimatization too radical. Dr. Verneau asked whether the brachycephaly noted might not be due to spontaneous selection in emigration. The increase in lumbar curvature might be due to muscular weakening. But since it has been observed by Bianchi among the African natives it may be an adaptation instead of a stigma of degeneration. A brief abstract of Dr. Telles paper appeared in "L'Anthropologie" (Paris, Vol. VIII. 1902, pp. 241-242.) It has also been published in extenso by the author.

KEKCHI MAIZE PRODUCTS. Maize is still the "staff of life" of the Kekchi Indians, (Mayan stock) of Guatemala. An interest-

ing account of their foods and drinks has recently been published ("Globus," Vol. LXXX. 1901, pp. 259-263,) by Dr. Karl Sapper,—"Speise und Trank der Kekchiindianer." From this article the following list has been compiled:

1. *Culuj iscvua*. A sort of *tamal*, prepared by slowly roasting dough from unripe maize in which raw sugar has been mixed.
2. *Cvua*. The common *tortilla*, or maize-cake of Mexico and Central America. Also called *xorvil*.
3. *Guatiboj*. The famous *chicha* of Spanish America, an intoxicating drink formerly made exclusively from maize (now sugar is added.) As the manufacture of alcoholic drinks is a state monopoly, *chicha*, which is used at festivals especially, is made in secret by the Indians.
4. *Iscvua*. A sort of *tamal* made from unripe maize and wrapped in maize husks.
5. *K'aj*. A drink made from ground roasted corn and warm to hot water. The Nicaraguan *tiste* is made with cold water, and a little cacao, sugar, and pepper is added. From their love for this drink, the Costa Ricans nickname the Nicaraguans "Pinoleiros," from *pinol*, the Spanish, (from Aztec) equivalent of *k'aj*.
6. *Korech*. A sort of *tortilla* baked for an hour or more over a slow fire. These "cakes" will last for a couple of months, whereas the ordinary "fresh" *tortillas* spoil after a few days. The Spanish Americans call them *totoposte*, a term of Aztec origin.
7. *Matz*. A warm drink made from unripe maize. Much liked by the Indians. Something like *rax uk'un*.
8. *Muipaj*. A drink made from young maize.
9. *Pochvil*. The well-known *tamal* of Spanish America.
10. *Rax uk'un*. A sort of "maize water" made by stirring with the hand maize-dough in warm water. This is said to be "an ideal drink" in the mountainous regions with their hot, moist climate. In Southern Mexico, however, the Indians make a drink from fermenting dough and cold water, called *posol*. This is disliked by the Kekchi Indians.
11. *Raxixim*. A sort of *tortilla* made from maize not quite ripe.
12. *Quem*. The common term for maize-dough.
13. *Sucuc*. A sort of "bean-tortilla." Between two layers of maize-dough ground, boiled beans are placed, and the whole roasted as is the case with *tortillas*.
14. *Ts'uuj*. A sort of "bean-tortilla." Here whole boiled beans are mixed in with the dough, which is then roasted.
15. *Uben*. A sort of *tamal* in the dough of which boiled pork is mixed. The whole is then cooked, after being wrapped in leaves for four or five hours in the pot over the fire.
16. *Uk'un*. Raw maize ground three times is made into dough and left standing over night in boiling water on the fire, after which the hulls are removed. See No. 10.
17. *Xcp*. A sort of "bean-tamal." Raw beans (*Phaseolus vulgaris*) are mixed in with the dough. The whole is then wrapped in chochoc leaves and boiled for some five hours.
18. *Xorvil*. One of the terms for *tortilla*.

These facts indicate to what extent the Indians of certain regions of Central America have utilized the product of the plant their ancestors transformed from a grass into a cereal.

Editorial.

VILLAGE LIFE AND VILLAGE ARCHITECTURE.

We now turn to the village life and village architecture of the tribes of the West and Northwest with the thought that these will perhaps throw additional light on the race problem.

We have already seen that village life furnishes the clue to the proper understanding of the monuments and structures of the Mississippi valley, and throws much light on the state of society which prevailed there in prehistoric times. We shall find, as we proceed, that the same is true of the vast region which lies to the north and west of this valley; a region which abounded with a great variety of structures all of which are evidently connected with the village sites, and many of them are still occupied.

These tribes are scattered over a vast range of territory. Some of them are situated far to the north where ice and snow always abound, and where the chief effort of the people was apparently to find protection against the inclemency of the weather, and to secure subsistence amid the contending elements. Others are situated along the Pacific Coast where great forests abound, and where the sea furnishes the chief source of subsistence. Still others are found in the valley of the Columbia river, and along the banks of Puget Sound, the various tribes dwelling there having their own methods of gaining subsistence, and building and governing the villages. A fourth is found among the mountains and valleys of California, each separate locality furnishing a different style of house construction, and a different kind of village. The people here adapted themselves to their circumstances and built their villages as their necessities required. A fifth stock or race may be found on the great plateau which rises like a great roof above the rest of the continent making, in itself, an air continent from which the rivers flow in every direction ultimately reaching the Pacific coast on one side and the Gulf of Mexico on the other, a few making their way to the chain of the Great Lakes. A sixth class of tribes may also be found far to the southwest near the region where are the remains of so many of the ancient cities which are now in ruins.

We may say of all this region that, while the tribes are so

different from one another as to be easily distinguished and described, yet the village life is everywhere so similar that we can take it as the clue to interpret and explain each one of the many monuments and structures that are scattered over the country, all of which belong to the Stone Age.

We shall see as we proceed that there were great advantages which came to the people from their village organization, as each locality had its own difficulties and drawbacks; but the people by means of their being brought together in villages, were able to make themselves comfortable and prosperous even under the most adverse circumstances.

1. Among the advantages of the village system, we shall first mention the fact that it brought the people together so that they could overcome the obstacles of climate, and the difficulties of the situation. If we study the villages of the people who dwelt amid the ice fields in the far north, we shall find this point well illustrated.

2. Another advantage furnished by the village life is that it enabled the people to take advantage of the resources of the country, and make them serve their purposes, and thus developed in them energy and thrift which are worthy of admiration. We find good illustrations of this among the Thlinkets, Haidas and other tribes that dwelt on the northwest coast. We may say that there were no people on the continent more energetic, thrifty, and comfortable than were those who dwelt on the edge of the forests and near the sea of this far-off region.

3. The village life seems to have united the people under a permanent form of government, as the village chiefs were generally hereditary, and if they were not, they generally belonged to the ruling classes and by their inherited qualities and social position were able to retain authority over the people. Illustrations of this will be found among the tribes on the Pacific Coast.

4. The village life favored the system of totemism which prevailed so extensively, and by this means brought together all of the tribes into an artificial brotherhood which was symbolized by the same general totemic figures. This system was not founded upon natural descent—but an imaginary descent. The animals which were represented by the totems were the ancestors of certain clans or tribes as well as their guardian divinities. Illustrations of this are numerous among the tribes of the Mississippi Valley, all of which were totemistic. Totemism among these tribes was exhibited in the villages in a rude way by tall poles which were placed in front of the huts and had rude figures suspended at the top. The Mandan village painted by Catlin shows this. Totemism is seen among the tribes of the Northwest in the carved totem poles which there show that certain animals and birds such as the bear, raven, whale, and whale-

killer, were the divinities which were worshiped as well as the guardians of the villages, the same totem having been adopted by nearly all the tribes, but minor divinities being taken as totems of the families.

5. Village life along with totemism brought together the clans and tribes of a large district into a unity which was almost equal to a confederacy; the similarity of life and the totemistic bonds brought the tribes adjoining into a fraternity which was stronger than kinship, and equal to the bonds of nationality as it exists in modern times. The best illustration is found among the different tribes situated on the Northwest Coast, for these tribes, notwithstanding the fact that they were separated by mountain barriers and by the barriers of language, were all united, and were always at peace with one another. Other illustrations are furnished by the Iroquois confederacy in New York, and by the mound building tribes on the Ohio river, and other localities.

6. Another advantage of village life, was that it held the people together in such a way as to resist the disturbing and disrupting attacks of hostile people, and favored the growth from savagery into barbarism and from barbarism into semi-civilization, thus preparing the way for the appearance of cities and of established and organized society. The best illustration is that given by the Pueblo tribes of Colorado and New Mexico. These tribes were situated in the middle of an arid region and had many disabilities which arose from unfavorable climate and poor soil, but owing to their village organization they were able to construct irrigating canals and reservoirs of water and other improvements, and so gradually advanced into a grade of culture which was in strong contrast to all others and which under other circumstances would have brought them into a civilization equal to that found among the people of the Southwest.

7. Village life, along with the intercourse between tribes had the effect to awaken the spirit of improvement to such an extent that there was a constant tendency to borrow such patterns and inventions as were found elsewhere and to incorporate them into art and architecture, until there was a mingling of the best styles and patterns, thus making a strange medley which is often difficult to account for.

8. Village life and village architecture bring to light the cultural areas which prevailed throughout this continent

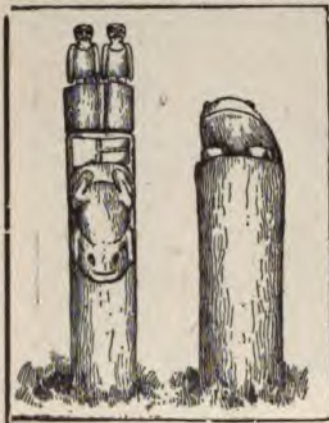


ESKIMO HEAD.
Ripley's Races.

Prof. O. T. Mason has made a study of these areas and has recognized eighteen upon the continent which he names as follows:

Arctic area Athapaskan, Algonkin, Iroquois, Muskogean, Plains of the Great West, North Pacific Coast, Columbia drainage, Interior Basin, California, Oregon, Pueblo, Middle American, Antillean, South American, Cordilleran, Andean, Atlantic Slope, Eastern Brazilian, Central Brazilian, Argentine-Patagonian, Fuegian.

The characteristics of the villages of these different districts are as follows: 1. In the Arctic region, under-ground houses, stone lamps, wood dishes. 2. In the Athapaskan area, bark lodges, bark and basket dishes, fur bedding, no pottery. 3. In the Algonkin area, bark and skin lodges, "long-houses," earth-works and mounds, pottery, stone knives, arrows, etc. 4. The Muskogee area, grass lodges and wattled houses, furniture of cane and matting, earth-works, pyramidal mounds. 5. The Plains of the Great West, skin lodges, also earth lodges, furniture of hides, sinew back bows, stone arrows, coracles for boats. 6. North Pacific area, communal barracks with totem posts, no pottery, wood carving, plain weaving, fine basketry, and dug-out canoes. 7. Columbian area, communal barracks but totem posts lacking, bark canoes, basketry, no pottery, nets. 8. Interior Basin, Colorado, Utah, shelters of brush, and cave dwellings, conical baskets. 9. California area, insignificant shelters, poor boats, conical baskets, elegant arrows, fish and animal traps. 10. Pueblo area, cave houses, cliff houses, towers, and pueblos, irrigating, sand painting, pottery, coiled ware, basketry. 11. Middle American area, (Mexico and Central America), pyramids, great buildings of hammer dressed, stone and carved stone, mining and metallurgy, paper and bark cloth, gem cutting, grotesque pottery. 12. South American area, Peru, Ecuador, thatched huts, fortified villages, carved stone, buildings with huge blocks, metals, pottery, weaving, irrigation, quipu, stone headed clubs, post roads, suspension bridges. 13. The Andean Slope, wooden houses, thatched with palm leaves, savagery, feather workers, no pottery, poisoned arrows, shields, throwing sticks, long bows, head band in carrying. 14. Brazilian area, immense huts, and shelters open below, thatched roofs and hammocks, canoes, house boats, clubs, axes, dug-outs. 15. Pampas, or Argentine area, awnings, hammocks, skin beds, woven blankets, spears, and lassos. 16. The Fuegian area, miserable huts, no furniture, pine bows,



TOTEM POLES.

16. The Fuegian area, miserable huts, no furniture, pine bows,

stones thrown from the hand, canoes of bark made in three sections for portages.

This list of areas shows to us the prevalence of village life and the great variety of art and architecture which prevailed in America, but gives us no idea as to the resemblance to extra-limital styles and patterns which have been noticed by others, and for this reason we shall call attention to the points which are omitted while passing over the various districts which have been recognized in the west and northwest portions of the continent.

With these general remarks upon the peculiarities of the village life, we take the different styles of architecture which are presented by the various tribes scattered throughout the West and the Northwest, but would call especial attention to the analogy between these and those which are found in other parts of the world.

I. We begin with the villages of the far North, especially those situated in the ice fields of arctic regions.

Here the Eskimos were the inhabitants; a people who are supposed by some to have been the descendants of the old cave and hut dwellers of Europe, and who present the state of society which prevailed in the rude stone or paleolithic age, a conclusion which is favored by the fact that the musk ox is still found in this region, and is hunted by the people as it was by the old cave dwellers of Europe. The relics however, prove that the people had passed entirely out of the old Stone Age, and had reached a stage in the new Stone Age equal almost to that of the Lake Dwellings of Europe, so that, if their houses resembled the old hut houses and chambered tombs of the north of Europe, the people must have passed out of their former stage and reached a social condition far in advance of that of their ancestors.



THE WHALE KILLER.

This is to be said in favor of the theory: the Eskimos on the north-eastern side of the continent have more primitive houses than those on the northwest, and retain more of the style of living that formerly prevailed in Europe, than can be found any where else.

The central tribes who dwell on Smith's Sound, Baffin's Sound, and the west shore of Hudson's Bay, differ from either of the others but dwell in villages and so are able to overcome the difficulties of their situation and remain contented with their lot. The most progressive of the Eskimos are those situated on the northwest coast.

Ruins of Eskimo villages are common on the Yukon and

along the coast line to Point Barrow. On the Siberian shore they are seen from East Cape along the Arctic coast. The saucer shaped pits indicate the places formerly occupied by the houses. These houses had stone foundations, many of which are still in place. The modern villages are generally situated with reference to hunting and fishing grounds. The sites vary from the head of some beautifully sheltered cove to the precipitous face of a rocky slope. The ancient villages were built usually on the highest points of islands, near the shore, or on high capes or peninsulas commanding a wide view over both sea and land.

The village was usually an irregular group of semi-subterranean houses built around a large central building called by the traders kashim. They are ordinarily made large enough to contain all the villagers, besides guests who may come during festivals. The size is limited by the material available, which is mainly drift logs cast up along the shore. Snow



A HOUSE OF CEDAR PLANK, ALASKA.

most unexpected places.

The Eskimo in the vicinity of the Behring Straits have summer villages built in a more or less permanent manner, but from Kotzebue Sound northward, the people use tents or skin lodgings while at their fishing stations. In addition to store-houses, every village has elevated platforms on which sledges and kayaks may be placed.

The village at Razbinsky will serve as typical of all in the region.

The front and rear ends are constructed of roughly hewn planks set upright. The sides are of horizontal timbers hewed and loosely fitted. About five feet from the ground a log extends from side to side of the structure resting upon two posts in the middle, having their ends set in the ground, and connected by similar logs which extend from front to rear along the eaves. Lengthwise over the top of the house extend hewed sticks which hold in position the upright posts and the bars that bind upright planks. The inner framework is bound together by withes or wooden pins

houses, so common among the Eskimos of Greenland, are known in Alaska only as temporary shelters when out on short excursions.

The villages look like so many mounds as the houses are covered with earth and are clustered together in the most irregular manner, and the entrances to the passage ways leading to the interior open out in the

and held in place at the eaves by joists, across which are thrown poles or planks forming an open attic, or platform for storage. The roof is double pitched and covered with slabs or planks over which pieces of planks, or bark are laid. Along the sides of the rooms at from 1 to 3 feet above the floor are broad sleeping platforms which accommodate from one to three families. The floor is usually of hard planks laid close together and occupies about one third the area of the room in the shape of a square in the centre. It is laid on sills at the end so that the planks may be readily taken up; below these there is a pit from three to five feet deep where a fire is built to heat the room at rare intervals; other planks covered the ground back to the walls. The entrance consists of a long roofed passage built of logs and covered with earth; the outer end of this is faced with planks over which is an arched doorway leading into the room in summer. In winter the entrance is closed and a round hole leads through a low tunnel to the fire pit and through a circular hole to the middle of the room.*

II. We turn now from the villages of the Eskimos which were situated in the great ice fields of the north to those which were situated near the great forest belt which stretches along the Northwest Coast, and which was occupied by various tribes such as the Thlinkeets, Tsimshians, Kwakiutls and others.

The description of these villages has been given by Ensign Albert P. Niblack, Dr. Franz Boas, Mr. Geo. A. Dorsey, and others. They all present a style of architecture and a mode of life which was peculiar to the region and yet was influenced by the people who lived as far south as Polynesia.

Ensign Albert P. Niblack, says:

"A strip of country one hundred and fifty miles broad, one thousand miles long, is generally called the Northwest Coast. Dotted throughout this region are the winter villages of the Coast Indians whose ethnic variations are somewhat marked as we go farther north, but who differ, as a group, quite materially from the Hunter Indians of the interior, and more sharply from the Eskimos. In contrast to the fierce and revengeful Tinnies, they are generally mild in disposition.

The physical character of the region occupied by the Thlinkeets, Haida, and Tsimshians, is similar, in general, to that of Southern British Columbia, but from local reasons, this area has a peculiar climate. A branch of the warm Japanese current sweeps along the coast and gives rise to excessive humidity, producing in summer the rains and fogs, and in winter the snows and sleets. The territory is very broken and sub-divided. It is densely wooded, the vegetation crowding down to the high water line. Travel is entirely by water, the village being on the water courses, and the canoe here reaches its highest development.

The principal fur-bearing animals are the brown and black bear, wolf, red and silver fox, beaver, mink, marten, and land otter. While in the mountains of the mainland are wild goats and sheep; wild ducks and geese in season; lonely herons, cranes, gulls, eagles, hawks, and crows. It is the breeding ground for whales, and wherever the whale is, there is found the whale-killer. The presence of the bear, eagle, raven, wolf, whale, and whale killer, explain the prominent part they play on the mythology of the coast.

The people are venturesome, going out to sea in their canoes. They often make trips of hundreds of miles along the coast; they are ingenious; handy with tools; imitative, and progressive. With their ideas of acquiring wealth, we have little to teach them in the habit of thrift. They have considerable taste in the use of colors and are advanced in the art of carving. Toratism permeates the whole tribal organization which is based on the mother-right; that is birth-right; such as rank, wealth, property received

*See Eighteenth Annual Report of the Bureau of Ethnology. Page 250.

from the mother. Among the Southern tribes of British Columbia, the father-right is the form of social organization.

There is no place for any person in any tribe whose kinship is not fixed, and only those persons can be adopted into the tribe who belong to some family, with artificial kinship specified. The clans or Gentes are sometimes organized into groups called phratries. We have, therefore, (1) the household or family; (2) the totem; (3) the phratry; (4) the tribe.

The obligation attaching to a totem is not confined to tribal or national limits, but extend through the whole region. The son acquires the totemship of his father. The ties of the totem or phratries are considered far stronger than blood relationship.

The totem found among these people are designated as the eagle, wolf, crow, black bear, and whale-killer.*

Dr. Boas in speaking of the "Kwakiutl," says:

"The Indian tribes are distinct in characteristics and different in language, but so alike in their arts, industries, customs and beliefs, that they form one of the best defunct cultural groups on the continent. Intercourse along the coast by means of canoes, is easy, while access to the interior is, on account of the hills and forests, quite difficult. The people are essentially fishermen; their houses are made of wood and timber and have con-



HAIDAH VILLAGE WITH TOTEM POLES, ALASKA.

siderable dimensions. Their canoes are made of cedar, their shapes and sizes depending upon, whether they are used for hunting, trading, or fishing; work is done in wood, by means of stone knives; trees are felled with stone axes, split by means of bone wedges, and plained with adzes or jades and serpentine, and carvings are executed with shell and stone knives. Totemism prevails in the district. The crests in use are carved on columns, intended to perpetuate the memory of a deceased relative and the legendary history of the clan. They show the traditions of the clans. Each clan derives its origin from a mythical monster, who built his house at a certain place, and whose descendants lived at that place. There are many places in which village sites can be identified; they show that the clan was originally a village community, but owing to changes in number, or for the purpose of defense, left their old houses and joined some other community. The patriarchal system prevailed in some of the villages, but the matriarchal in others, and a combination of the two systems in other tribes. The woman brings as a dower, her father's privileges and powers to her husband who, however, is not permitted to use them for himself but preserve them for his son; the female law of descent being thus secured through

*See Smithsonian Report National Museum, 1888. Page 231 to 250.

marriage. The crests and the property of the family descends through marriage in the female line.

The American idea of the acquisition of the Manitou is embodied in the carvings and in the community, as they represent that the Manitou was acquired from a mythical ancestor, who was the founder of a village, and this fact has been handed down from generation to generation, through the carved symbolism, as the tutelary genius of the clan is exhibited by the crest."

Here, then, we have a few features which are very unique, and yet important, because of their bearing on the carving of the totem poles. One legend is, that the whale-killer, assumed the shape of a man, and that he gave the chiefs of a certain village the right to use the whale-killer as a crest or symbol on house fronts, and taught them how to make the quartz pointed harpoon. Other legends are to the effect, that the ancestors of the clan brought from heaven, or from the under-world, or out of the ocean, or from the forest, certain emblems, such as



BARK CANOE ON CANADIAN LAKES.

the sun, or the raven, or the whale-killer, or some sea animal, or some bird of the forest, or fabulous monster, whose crest was perpetuated in totem poles, and who were thus divinities of the villages. Now all this mythology was embodied in the wood carvings, which are worthy of close study because of their bearing on the history of the people, and upon their social conditions, as well as their architectural skill. There is, however, one other feature which is especially worthy of attention as it indicates, that even among this far off people, rude fishermen, as they were, there had arisen class distinctions which we may recognize in many other regions, but did not come to their complete and final sway, except among the so-called civilized people of the south-west.

Dr Boas, says:

"All the tribes of the Pacific Coast are divided into a nobility, common

people and slaves. The clans of the Kwakiutl are so organized that a certain number of limited families are recognized as the leaders; the ancestors of each of these families having been of a high order. These bestowed special privileges; while there were other families which have not been so favored. These distinctions are blazoned on the totem-poles and house-fronts exactly as they are on the equipages, heraldic emblems, and coats-of-arms of the aristocratic families of Europe."

III. The villages of the Blackfeet and other uncivilized tribes are situated east of the Rocky Mountains, and between Hudson's Bay and the great lakes.

This is the home of the Athapascans, Tinnes and Assiniboins. It is a region drained by Hudson's Bay and the rivers that run into it. The Indians are still in their wild state, though they have horses, and are settled in permanent villages. They dwell in tents or tepees which are of different colors, white at the base, reddish half way up, and brown at the top, some of



BARK CANOE ON CANADIAN RIVERS.

them gayly ornamented with geometric patterns in red, black, and yellow around the bottom. Others bear the paintings of rude but highly colored figures of animals, as the clan sign of the family within. The visitor to these tepees will sometimes find the men seated in a circle against the wall, and facing the open center where the fire is kept burning. The door is a horseshoe shaped entrance reaching 2 feet above the ground. The tepees are arranged in a great circle, within which the games are played, among which is the Pony War Dance. The traditional Indian may still be seen here with the eagle plumes from crown to heels, or with buffalo horns upon his skull, or clad in yellow buckskin, fringed at every point, the bodies of men painted with different colors, or wearing masses of splendid embroidery trimmed with beads, riding horses that were also painted with figures of serpents, or spotted with daubs of white. In the villages may be seen the braves throwing the

snow-snake and going through the various games which were common among the tribes.

In a region where every sort of fishing is followed for a living, from that which requires a navy of sailing vessels and men, down through all methods of nets, spear-fishing, fly-fishing. Here the bark canoe abounds. These are made in different patterns, according to the water to be navigated, for the canoes which are used for navigating the lakes where the waters are rough have high bows which resist the waves and throw off the spray; while those which are used upon the streams have low bows that run out to a sharp point. They are adapted to pass under the branches of the trees, and to resist the swift current of the river.

The Indians of this region are great hunters and trappers, though the old forts and trading stations are disappearing, the half-breeds are growing less in number, and permanent settlements are increasing. Toboggans are still in use, mainly for the carrying of packages of furs. They are drawn by dogs resembling the Eskimo dogs, but resemble the wolf more than any of our domestic dogs. The only roads into the north are the rivers and lakes, traversed by canoes in summer and sleds in winter.



THE FISH WEIRS OF ARIZONA INDIANS.

British Columbia is of immense size. It is as extensive as the combination of New England, Middle States, Maryland and Georgia; has a length of 800 miles and an average of 400 miles in width. It is a vast land of silence. The traveller sees here and there an Indian village or a mission, and now and then a tiny town; but for the most part, his eye scans only the primeval forest, lofty mountains covered with trees, turbulent streams, and huge sheltered lakes. The Cordilleras are divided into four ranges; the Rockies upon the east, Gold Range, the Coast Range, and, last of all, the submerged chain which formed the islands skirting the mainland on the Pacific.

The Columbian Indians are, for the most part, very dark skinned, and have physiognomies very different from those east of the Rockies. Their high cheek-bones make them resemble the Chinese. The Coast Indians are splendid sailors.

With a primitive tool like an adze, these natives pick out the heart of a great cedar log and shape its sides like a boat. "When the log is properly hollowed, they fill it with water, and then drop in stones which they have heated in a fire. Then they fit in the cross-bars which keep it strong and preserve its shape. These dug-outs are sometimes sixty feet long, and are used for whaling and long voyages in rough seas. They are capable of carrying tons of the salmon or oolachan or herring of which these people, who live as their father's did, catch sufficient in a few days for their maintenance throughout a whole year. Salmon, sea otter, otter, beaver, marten, bear, and deer, caribou and moose, were and still are the chief resources of most of the Indians."*

IV. The villages in California are next to be considered. Here is a region which has a great variety of scenery, climate and



SLAB HUT OF CALIFORNIA INDIANS.

physical characteristics, but its resources were beyond the reach of the native tribes. They were not miners and could only eke out a subsistence from such things as they found upon the surface. There were physical barriers between the tribes which isolated them from one another, so that the boundaries were marked with the greatest precision. This prevented such combination as existed either among the mound builders of the Mississippi Valley to a great extent, or among the tribes of the Northwest Coast. There was no confederacy to be found anywhere among them. The tribes were broken into small fragments and were isolated from one another, and even at war with each other.

Mr. Stephen Powers has spoken of this: He says:

"It is perilous for an Indian to be found outside of his tribal boundaries.

*See "Canadian Frontier."—Julian Ralph. Page 257. Harper Bros.

Accordingly the squaws teach them to their children in a sing-song manner. Over and over again they rehearse each boulder; describing each minutely and by name with its surroundings."

He has described the different kinds of villages and the houses which abounded, each tribe having its own method of building a house which was adapted to their own necessities, and most useful for their own purpose; even the material being such as was most abundant in the region and the most convenient. In this way the earth lodges of the Sacramento Valleys; the conical lodges of the Russian River thatched with leaves; the Pile lodges of the Yokuts; and the Wickiups of the California Indians; were the products of the locality. The wooden lodges of the High Sierras were affected by the surroundings.

Every large natural division of territory possessing a certain homogeneity constitutes the domain of one tribe and one chief; for instance, a river valley from the snow line down to the plains, often the foot-hills to the lake. In this domain every village has a captain who stands as the central chief in relation of a governor to the president, and is generally distinguished by his long hair. Another peculiarity is to be noticed. Being compelled to live near the streams to procure a supply of water they are exposed to malarial influences. They sometimes throw up mounds for the village to stand on which were a defense against high water as well as malaria. This explains the object of some of the pyramid mounds in the Mississippi Valley. The following is a summary which will show how the California Indians were effected by the climate in the construction of their houses:

"Perhaps the reader will not have noticed the large variety of styles employed by the California Indians in building their dwellings according to the requirements of the climate or the material most convenient.

(1) In the raw and foggy climate in the northwestern portion of the State we find the deep warm pit in the earth, surmounted by a house shaped something like our own, and firmly constructed of well-hewn redwood, puncheons or poles

(2) In the snow belt, both of the Coast, Range, and Sierras, the roof must necessarily be much cheaper than on the low-lands; hence, roof and frame become united in a conical shape, the material being poles or enormous slabs of bark, with an open side toward the north or east, in front of which is a bivouac-fire, thus keeping the lodge free from smoke.

(3) In the very highest regions of the Sierra, where the snow falls to such an enormous depth that the fire would be blotted out and the whole open side snowed up, the dwelling retains substantially the same form and materials, but the fire is taken into the middle of it, and one side of it (generally the east side), slopes down more nearly horizontal than the other, and terminates in a covered way about three feet high and twice as long.

(4) In Russian River and other warm coast villages, prevails the large round or oblong structure of willow poles covered with hay. This is sufficiently warm for the locality; is easily and quickly made, and easily replaced when an old one is burned to destroy the vermin.

(5) On Clear Lake, was found a singular variety of lodges; one with four perpendicular walls made by planting willow poles in the ground and lashing others to them horizontally, leaving a great number of small square interstices. Whether intentionally or not, these are exceedingly convenient for the insertion of fish for sun-drying. The roof is flat, made of poles covered with thatch.

(6) On the great woodless plains of the Sacramento and San Joaquin,

the savage naturally had recourse to earth for material. The round, dome-shaped, earth-covered lodge is considered the characteristic one of California, and probably two-thirds of its immense aboriginal population lived in dwellings of this description. The doorway is sometimes directly on top; sometimes on the ground; at one side. I have never been able to ascertain whether the amount of rainfall of any given locality had any influence in determining the place for the door.

(7.) In the hot and almost rainless Kern and Tulare Valley occurs the dwelling made of so frail a material as tule "

Many illustrations of this are given by Mr. Powers, but we refer to but a few and the cuts which represent the various styles, and pass on to other regions.

V. The Villages of the plains are worthy of consideration. These are better known than those of California as they have been oftener visited by explorers and made familiar by descriptions from travelers. The first view gained of them was by Coronado and his troops, who, after passing through the Pueblo region, moved eastward, and finally reached the mysterious place called Quivira. Descriptions have been given of them by the government parties who were sent to the borders at an early date, among whom were Col. Marcy, Gen'l Simpson and Catlin. The famous historian, Parkman, made his home among the plains Indians, and became familiar with their life. The general impression is that there was no permanent village life among them; that they were only wandering bands; but the village organization was as strong among them as among the sedentary tribes, for every tribe was divided into clans, and every clan had its own form of government; its own customs, and its own style of building houses and arranging camps. These western tribes belong to a different stock from the eastern as the most of them were Athapascans, a stock which came down from the far north at a time subsequent to the settlement of the Pueblos and cliff dwellers and proved to be a source of danger to them and ultimately drove them out of their strongholds and compelled them to concentrate their villages on the plateau.

They show the influence of environment, as the very habits, manner of living and manner of building their houses and arranging their villages were such as an open country would demand. They drew their material from the prairies and from the wild animals that roamed over them, as the many huts were made of poles and thatched with leaves; others thatched with skins. The Mandans have been called Prairie Indians, but they differ from the Athapascans in nearly every particular. They had permanent villages and often surrounded them with stockades. Catlin has painted many of these villages so that they are familiar to most. The Crows and Blackfeet and Assiniboins have nearly the same mode of constructing their wigwams. They dress the skins to make them as white as linen. The Mandan lodges are closely grouped together and are circular in form and are supported by beams, poles, and timbers. They are very spacious and contain curtains that extend around

the sides four or five feet apart; the centre is used for domestic purposes. The decoration of the Dakota tents has been noticed.

This shows the influence of the totem system and is often significant.

The following description has been given by Col. Marcy:*

"In contemplating the character of the Prairie Indian and the striking similarity between them and the Tartar, we are not less astonished at the absolute dis-similarity between them and the aboriginal inhabitants of the Eastern States. The latter from the time of the discovery of the country, hold in permanent villages where they cultivated fields of corn, and possessed a strong attachment for their ancestral abodes and sepulchres; they did not use horses, but always made their hunting and war expeditions on foot, and sought the cover of trees on going into battle; while the former have no permanent abiding places; never cultivate the soil; are always mounted, and never fight a battle except in the open prairie, where they charge boldly up to an enemy, discharge their arrows with great rapidity and are away before their panic-stricken antagonist can prepare to resist or retaliate.

In common with most other Indians, they are very superstitious; they believe in the wearing of amulets; medicine bags, and the dedication of offerings to secure the aid of invisible agents. In every village there is also the efficacy for dancing for the cure of disease. In all may be seen small structures consisting of a frame work of small poles bent in a semi-circular form and were used as vapor baths. Trained up as prairie Indians have been from infancy to regard the occupation of a warrior as the most honorable of all others, and having no permanent abiding places or attachments, they camp without inconvenience; move all their family and worldly effects from one extreme of the buffalo range to the other."

A natural supposition is that the prairie Indians would build their houses after the same pattern and would have the same kind of villages, as they are supposed to have lead the same life; but, in fact, we find as much difference between them as we do among the tribes of the Northwest Coast or any other district. They did not, to be sure, build heavy timber frames such as the Thlinkeets and Haidas erected, for there was a scarcity of wood on the prairies, nor did they build such great communistic houses as the Pueblo tribes did, for they were too nomigratory for this, and stone was not accessible or easy for them to use as such material as poles, skins, sod and grass.

Still, notwithstanding, the similarity of their life, we find great contrasts in the village organization; in their social customs, and their religious symbols, showing that they were influenced by ethnic descent and traditional habits and customs even amid the environments which were so similar. The material used in their houses was such as was most abundant as those who dwelt upon the wide prairies, built their huts out of poles which were fastened into the ground and bent at the top, and were thatched with long prairie grass, and when seen in the distance, had the appearance of straw beehives; while the Dakotas who were great hunters, built their tents in a conical shape, and covered them with the tanned skins of the buffalo, which they decorated with the pictures of animals and plants, these representing their clan tokens and their

*Marcy's Exploration of the Red River. Page 103-106.

mythologic divinities. The Mandans on the other hand place their villages on the banks of streams, and surrounded them by stockades. They constructed their houses out of timber, and covered them with brush over which they placed the sod from the prairies, placing the fire in the centre of each hut. These houses differed in nearly all respects from the houses of the Ojibwas or Chippewas who dwelt on the banks of Lake Superior, who were also hunters and belonged to the Algonkin stock. Their wig-wams were made of poles and bark, but were oblong in shape and with a roof semi-circular in form as best calculated to ward off rain and wind. Their huts were easily taken down; their bark coverings could be quickly removed and rolled up and transferred to some other point on the lake.

The canoes of these various tribes also differed in shape. The bark canoe of the Ojibwas is perhaps the most beautiful of all the water-craft ever invented. They are generally made of birch bark and sewed together with the roots of the tamarack, and ride upon the water as light as a cork. The canoes of the Mandans were very different. They resemble the coracels found upon the Tigris, which were nearly round, and resembled a shallow dish or saucer in shape.

THE ARCHÆOLOGICAL HISTORY OF OHIO.

The State of Ohio has, from an early date, been celebrated for its many remarkable earth works, and still more remarkable relics. Many books have been written concerning these, a list of which was prepared by the writer at two separate times at the request of B. F. Poole, the celebrated librarian, and published in the AMERICAN ANTIQUARIAN.

The authors of these books are men of established reputations, and have been known as the best geologists and archæologists in the country. Some of them have been at the head of geological surveys, others are now secretaries of learned Societies and professors of Universities, and editors of well-known journals. A book, however, has just appeared, under the auspices of the Ohio Archæological Society, written by Mr. Gerard Fowke, a resident of Ohio, which, in our opinion, is calculated to do more harm than good, as the author has taken pains to break down the testimony of all who have written upon the subject, and to set up his own opinions instead.

The attitude of the author, can be seen from the first chapter, but it continues to the very end, and deserves, only of censure, from scientific men.

The book begins in the introduction with a sweeping assertion that most publications, relating to the subject, whether "newspaper articles, or bulky volumes, are the work of relic hunters," or of persons excited by something they have seen or heard, or "visionaries" seeking proof of a pet hypothesis. "A few, unfortunately, bear the signature of distinguished men whose successful work in some other profession or branch of science, gives to their words, the weight of authority, when they decide, usually, as a matter of recreation, to dabble in archæology." "There has been evolved a 'lost civilization' for which writers, 'largely ignorant of facts, have deemed it necessary to account, by inventing a great nation,' dominating all the country, from the Atlantic ocean to the Rocky Mountains, and from Canada to the Gulf, a busy people living in unity, under fixed laws, but always with the underlying principle of force and fear, tilling the soil, paying tribute, assembling periodically for the adoration of a great spirit, or homage to rulers, national games or religious festivals, digging mica in the East, mining copper in the North, diving for shells and pearls in the South, working flint quarries, etc., for these people were supposed to have preceded the known Indians, and to have differed from them in almost every respect; the expression,

„Mound Builders,' has been appropriated as a distinctive title."

Taking this unnatural attitude, this doughty knight proceeds, like Sancho Panza, to fight the wind-mill, and, imagining himself a hero, makes an onslaught upon everything he meets. The result is, a book of 760 pages, which contains more abusive, slanderous, and unbecoming language than has appeared in any scientific book for years, and more misrepresentations of others, than it seems possible for any one who has a right mind to make.

A very few of the expressions used are quoted in the review given below, written by Rev. J. P. MacLean, but the number of them would be difficult to count, and not worth while to repeat. Suffice it to say that, no one who has had the presumption to write on the subject of mound building people, has escaped his censure. All have been classed together, whether belonging to an early or a latter date, the testimony of such well-known citizens of Ohio as Gen. Harrison, Squier & Davis, Alexander Bradford, Dr. Drake, who were familiar with the works when they were intact are rejected, and his own impressions formed from seeing the works worn as they are, and some of them nearly destroyed, being advanced, while the careful surveys made from time to time are set aside; his own opinions and interpretations given as authoritative; his own rude drawings are made to represent the works rather than the fine steel plate engravings which were published, at great expense, by the Government, and could easily have been reproduced.

This was altogether unnecessary, and, certainly, does not help the writer to establish any position, or to enforce his ideas, for the gentlemen who have written upon the archæology of Ohio, are too well known, and their reputation too well established for him to overthrow, and, every attack of this kind, only reacts upon himself. It is now fifty-five years since the first volume of the *Smithsonian Contribution to Knowledge* appeared, and the book stands as authority upon the subject. If Mr. Fowke, the author of the *Archæological History of Ohio*, thinks that he is going to overthrow their work, and substitute his own in its place, it would have been well if he had followed their manner of treating the subject, and caught the spirit of such gentlemen as have written upon the same or similar subjects, but instead of this, mis-statements and mis-representations appear in great numbers.

It is certainly mortifying to the most of the archæologists of this country, that a writer of this kind should have been allowed to use the name of any society, and receive the financial aid of any State, but when a book appears under the auspices of the State Archæological Society of Ohio, and the field chosen is the one which required the most judicious and careful treatment, the offense is aggravated and every one feels indig-

nant. It is well known that Ohio has produced more writers on archæology than any other state. Among them we may mention the names of Prof. Newberry, Col. Charles Whittlesey, Prof. M. C. Read, E. G. Squier, Prof. John W. Short, Rev. J. P. MacLean, Warren K. Moorhead, Prof. F. G. Wright, Chas. T. Metz, L. M. Hosea. Among the gentlemen who have entered the State and have done excellent work as explorers, and have written upon the subject, are Prof. F. G. Putman, W. H. Holmes, Dr. Cyrus Thomas, Prof. Foster, and others.

Here, however, is a writer who criticises each in turn, ridiculing some, misrepresenting others, and setting up his own opinion as more important than all others, even contradicting himself at times to overthrow the opinion of others.

The total unreliability of this book, whether in the description of the ancient earthworks and enclosures, or their situation in relation to streams and their physical features, may be seen on almost every page. A few instances of the many will be cited.

The editor of this MAGAZINE was the first who ever advanced the idea that the so-called "sacred enclosures" were village sites, and the so-called "covered-ways" were designed to protect the people as they went from the villages to the canoe landings and to the dance grounds and corn fields. Mr. Fowke, the author of this book says, that there are no covered ways or graded ways, and that there were no streams near the villages that would admit of canoe navigation; and, yet, he reproduces, from Squier & Davis, 15 or 20 engravings, every one of which, shows that streams are close to the enclosures, some so close, as to wear the embankments away. The writer also maintained that the great serpent effigy is upon a cliff that resembles a serpent in shape. The author of this book says it is not any different in the topography than any other in the region, and denies what Prof. Putnam, Mr. Holmes, and the writer maintains. The following are a few of the cuts which disprove the author's assertions: On page 159, after quoting the language of the writer, he says, in reference to the earthworks being connected with streams by covered ways, "many of the village sites are remote from streams large enough to float canoes." Of those closer, not one presents a graded way to the water, nor a covered way direct to a canoe landing. Neither is there any evidence of protective walls that Peet thinks he sees; yet, immediately following these remarks, there are cuts on nearly every other page which absolutely refutes his assertion, and confirms the correctness of the opinion stated. On fig. 10, page 163, there is a map of the Racoon Creek Valley, near Newark; also, fig. 11, on page 164, a plate from "Ancient Monuments," (reproduced), in which the enclosures are plainly connected by "covered ways," and "defensive walls" are around the enclosures, and streams may be seen on three sides of the enclosures, with a "graded way" leading to the lower terrace adjoining another stream and a square enclosure overlooking the banks of the same stream. In fig. 15, page 172, there are two enclosures, one of which is connected with the lower terrace by a "graded way" which had, at the time of the author's visit, every evidence of being artificial; the terrace overlooking the Muskingum River intervened between the end of the graded way and the

banks. In fig. 16, page 174, covered ways connect the group on the hill back of Portsmouth with the circle on one side, and the enclosure upon the other, giving the impression that canoes were used for carrying processions or companies across the Ohio river, and suggesting the religious character of the works, an impression which is strengthened by examining the cuts in figs. 18 and 19, on page 177. Fig. 23, representing twelve miles of the Scioto Valley, there are ten enclosures, and six groups of circles, all of which are near the Scioto River or Paint Creek. Some of them are so near that the stream has washed away the banks and left one side of the enclosure unprotected by a wall; while in fig. 24, representing six miles of Paint Creek Valley, there are three enclosures, and one fort, all of them overlooking the stream. On fig. 31, Hopeton Works are shown to be near the Scioto River, and connected with the valley by parallels 2400 feet long, while on fig. 34, page 196, the enclosure at Cedar Banks is directly above the Scioto River.

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BOOK REVIEWS.

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ARCHAEOLOGICAL HISTORY OF OHIO.—The Mound Builders and later Indians, by Gerard Fowke. Published by the Ohio State Archaeological and Historical Society, Columbus, Ohio. Press of Fred. J. Heer, 1902.

The American Archaeologist welcomes every genuine contribution to his favorite study, let the source be what it may, and the continued accession to the ranks of co-laborers is a matter of pride. He recognizes that archaeology is one of the most important branches of anthropology, and whatever advances the former enhances the latter. He fully realizes that the uncertainty surrounding certain phases of his favorite branch, but lends interest to his subject.

There are few fields of scientific research, that affords a wider range for the play of the imagination, or the art of speculation than tracing the history of a lost race of people. The temptations to theorize on the accumulated, is almost irresistible. We know the state of civilization of prehistoric people, by comparing their arts with those of existing tribes; however, the arts can hardly be said to be the same peoples so widely separated by time; hence, there is an uncertainty, a mystery surrounding the subject. Though one may use the greatest care in formulating his deductions, yet an overlooked fact, or a new discovery, may endanger the whole line of thought. This fact is so well understood, that the archaeologist is not disturbed by the conjectures of others. The more intelligent the archaeologist, the more tolerant is his mind.

The antiquities of America, have invited the attention of some of the world's ablest men. The investigations and conclusions of these men have called out many who are unable to brook opposition; a class unable to realize the breadth and magnanimity of a Charles Darwin; a Sir Charles Lyell, or a Sir Walter Scott. True men of science are always gentlemanly and courteous.

Whether it is a misfortune or simply an incident, yet the unpleasant fact stares us in the face, that there is a spirit of intolerance abroad which cannot evidence opposing views. This was set apace, in the realm of archaeology, by a paper, contained in the Second Annual Report of the Bureau of Ethnology, wherein was an assault on the members of the Davenport Academy of Science. At that time, the said Academy, was so fortunate as to have a distinguished attorney of consummate ability, for its president. The reply he made was so crushing as to eliminate the assailant from the ranks of archaeologists.

The appearance of Prof. G. Frederick Wright's "Man and the Glacial Period," in 1892, was the signal for a preconcerted and organized assault on the contents of the book; the nature of which, immediately forced the sales up to over 8,000 copies, which, was almost, unprecedented in that class of literature. Within a space of fifteen pages, in the second edition, of his

work, Prof. Wright makes a judicious and well considered reply to his critics. Not long since an editor of a California magazine made an unprovoked and virulent assault on Dr. Peet, or one of Dr. Peet's contributions, and the AMERICAN ANTIQVARIAN. The violence of the attack carried its own antidote.

An assault is one thing—a criticism is far different. A broad mind does not object to criticism, for this, when properly exercised, is a high art. Whoever speculates, must expect to meet with disclaimers. But whosoever assumes the role of critic, must look well to his own building. A person who puts forth his speculations at private expense, stands in a different attitude from the one whose efforts are maintained at the public cost. If leniency is to be exercised, it is due to the former rather than the latter.

The latest work on American archæology, is a book entitled "Archæological History of Ohio," by Gerard Fowke, published under the auspices of and at the expense of the Ohio State Archæological and Historical Society. The book is an octavo of 760 pages, profusely illustrated, and very attractive in appearance. Were it possible to give this book a generous notice, I would do so with pleasure. I deem it but justice to say that it is the most dogmatic, arrogant, intolerant, waspish and libelous book, I think, any fair minded person will affirm that the contents, of the book prove that the author, is unfitted for the performance he has essayed.

With all the possible care exercised, public institutions are more or less unfortunate. Every person acquainted with the Ohio State Archæological Society, will affirm that in its Secretary, Prof. E. O. Randall, it has been exceedingly fortunate. He is one of the most versatile, genial and patient of men; no man in Ohio, works harder. Beside his duties as Secretary, he is Supreme Court reporter, and professor of law in the State University. The bulk of work of the State Society falls upon his shoulders. I believe I voice the sentiment of the entire board of trustees, when I state that not one of them will censure on him in the publication of Mr. Fowke's book. I trust that Prof. Randall will, in the issue of the *State Quarterly*, will give us a plain statement of the facts leading up to the publication of this book.

It is not my purpose to point out all the errors in the book, for they are exceedingly numerous, nor will I enter into its eccentricities, nor reflect on the character of the author, but will confine myself to the temper of the book, which entirely proves that Mr. Fowke has not sufficient judgment and information to compile such an archæological history of Ohio as will contribute to knowledge. That he is lacking in judgment, is proved from his discourteous epithets applied to his superiors. Among these designations there may be noticed "simple," (p. 33); "paradoxical surmises," (p. 52); "ridiculous," "fanciful," (p. 58); "unwarranted opinions," "assumptions," (p. 59); "wonder mongers," (p. 72); "hysterically," (p. 73); "equally ridiculous," (p. 74); "rhapsodies," (p. 75); "abundant theorizing," "tendency towards the marvellous," (p. 76); "silliness," (p. 79); "delusion," (p. 86); "ridiculous," (87); "the next is a gem," (p. 88); "perversion of evidence," (p. 89); "pure fancy," (p. 100); "dubious feature," (108); "funny twist," (p. 112); "twaddle," (p. 115); "groundless assumptions," (p. 122); "silly," (p. 135); "perverted," (274); very foolish utterances, "conceit," (p. 320); "lucubrations," (425). One paragraph of less than nine lines contains "ridiculous," "fanciful conceptions," "height of absurdity," "venal charlatan," (p. 58); and another of less than seven, "turgid emanations," "sort of stuff," and "vagaries," (p. 71).

Not content with such descriptions, he attempts to bring others down to his own level by force of ridicule. On the same page (63), both Prof. Short and Col. Whittlesey, are ridiculed, the former on account of an opinion concerning the Cincinnati Tablet, and the latter on account of his standard of measurement adopted by the Mound Builders. "McLean," on another page (67), is charged with "a tangle of ideas," which is done by taking four excerpts from as many different pages, thus disconnecting them from the line of thought in which they were employed.

Peck, (p. 70), is advised to restrain his impudence, and Squier & Davis

are accused (p 30) of seeing "an altar in every spot of burial earth." Not content with ridicule he goes a step further and libels Dr. Peet. Perhaps, even a worse case is the misrepresentation of Prof. Newberry's remarks on the age of trees (p 118). Having set at naught the opinions of Foster, the Marquis of Nadaillac, Squier & Davis, and Prof. Newberry, on the age of trees, our author blandly informs us "that no reliance can be placed upon the number of rings in estimating the age of a tree," (p 120).

As an example of a choice of language the following is cited: "Strange-ly enough, he makes no mention of the tall man, with hairy whiskers, and an unusually large jaw," (p 73).

Passing over this element that occupies so large a place in his mind, the next step is to notice his reckless statements, only a few of which may be noticed. We are informed (pp 59-60) that "the most complete and convenient catalogue of writers on Aboriginal Remains, accessible to the public, is that contained in the AMERICAN ANTIQUARIAN, volume IX., July 1877," and in "March 1893." "All that will be attempted here is to give extracts from a few of their writings, showing how the subject has been covered - - - A hundred volumes could be filled with other quotations." The references here cited, including letters and papers on societies, reports as well as distinct volumes, number eighty-one in all. Yet, Mr. Fowke would make one hundred volumes of quotations from them!

Squier & Davis, "Ancient Monuments," (p 57), state that they carefully surveyed, in person, an ancient work in Ross county, Ohio. Mr. Fowke says, in reference to this statement, "it is not probable they ever made any such survey as that set forth in their note." (p 57). My understanding is that, the literary work of "Ancient Monuments," was that of Dr. Davis. This is the first, and only instance, known to me, of the word of Dr. Davis being called in question.

Regarding the Elephant Pipes owned by the Davenport Academy of Sciences, we are informed, (p 112), that all the evidence for and against their genuineness is, in the Second Annual Report of the Bureau of Ethnology. It is charity to assume, that Mr. Fowke is ignorant of Col. Putnam's paper of 92 pages, on these pipes, published in volume IV. of the Society's Proceedings.

Our author, in one place, (p 83), declares that such statements concerning Fort Ancient that "at numerous places, are found large quantities of water-worn stones which, after an incredible amount of labor, have been carried from the river below," are not true; while speaking of the same fort, in another, page, (239), he avers that "at every opening where the wall is worn away, stone may be seen cropping out of the base."

Without pursuing this line further, I pass to a want of system in arrangement of matter. In chapter II, Mr. Fowke treats of glacial man; but near the close of the following chapter, takes up the subject again, (p 43). The Graded Way at Piketon he summarily dismisses, (p 126), as "a natural formation." He takes up the subject for treatment again, (p 274), and finally alleges that all excavated graded ways, with one exception; are natural depressions, (p 280.)

In one place, (p 173), the Marietta graded-way never existed, and in another, (p 273), the same was formed by excavating for the mounds and embankments in the vicinity.

The Great Alligator Mound, (p 291), is an opossum, and one reason assigned, is the uniform diameter of the tail, and even his "imagination balks" when he views the serpent structure in Adams county. And why? Because, there is a violation of "physiological fact", (p 287). If the author will turn to the three illustrations of an effigy pipe, which constitutes the frontispiece of the book he will find an exaggerated violation of a "physiological fact."

Mr. Fowke goes out of his way in order to make an attack on the Bureau of Ethnology,—affirming that the former chief of the division of mounds exploring was without practical experience, and only employed men without experience or knowledge in archaeological work, (p 333). It must

be remembered that some years ago, Mr. Fowke was employed in field work by the Bureau, and was dropped.

Mr. Fowke essays a list of books, some of which he recommends "for careful reading." Among those not recommended are *The American Naturalist*, *Journal of American Antiquarian Society*, *Bancroft History United States*, *Bancroft's Native Races of the Pacific Coast*, *Burnet's Notes*, *Fiske's Beginnings of New England*, *Gibbon's Decline and Fall of the Romans Empire*, *Hildreth's Pioneer History*, *Howes Historical Collections of Ohio*, etc. On the other hand, he is exceedingly severe on *Squier & Davis' "Ancient Monuments,"* and boldly charges that work with being the cause of the misconceptions and erroneous beliefs implanted in the mind of nearly every person, yet this mischievous (!) book is recommended.

The book abounds largely in quotations, which, principally, are used in such a way as to mislead the uninformed as to the character of the works referred to.

The book is a great disappointment in almost every particular. No discrimination is made between archaeologists and amateurs, but both are massed together with newspaper clippings. All receive a blow, (p 288), at Mr. Fowke's hand. The author is not familiar with the antiquities of Ohio, for there are many works that have been illustrated, and described, which are not even referred to. The only original matter in the book is that furnished by Prof. Mills, and that without credit.

Mr. Fowke's statement (preface) is misleading where he says that the task had been assigned to him. On the other hand he solicited the favor and agreed to perform the work for \$600, under the pretense of original field work which was not done, he got \$400 more. He became very angry at Prof. Randall because the latter would not lobby the legislature for an additional \$500. He then desired a large assignment of the books that he might be further remunerated. He worried Prof. Randall, and exhausted the patience of the printer. Prof. Randall did cut out the very worst features of the Mss. Ostensibly the book "is not written for scientists or specialists." It certainly is of no value to them, and, practically to no one else. The \$3,200 spent on this book may not be wholly wasted. It should be withdrawn and all books sent out should be recalled.

Mr. Fowke has driven the nails into his coffin so thoroughly that he will never be able to remedy the matter. Never was there a man with a better prospect before him to do a good work. He had no sense of the dignity of the occasion, nor the propriety of what the book should be. An opportunity of a lifetime was thrown away that he might vent his spleen on those who had never harmed him. The graves of the dead were violated and he attempted to bring the living down to his own level.

J. P. McLEAN.

FREE Museum of Science and Art—Department of Archaeology and Paleontology.

University of Pennsylvania. Bulletin No. 1. May 1897. No. 2. Dec. 1897. No. 3, Apr. 1898. No. 4, June 1898. Vol. II, Nos. 1, 2, 3, 1899. 4, 1900. Vol. III. Nos. 1, 2, 3, 1901.

The bulletins contain a resume of the collections made by the Museum; edited by the directors and curators, with brief papers by the officers, with accounts of explorations conducted by the Museum.

The first one has an interesting article by Daniel G. Brinton, Professor of American Archaeology in the University, describing the only menhirs found, so far, on the continent, called the Pillars of Ben, though detached, monoliths, were reported by Stephens. Bishop Landa states that the Mayas were accustomed to erect pillars at their annual festivals, to the four mythical giants, who were supposed, to be at each of the cardinal points, and uphold the sky. Dr. Brinton was inclined to believe that these pillars were erected to Ben, the thirteenth hero of their calendar, who traveled through the department of Chipas, and left monuments of his journey at the various points he visited.

This shows the fertility of the distinguished author's mind, who has always recognized some latent symbolism in every monument, and token of

the prehistoric people of America. His loss is felt more keenly from this fact.

The same bulletin contains an account of the growth of the Babylonian section in which Dr. Brinton was also interested, though Prof. Hilprecht was the chief ruling spirit as he spent the greater portion of the years '93, '94, '96, in Constantinople, and who secured a large number of valuable antiquities from Nippur, among which, was the stele of Naram Sin, (B. C. 3750;) the only cuneiform inscription so far found in Palestine (B. C. 1400;) a number of Hittite inscriptions, Sabæan and Minean monuments, in 1896; one hundred and twenty large boxes of tablets, bricks, pottery, and objects of art of the earlier period of Babylonian civilization, and over thirty large well preserved sarcophagi. The Babylonian collections form the nucleus of this Museum, but two other nations, the Hittites and the Phœnicians are included, and four successful tours of Dr. Ed. Glaser brought out information about the Sabæans and Mineans, and excavations in Sinjirly brought also information about the early inhabitants of Palestine, and the regions to the south and east; two large Hittite sphinxes flanking the entrance to the biblical room, a large collection of Babylonian tablets, so new Cappadocian cuneiform tablets, the earliest Babylonian documents in existence, (B. C. 6,000), a beautiful inscription of the king of Tello, a new document referring to Sargon I, (B. C. 3,800); an account of the old Babylonian inscriptions published by the American Philosophical Society, followed by Vols. I., II., III., V., VI., in the folio form.

All this is reported in bulletin No. I., May 1897, showing that as Athene sprang from the head of Jupiter fully armed, so this Society or Museum sprang out from the midst of the Quaker city fully equipped for the great work which is to be accomplished. The West is celebrated for its rapid growth, and Chicago is supposed to have outstripped the world in its progress; but, here in the staid old city, a work has been going on almost unnoticed by the majority which has already produced the most astonishing results.

Mr. Stewart Culin has also in the third bulletin, gives an account of American Indian games, and has presented an interesting explanation of the Fejervary Codex, who regards it as representing the divinatory or gambling, counting circuit of the four directions, the god of the divination with the three arrows, and Atlatl or spear thrower in the middle; a novel explanation, but one that is quite recent. Prof. Ames P. Brown, in bulletin No. 3, described oriental jade, distinguishes it from the serpentine, and says that jade was brought to Europe by the Spanish conquerors of Central America, though the jade bearing rocks have not yet been discovered. It is found in the roll pebbles; it is found in the stream; in gravel deposits; in situ; in Western Turkistan; in eastern Burma; in parts of Persia; southern Asia; islands of the Pacific; New Zealand. The jade of the Swiss lake dwellers may be either nephrite or jadite. Among primitive peoples the uses of jade are various. The Costa Rica collection in the Museum is the best assemblage of worked jade ever brought together. Modifications of the axe or celt are numerous in it. The cutting has been done by a cord with a bow with quartz as the cutting agent.

The use of plants among the ancient Peruvians is the subject treated by John W. Harshberger.

The powder horns containing maps of the interior, and routes to the various stations or forts, some of them made to suit the Braddock and Boquet expeditions to Ft. Pitt; others embrace the Hudson and Mohawk rivers; the New York Lakes; Montreal and Quebec, the two rivers which were the pathways of the Belligerents. These maps were from French, Dutch, and British sources; thirty two specimens of geographical horns are in the collection.

Quipus, from Bolivia, are described by Dr. Max Uhle, in bulletin No. 2, Dec. 1897; also, the potters wheel as found in Yucatan, is described by Henry C. Mercer; also, certain war axes and chunky stones from the Southern States, are described in the same bulletin and represented in cuts.

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No. 5

ANCIENT TEMPLE ARCHITECTURE.

BY STEPHEN D. PEET

We have now passed in review the different structures which appeared in pre-historic times and continued into the historic, and have found that each one of them originated in a very primitive form, but came up through different stages until a high degree of perfection was reached. This has proved to be true of such common objects as the bridges, boats, and other mechanical contrivances, but especially true of the houses, forts, palaces, and all other forms of architecture, whether representing naval, military, domestic, funeral or sacred. There is, however, one class of structures into which other elements besides the ordinary mechanical and architectural principles have entered, namely, the Temples: for in these the religious sentiment has proved a very important factor, and has had as much to do with their growth as even the architectural or mechanical principles. We shall, therefore, take for the subject of the present chapter, The Early or Ancient Temples of the World, and seek to find out their origin and to trace the lines of their development and see what causes have been at work to bring them into such a variety as they have presented. In doing so, we shall assume that there were, at the beginning, certain primordial forms from which all architecture started, and that these forms continued to impress themselves upon the temple architecture when it arose, so that we have even now different kinds of temples which may be classified according to the type after which they were patterned. They may be classed as follows: 1. Temples in Caves. 2. Open Air Temples. 3. Temples in the form of a tent. 4. Temples in the form of a round hut. 5. The Temple in the form of a square tower called a *teocalli*. 6. The Temple or Shrine situated upon the summit of a pyramid. 7. The Temple in the form of a house but built in the columnar style.

1. In reference to the cave temple, it will be understood that this was different from the ordinary cave dwelling, and yet was the outgrowth of the habit or custom of living in caves.

It is well known that the oracles and temples of Greece and other ancient countries were either in caves or remote mountain recesses. The temples of Pan, Bacchus, and Pluto were in caves, as well as the oracles at Delphi, Corinth, and Mount Cithæron. In Persian mythology caves were the places where the rites of mithras were observed. In Europe there were caves about which myths have gathered, such as the Fairy Dragons or Devil's Cave and Dwarf Holes. Caves were also used for burial places, and so became shrines and sacred places. The cave of Macpelah is well known as the burial place of the household of Abraham.

In America, caves were used as the homes of the people, and became sacred places. Among the Cliff-Dwellers, there were whole villages built into the shelter caves, but the most prominent building in them was the so-called Kiva. This presented the shape of a primitive hut, built in circular shape with the walls divided into ledges and piers, which are supposed to represent the posts and walls of the primitive hut, and at the same time, symbolize the pillars of the sky, the conical roof symbolizing the dome of the sky, and the hole in the floor symbolizing the place of emergence through which the ancestors came from their primitive home. The Pueblos built their kivas under the ground, and reached them by ladders, but made them represent both the cave and the hut.

In Mexico, and Central America, there were under ground caves which were used for the sacred ceremonies that were performed. Dr. Brinton has described the nagualism or witchcraft which found lodgment in caves, and which reminds us of the witchcraft that was practiced in the time of Solomon by the witch of Endor, whose home was in a cave.

The cave became so sacred that labyrinths were constructed to imitate them. The labyrinth of Egypt is well known. It consisted of many chambers, the most of them below the ground, the subterranean rooms being sacred places. A labyrinth has been recently discovered in Crete. The most magnificent works of art were contained in it, and some fine specimens of architecture, thus carrying back the date of civilization in Crete to a marvelous antiquity. The labyrinth called "Lost and Lost," (Tzatum Tsat) in Nicaragua, was also a sacred place which imitated the cave. The following is a description of it by Mr. H. C. Mercer:

"The whole was covered by an artificial mound of stones, oblong in shape, 300 feet in circumference, and 30 feet high. Within, there are directions of flat stones, and the staircase leads from the innermost passage of the lower story to the upper story."

The cave of Tzatum, near Palenque, has also been described by Mr. Mercer:

A great room of 100 feet by 20 feet in diameter, led to a chamber for the sky light. The rocks were covered with symbols and pictures of a mysterious character. The question arose, had the rocks seen the

diabolic rites of Nigralism?' or had men ventured to live here day and night, burying their dead here, and wandering into the unknown?"

It is to be noticed that the rock cut temples of India, were shrines as well as temples, but they presented, on the outside, carvings which represented the earliest columns, beams, posts, doorways, rafters of the earliest temples constructed of wood, and, at the same time, the statues of the Divinities were preserved in the shrines, but all carved out of stone.

The ancient Etruscans, built their temples partly beneath the surface, but the upper part was built in the form of a house, with arched roof and pillars in front, and a ledge which formed a seat around the sides. The tomb of Cyrus was in the form of a house, but the front was open, thus making it into a shrine. The tombs in the valley of the Kedron opposite Jerusalem, were grottoes cut out of the rock, but resembled houses or temples on a small scale. The tomb of Absalom, is a good specimen of this. It is ornamented with Ionic pilasters, surmounted by a circular cone of masonry which terminates in a tuft of palm leaves.

It was in connection with the cave temple that the earliest forms of architecture appeared. The column, in its different stages of growth, is shown by the cave at Beni Hassen, in Egypt, and the facade, or, portals, with the accompanying statues, as shown in the rock cut temple at Abou Simbel. Within this tomb, or grotto, are seen two groups of statues, and, upon the roof, may be seen the winged circle. The tomb of Mugheir, on the other hand, presents one of the earliest forms of the arch, though it is made by horizontal projections of the bricks and without the key-stones, and thus resembles the arch as it is found in America. There is a relief from Korsabad which represents a temple with its interior open to view, and on either side may be seen the castle with battlements; also, the rock cut tomb of Darius, represents a palace with columns and cornice and doorway all in the Persian style.

II. Open air temples are to be treated next. These were constructed in different ways and had a great variety of forms. Among these forms the following may be mentioned: 1. The Monoliths or Obelisks. 2. The Circle of Standing Stones, which are so common throughout the far east and the various parts of Europe. 3. The high places which are so numerous in various parts of Syria, Arabia, and the land of the Hittites, 4. The various altars which were common in the same region but were disconnected from temples and yet were sacred places. 5. The altars which are connected with sculptured statues and idol pillars generally called Stelæ which were common both in Babylonia and other parts of Asia and in Central America. 6. The sacred groves common in India, Greece and Great Britain. 7. The slab circle with the altar enclosed found at Mycenæ.

Open air Temples were very ancient, and, perhaps, follow-

ed the caves in the order of time. These, for the most part, were in the form of circles, sometimes consisting of earthworks with openings for the processions which might enter them, but generally were made of monoliths, which were erected either in the form of a circle or an ellipse or a horseshoe. Monoliths were common throughout the East. The majority of them were erected to commemorate some noted event, illustrations of which are found in the scriptures, for Jacob erected a pillar which should be a sign of his vow as well as a reminder of his vision. The obelisks of Egypt, may be called monoliths rather than temples, for they are commemorative monuments, and contain the records of various kings. The obelisk at Nimrud* is also a monument, as it was designed to commemorate the victory of the king over his enemies.

Obelisks were frequently placed near temples, and so may well be considered in connection with temple architecture. Two rock cut obelisks at Mazzebah, near Petra,



OBELISK IN MOAB.

with a round and square altar, and a rock cut court have been discovered. These obelisks probably grew out of standing stones; or a modification of them, and suggest the thought that the standing stones and alignments, in the north of France, were connected

with some form of worship, marking out the avenues through which the processions might be led to the tombs, as elsewhere, in Great Britain, they led to open air temples.

That standing stones and obelisks were connected with open air temples, will be seen as we proceed, for they are found not only at Stone-henge and Avebury, but also in Peru, and many other parts of the world. There were isolated columns forming the circles around the ancient tombs in India, and many other parts of the East.

As to the question whether there were open air temples in America, it would seem that there were, for nearly all of the religious ceremonies of the aborigines were in the open air. The people of the Great Plateau timed their ceremonies by the position of the sun by day and the Pleiades by night, the study of the heavens being as close with them as among the

See chapter on Rock Cut Temples.

peoples of the East, and the dependence upon the powers of the air was as great among them as the dependence upon the rising of the waters was among the people dwelling upon the Euphrates or the Nile.

The circle, or round temple, seems to have been at one time the place where laws were enacted. In Ireland the Moot Hills are usually on the margin of a river, in the immediate vicinity of a religious edifice, forming an interesting object in the landscape.

Sir James Logan says:

"In Scotland, the Highlanders were accustomed to assemble and elect chiefs, the clans having their special place in the circle. Clanship involves open air assemblies both for the military and religious purposes. When the Highland chief entered on his government, he was placed on the top of a cairn, and around him stood his friends and followers. The practice of crowning a king upon a stone is of extreme antiquity and survives to the present day in England. The practice of holding courts in the open air was common. The court of Areopagus, at Athens, sat in the open air. The same practice was common among the Druids, but on the abolition of Druidism the courts which were held in the circles, were transferred to the church. The sacrifice of captives was considered, in some cases, as necessary for propitiating the deity."*

The question arises, in reference to the connection of the standing stones with the circles, and the object of the circles. There are many reasons for believing that the larger circles were designed for temples. Among these are the following: 1. Many of the circles contain within them dolmens, which were used both



OPEN AIR TEMPLE AT AVEBURY.

for burial places and for altars, suggesting that human sacrifices may have been practiced. 2. The fact that there are ring marks and cups upon some of the dolmens, suggests the idea that blood was poured out and was preserved in the cups. 3. Circles formed of standing stones are frequently isolated from the surrounding country by small bodies of water, or upon hill tops. 4. The fact that earthwalls surrounded the stone circles and that avenues led to the interior suggests that they were used for religious ceremonies and processions. 5. The symbolism contained in the stone circles suggests that the enclosures were sacred to the sun and the circles were symbols

The circle of standing stones at Avebury shows probably an open air temple. The cut so represents it, for Druid priests are seen in it, loitering about the walls and treading the enclosed ditch.

*See Scottish Gael or Celts Manner, by James Logan, 1843

of the solar cult. 6. The standing stones or menhirs, were often placed in such a position as to throw a shadow into the circle. This confirms the idea still further, and makes it probable that there were solstitial ceremonies observed in these circles resembling those in the ancient temples farther East in Egypt, Assyria, India, and in America. 7. The color, and character of the stones, especially those of Stone-henge, are very significant, and show that symbolism extended even to the material as well as to the arrangement of the stones.

This generalizing does not prove that all circles were open air temples, nor does it prove that there was any connection between the open air temples and other temples which appeared in other parts of the world, and yet this as well as the fact that temples and tombs were always closely associated, and that



OPEN AIR TEMPLE IN PERU.

the sky and earth were regarded as the different parts of the Great Temple, renders it probable that the circles were not only symbols, but were sanctuaries in which the solar divinities were worshiped.

There were open air temples in America. The one represented in the cut is in Peru. It was devoted

to sun worship. It symbolized the sun, as the stone pavement was laid in diagonal lines, the temenos was marked by a circle of standing stones, while two standing stones in the center showed the exact time of the equinoxes, as they cast no shadow when the sun was at the equinox.

The best specimens of open air temples are those of Stone-henge and Avebury in Great Britain. These have already been described, but as there are certain features which have been omitted, we shall again refer to them, drawing especially from the English authors.

The following is Barclay's description of Stone-henge:

"It is enclosed by a low circular embankment outside a ditch, named the 'Earth Circle.' To the northeast is the ancient avenue where are the two outlying stones; The 'Friars Heel' that bows toward the temple, and the 'Slaughter Stone' that lies flat with the ground between the Sun stone and the temple. The design consists of an outer circle of thirty upright

*The color of the stones, white and blue, reminds us of the symbolism of color which common among the American aborigines.

supporting twenty-eight transverse lintels; within this circle, a smaller circle of uprights. These circles contain two horseshoe figures, one within the other. The outer horseshoe, is composed of five groups, consisting of two piers, and a superimposed block. The inner horseshoe, is composed of small uprights. Both horseshoes had their openings toward the Sun stone. The outer lintel circle and outer horseshoe are composed of Sarsen stones brought from near Avebury; the inner circle and inner horseshoe are composed of blue stones of igneous rock brought from a distance.

The analogues of Stone-henge, were found by Palgrave in Central Arabia, by Barth near Tripoli, in Africa, consisting of triliths and stone circles, a sort of sun dial, combining the vertical and horizontal principle. The flat stone was intended to carry off the blood of the victim.

Stone-henge consists of different kinds of stone, but was probably erected at one time, and has a unity of design in the measurement of different parts. Parts of the chippings of the stone, are found in the barrows. The cursus was an appendage of the temple and was constructed at the same time.

The triliths distinguish Stone-henge from other circles. The distance from the Sun stone to the Slaughter stone, is one hundred feet. The placing of the Slaughter stones, the Sun stones, the Stones of the earth circle in regard to the center, the diameter of the Sarsen circle, and of the blue stone circle, the distance of the central trilith, the depth of the horseshoe, and the dimensions of the altar, are all derived from the triangle within the circle.

The symbols of Stone-henge, are found in many things; the circle is a symbol of the sun; the crescent or the horseshoe, is the symbol of the moon; the triliths are mystic gateways; the long avenues were designed to be the paths of religious processions; other symbols are found in the color of the stone, the blue stone and the red stone.

We have two forms of worship symbolized at Stone-henge; the earth worship and the sun worship. The bond of union in the primitive household was the domestic worship. As the house father made the offerings to the house spirit, the fire, by throwing a share of the food into the fire before eating; in the circular temples was involved the worship of the sun, the visible world father. Men prayed to the sun, the Ruler, and Saviour of the world to give them good harvest and daily bread.

From the position of the altar table, in the circle, we perceive that any object placed on it should be at the mid-summer sun-rise, when the sun would cast its shadow on the trilith.

As the sun rose the shadow of the lintel circle covered the altar table, but when the portals of the east, the everlasting gates, were thrown wide open and the sun god shone out in the fullness of his glory, then it appeared that he regarded the sacrifices with favor, and wrote upon the wall with his sunbeams the golden rule, his assurance of plenty.

Barclay says, further:

"When standing within the precincts of this heavy or shattered temple, the spectator is forced to acknowledge that the unknown designer, has succeeded in conveying a remarkable impression of grandeur, simplicity of design, bold and rugged objects with no attempt at ornament. These rocks strike one with a sense of endless endurance and power, while order and dignity assert themselves amid this wreck and confusion."

III. The temple, in the form of a Tent, is the most common, and, at the same time, the most interesting. We learn from the Sacred Scriptures, that the Tent was regarded as the home of the divinity, and, that it was sacred to the Hearth Divinity. This is illustrated in the case of Abraham. When the angel visited him, a sacrifice was made, and the pieces of sacrifice, according to the common custom, were divided, but

Abraham dreamed that he saw the furniture of his tent, such as the smoking furnace and the burning lamp, passing between the pieces, and he took it as a sign that the hearth divinity had accepted the sacrifice, and had even made sacred the common furniture.

It was perfectly natural that the temple should become a shrine or temple, for the most sacred associations of life were connected with it. The children of Israel, when they passed through the wilderness, are said to have received a command from God, as to the place in which he was to be worshiped. It was in the tabernacle or tent resembling those of the common people, and its furnishings were reminders of those of the home, the table, upon one side, the candle stick upon the other, the laver at one end, and the curtain at the other, the Holy of Holies beyond the curtain, and the ark of the covenant within the curtain.

Every portion of this tabernacle, reminds us of the Patriarchy which prevailed at the time, and furnishes a picture of the home life of the people, for the tabernacle was gold lined, and yet was in the form of a tent. The table with the sacred loaves upon it, and the golden candlestick, also represented the common furniture of the house; the ark within the Holy Place represented the chest, which contained the treasures of the household; the sacredness of the place also suggesting the privacy of the house, and the authority of the father. So sacred was the house in these days that it was imitated by the tomb, and the tomb became not only the house of the dead, but the place of worship and sacred assemblies. In fact the tomb became a temple, and remained such for many centuries, even among the more civilized people, and into historic times. It is supposed by some, that the worship of ancestors which was one of the earliest forms of religion, was perpetuated by this means, but the tomb continued to be a temple or place of worship long after the worship of ancestors ceased.

The enquiry has arisen as to the original form of the tabernacle. Was it in the form of a tent resembling the other tents in which the Israelites dwelt or was it in the form of the oblong house with upright walls resembling the Egyptian temple? On this point there is considerable uncertainty. It is known that the Egyptian temple was made up of several parts. In front of it were the propylæ or lofty gateways. Next to this was the Peristyle hall back of this was the Hypostyle hall in the rear of all was the Adytum. The tabernacle had a court in front of it which was entered through a single gateway and was called the Temple Court and was the place of sacrifice. Within the tabernacle proper was the Holy Place which corresponded to the Hypostyle Hall, while the Holy of Holies corresponded to the Adytum of the Egyptian and no one could enter it except the high priest.

The Temple of Solomon was modelled partly after the or-

iginal tabernacle but contained features which resembled those of the Assyrian and Babylonian rather than the Egyptian temple. Several features, however, seem to have been borrowed from the Egyptians. First there were two pillars in front of it which resembled the obelisks in front of the temples in Egypt. Second the pillars or columns of Solomon's court were all on the inside making it resemble the Egyptian temple rather than the Greek temple. Third, the tabernacle as well as the temple of Solomon was but a single story in height and in this respect resembled the Egyptian rather than the Babylonian, for the latter was always three stories in height and ultimately reached the seventh story. Each story or terrace was devoted to a separate Stellar divinity, the upper story devoted to the sun. Fourth, the tabernacle as well as the temple was divided



SHINTOO TEMPLES AND BUDDHIST TOWERS.

into three parts, the court, which was open to the people, the Holy Place which was open only to the priests, the Holy of Holies which was open only to the high priest once a year, and contained the ark and figures of angels; a division which corresponded to the Peristyle, Hypostyle, and Adytum of the Egyptians. Fifth, the form of angels with wings in the Holy of Holies corresponded to the winged figures of the Babylonians, though the Babylonian figures had six wings. There was a difference, however, between the winged figures of the tabernacle and those in the temple for in the tabernacle the winged figures were kneeling and both wings were thrown forward, but in the temple the winged figures were standing and the wings stretched out to either side, reaching the walls on one side and meeting one another over the ark on the other side and so

over shadowing the ark. Sixth, the names of the temples of the different nations are significant. In Babylonia the temple is called Mountain House or the Lofty House. In Egypt it is called the Great House or the King's House, and is equivalent to the palace. In Jerusalem it is called the House of Yahveh or God's Dwelling Place and the Holy Place.

Seventh, the personal element prevailed in the temple of the Jews, but the worship of the sky and heavenly bodies prevailed in Babylonia. In Egypt it was the worship of animals, of ancestors, of kings, and of the personified nature powers, the most of them represented under human forms but with animal heads. No such distorted images were ever seen in the Tabernacle or temple and the only image seen was suggestive of angelic creatures and typical of the heavenly scenes.

The Hebrew temple had two forms—that of the tabernacle in the wilderness and Solomon's temple at Jerusalem, each of which was built after a different model and embodied a different style. The Babylonians seem to have retained in the tower like form of their temple the reminiscences of their earliest home among the mountains, for, notwithstanding the fact that they long lived on the level plains near the mouth of the Tigris, they always built their temple in the form of a lofty tower and called it the Mountain House or the House of the Mountain Divinity. They, however, changed the significance of the tower and made it symbolize the pillars of the sky, but dedicated it to the planets and the sun, and gave each story a different color so as to represent the various planets. The shrine upon the summit was consecrated to the sun.

There were other nations beside the Hebrews who built their early temples in the shape of tents. Among these the most notable are the Hindoos and Chinese. The Chinese had two kinds, one devoted to the Shintoo faith and the other to Buddhism, but both retained the tent form. See cut.

The Buddhist temples have taken the place largely of the Shintoo temples. In them we see a marvellous grouping of buildings with a two-storied gable as chief feature, which resembles a gate. The framing of the lower story is arranged so as to form niches in which stand the God. The roof is the most artistic feature, having broad, overhanging eaves, festooned in the centre and bent upward and backward at the corners. Buddhist temples, like the Shintoo temples, are composed of buildings grouped together. Passing through the entrance, the visitor finds himself in the first terraced court, only to encounter another, and so on to a third and fourth. After traversing terrace after terrace he reaches the chapel or oratory. The court yards are usually filled with buildings of the Buddhist cult, as well as a number of bronze lanterns.

Belfreys, priest apartments, pavilions, with cisterns of holy water, and pagodas appear on every side, all crowned with festooned roofs. Among the most imposing of these are pagodas which are invariably square. Externally the pagoda is built in five or seven stories, each set a little back of the other, and girt about with balconies and overhanging eaves. The whole is usually lacquered, and above all, is the spire of bronze which forms the peak.

The temple, like the domestic buildings, is provided with a veranda, and columns shaded by a gabled roof, and a bracketed cornice. The floor is covered with silk bordered mats. The roofs, like festooned, jewelled

mantles, are graceful in curve and sweep. The Japanese never mistake greatness or ostentation for beauty, but they always exhibit refinement and reserve, which contribute so much to the ideal.

The origin of these styles of the Oriental temples came from the tendency to make the house resemble the tent, and to cover it with adornments of sculpture, which so easily won their fancy and engaged their skill. In this respect their art and literature were alike.*

IV. Another pattern is found in the Chinese temples. These are in the shape of a round hut, with a conical roof, and sometimes several roofs. They are probably survivals of the primitive house. They are described by Rev. Henry Blodget D.D.:

† "The state worship of the early kings of Egypt, Greece, Rome, Phœnicia, Assyria, Babylonia, and India, no longer exists in real life. If we study it, we do so from books, and from the monuments of antiquity; but here we have the ancient worship of China, preserved in a living form, to the present time. This worship is invested with the deepest interest to students of ethnic religions. The antiquity of its observance; the magnificence of its altars; the imposing nature of its rites; combine to give this worship a very conspicuous place in the study of the ancient nations.

The dual principle was recognized in China, one called *yin* and the other *yang*, and there were two altars in the city of Peking. The one directed to heaven, which is also *yang*, is on the south; the altar to earth, which is *yin*, is on the north, but the altar of the sun is on the east, and the altar of the moon on the west. Each of these altars, is situated in a large park, planted with rows of lotus, pine and fir trees. The south is the region of light and heat, the *yang*, while the north is the region of cold and darkness, the *yin*. This perpetuates the myth, which surrounds the altar to heaven, which has the greatest antiquity and importance. This altar is built of white marble, and stands under the open sky. The structure is in three concentric circular terraces, rising one above another, and each surrounded by richly carved marble balustrades. The diameter of the lowest terrace is 210 feet, the middle terrace 150 feet, the uppermost terrace 90 feet. The last is a circular flat surface about 18 feet above the level of the ground. It is paved with white marble slabs, which are so arranged as to form nine concentric circles around one circular stone in the centre. The altar is round, as representing the circle of heaven. It is built of white



CHINESE TEMPLE.

*Ovorland Monthly. †Four. of Amer. Oriental Society, 1902.

marble, rather than of dark, because heaven belongs to light, or the *yang* principle. The ascent to the altar, is by three flights of steps, on the north, the south, the east, the west; each flight having nine steps. Answering in all respects to the altar of heaven, is the altar of earth, on the north side of the city. The grounds of this park are square, and contain about three hundred acres. The altar to earth is made of dark colored marble, since the earth belongs to *yin*, the dark principle. It has two terraces, instead of three. The top of the altar is paved with marble slabs, quadrangular in form, and laid in squares, around a central square, upon which the emperor kneels and worships. Each of these squares, consists of successive multiples of eight instead of nine as in the circles on the altar to heaven. It is built upon a square elevation, surrounded by a square wall, while the altar to heaven is built upon a round elevation, and surrounded by a round wall. The altars to the sun and moon are constructed on the same general plan, with constant regard to the



CHINESE TEMPLE AND STAIRWAYS.

haunted, and the power of the *yang*, or light principle, represented by heaven, again begins to assert itself. The days begin to lengthen; nature prepares herself once more for the glories of spring and summer.

The worship of earth comes at the summer solstice. Then the power of the *yang*, or light principle, is exhausted, and the power of the *yin*, or dark principle, represented by earth, begins in turn to assert itself. The days begin to grow shorter.

This solstitial worship, as it is most ancient, so also is it sacred in the regard of the Chinese. No one but the emperor or one of the highest rank, delegated by him, is allowed to perform it. Acknowledging its great authority, every one would recognize the fact that, it is invested with a high degree of reverence and solemnity; the religious feelings are deeply moved in performing its sacred rites; that there is a certain elevation of mind, a grandeur and awe, which attaches to the worship of

dual principle, as are the altars of the gods of the land and grain, the spirits of heaven, the spirits of earth, all of which are in the *yin*, as all worship is arranged according to the dual principle, *yin* and *yang*. The worship of heaven comes at the winter solstice, because then the power of the *yin*, or dark principle, has run its course, and is ex-

the vast heaven and broad earth, the sum total of all created things, performed, as it is, by the monarch of so many millions of human beings.

The worship of heaven and earth, stands at the head of the Chinese pantheon, and is inseparably bound up with the worship of numerous other beings and things. The pantheon of China is large. It includes the various parts and powers of nature; the deceased emperors of every dynasty; deceased sages, heroes and warriors; distinguished statesmen; inventors of useful arts; in general, an under world made up of all objects of worship in the three great religions of the land.

V. In America there were several kinds of temples, one circular in shape, resembling the round hut, another in the shape of a square tower, called a *teocalli*, and the third in the form of a shrine, all placed upon pyramids.

To illustrate, there are round towers in Mexico and Central America, which are called *Caracols*. These are conical in shape, and have stairways in the interior, and a conical roof surmounting them. They are placed upon a conical pyramid, which has stairways, pointing to the four quarters of the earth, and are furnished with doorways connecting with the stairways. It is not known from what source this symbolism was derived, but it seems to have been connected with the worship of the nature powers.



CHINESE PAGODA.

Temples are to be distinguished from towers. There were temples connected with palaces, as can be seen from examining the plates, which represent the ruins of Palenque, Uxmal, Chichen-Itza, Xkichmook; that there were also towers connected with the temples, is shown by the accounts written by the various historians. To illustrate: De Solis, in describing the conquest of Mexico, speaks of a rising ground that commanded the whole circumjacent plain, on the top of which, was a towered building which appeared like a fortress. It was a temple dedicated to the sylvan deities or idols of the woods, to which those barbarians dedicated their harvests. The court of the temple was sufficiently capacious, encompassed with a wall, after their manner of building, which, together with the

towers, by which it was flanked, rendered it tolerably defensible.*

These towers were generally arranged on the sides of enclosures and, in connection with entrances to the temples, but some of them, were at the foot of the pyramid on which the temples were placed. De Solis, speaks again of the towers of the great temples, which could command a part of the palace and of others connected with the temple itself. He says: "The ascent to the upper gallery to the temple, was by a hundred steps upon the pavement, whereof some tolerably large towers were erected. In this they had lodged about five hundred men, chosen out of the Mexican nobility, and were so fully bent upon maintaining it, that they had provided themselves with arms, ammunition, and all other necessities for many days."

Gomara, speaking of the various towns which were planted in the middle of the lake, says: "They are adorned with many temples, which have many fayre towers that beautify, exceedingly, the lake."

In speaking of the city of Mexico, and the towers which abound in the city, he says: "Upon the causeway are many draw bridges built upon arches that the water passes through.

The strength of every town is the temple, which is built with a pyramid and stairs, and towers upon the summit. Besides the palaces, which stand upon the pyramid, there are lofty towers. The great temple occupied the centre of the city. The wall about the temple, was built of stone and lime, and very thick, eight feet high, and covered with battlements ornamented with strange figures, in the shape of serpents. It had four gates to the cardinal points, correspond-



CARACOL AT MAYAPAN.

*De Solis' History of the Conquest of Mexico. Book IV. Page 710.



THE CITY OF MEXICO AS REBUILT BY THE SPANIARDS.



ANCIENT TEOCALLI IN THE CITY OF MEXICO.



STONE-HENGE BY MOONLIGHT.

ing to the streets, the broadest and longest of which, led to Iztaclopoca, Tacuba, and Tezcucó. Over each of the gates was an arsenal filled with a vast quantity of weapons. The space within the temple wall was paved with very smooth stones, in the middle was raised an immense solid building of greater length than width. This building consisted of five stages. The lowest was more than fifty perches long, and forty-three perches broad; the second and third about a perch less, so that upon each there remained a free space which would allow three or four men to walk abreast, with as many separate stair-cases. The height of the building, without the towers, was eighteen perches, and, with the towers, twenty-eight perches. From the height one might see the lake and the cities around.

As to the city of Mexico, it is well known that there were, at the time of the conquest by Cortez, many temples, which were called Teocalli. These were in the form of pyramids which stood in the centre of an enclosure, and were surrounded by a number of shrines or smaller temples.

The following is De Solís' description of the Great Temple or Teocalli which is situated in the center of Mexico, and is represented by the plate, but incorrectly:

The first part of the building was a great square with a wall of hewn stone; wrought on the outside with the various knots of serpents intertwined, which gave a horror to the portico and were not improperly placed. At a little distance from the principal gate was a place of worship that was terrible. It was built of stone, with thirty steps of the same, which went up to the top, which was a kind of long flat roof, and a great many trunks of well grown trees fixed in it in a row, with holes bored in



SYMBOLIC HUT AND MANITOU FACE.

Of the two plates, one represents the temple or Teocalli, described by De Solís, the other represents the cathedral, forts and houses erected by the Spaniards after Cortez had destroyed the first city and laid in ruins the various temples which were scattered through it. The figures over the gateways of the old temple do not properly represent the originals for these were wrought out of solid stone and were covered with hideous serpents' fangs and tails and a ghastly skull in the center, the whole presenting a terrifying appearance.

them at equal distances and through which from one to another passed several bars run through the heads of men who had been sacrificed. The four sides of the square had as many gates opening to the four winds. Over each of these gates were four statues of stone which seemed to point the way, as if they were desirous of sending back such as approached with an ill disposition of mind. These were presumed to be threshold gods, because they had some reverences paid them at the entrance. Close to the inside of the wall were the habitations of the priests, and of those who, under them, attended the services of the temple with some offices which altogether took up the whole circumference within, retrenching so much from that vast square that but eight or ten thousand persons had sufficient room to dance in upon their solemn festivals. In the center of this square stood a pile of stones, which in the open air exalted, its lofty head overlooking all the towers of the city; gradually diminishing till it formed a pyramid; three of its sides were smooth; the fourth had stairs wrought in the stone; a sumptuous building and extremely well proportioned. It was so high that the stair-case contained a hundred and twenty steps, and of so large a compass that on the top it terminated in a flat forty foot square. The pavement was beautifully laid with Jasper stones of all colors. The rails which went round in nature of a balustrade, were of a serpentine form and both sides covered with stones resembling jet, placed in good order and joined with white and red cement, which was a very great ornament to the building. There were other places where similar temples were situated the remains of which are still standing,

Various authors have spoken of the Teocalli of Mexico, Humboldt says:

"The construction of the Teocalli recalls the oldest monuments which the history of the civilized race reaches.

The temple of Jupiter, the pyramids of Meidoun, and the group of Sakkarah in Egypt, were also immense heaps of bricks; the remaining of which have been preserved during a period of thirty centuries, down to our day."

Bancroft says: "The historical annals of aboriginal times confirmed by the Spanish records of the conquest, leave no doubt that the chief object of the pyramid was to support a temple; the discovery of a tomb with human remains may indicate that it served also for burial purposes. These temples have disappeared along with the palaces and private houses, and scarcely a building remains to remind us of the condition of the city as it was seen by the Spaniards.

The principle monuments of Mexico, the Calendar Stone, the so-called Sacrificial Stone, and the Idol, called Teovaomiqui, were all dug up in the Plaza, where the great Teocalli is supposed to have stood, and where they were doubtless thrown down, and buried from the sight of the natives at the time of the conquest."

There are, however, localities not far from the city, which retain a few vestiges and remains of the ancient temples. Among them may be mentioned the city which, at the time of the conquest, stood out boldly in the midst of the waters of the lake, and were connected with the central city, and the shores, by the famous causeway or dyke over which the Spaniards retreated.

Among these may be mentioned Tezcuco, the ancient rival of Mexico. This city yet presents traces of her aboriginal architectural structures. In the southern part are the foundations of several large pyramids. Tylor found traces of two large Teocallis.

These Teocallis were common in Mexico and suggest the

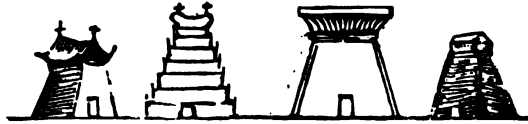
cruel practices of the Aztecs. They were furnished with sacrificial stones and were places in which human sacrifices were offered to the sun.

In these sacrifices the victim was stretched upon the stone and his heart torn out and offered to the sun, but his body was hurled down the steps of the pyramid and afterward devoured by the people.

On the contrary, the temples of the Mayas of Central America were furnished with tablets and sculptured figures which were suggestive only of peaceable scenes, and a mild and kindly religion.

We may say of these temples that they differed from those of the old world, though the pyramid seems to have served as the foundations for all.

An illustration of this will be seen in the cut, which represents the different forms of temples in the Eastern continent the Egyptian, the Assyrian, the Tibetan and Scandinavian, all of which were of pyramidal style.



PRIMITIVE TEMPLES IN THE OLD WORLD,

There were, to be sure, shrines in Babylonia, some of them situated high up in the sides of the rocks, with columns and figures, and inscriptions in front of them; others, on the summit of pyramids or towers. There were shrines among the rock cut temples of India, and the most of them contained images of the personal divinities, those of Brahma, Siva, Vishnu, and Indra. In China, shrines are often found in the Pagodas and are surrounded by a court which is filled with images.

Such shrines are at present very common in all parts of the world, in India, China, and America; and the supposition is, that they were survivals from pre-historic times, but originated in the rectangular house, which, because, it was a home became very sacred. In Mexico and Central America there were temples which were rectangular in shape, and were placed upon the summit of circular or oblong pyramids, and were reached by stair-ways placed upon the four sides of the pyramids, every part of them being symbolic of the nature powers, the sky, the four parts of the compass, and the earth. They were called caracols, and were very sacred. It is not known from what source they were derived, but a supposition is, that they were the survivals of the primitive hut. In favor of this, is the fact that the figure of a hut is often seen sculptured on the doorways of the palaces and temples, with the image of the divinity seated inside the door, and a manitou face above the door, conveying the idea that it represented the primitive

shrine, which was in itself the survival of the still earlier hut or house. Such circular structures are found at Mayapan, at Copan and at Chichen-Itza, and everywhere retaining the same shape. The caracol or round tower of Chichen-Itza has been described by Mr. W. H. Holmes. It is upon the summit of a pyramid and consists of two stories, one above the other, with a central column or core, seven feet in diameter, with annular galleries five feet wide, connected by winding stairs, also supporting buttresses in the walls, the whole finished with heavy cornices.

VI. This leads us to a view of the temple, as a shrine, and especially as a shrine situated on the summit of a pyramid. It will be understood that there were no such temples in Egypt, which was the land of the pyramid, for whatever shrines there were there, were situated either in caves hewn out of the rocks, or in the chambers in front of the mastabas or tombs, or in the interior of the columnar temples, and never upon the summit of pyramids.



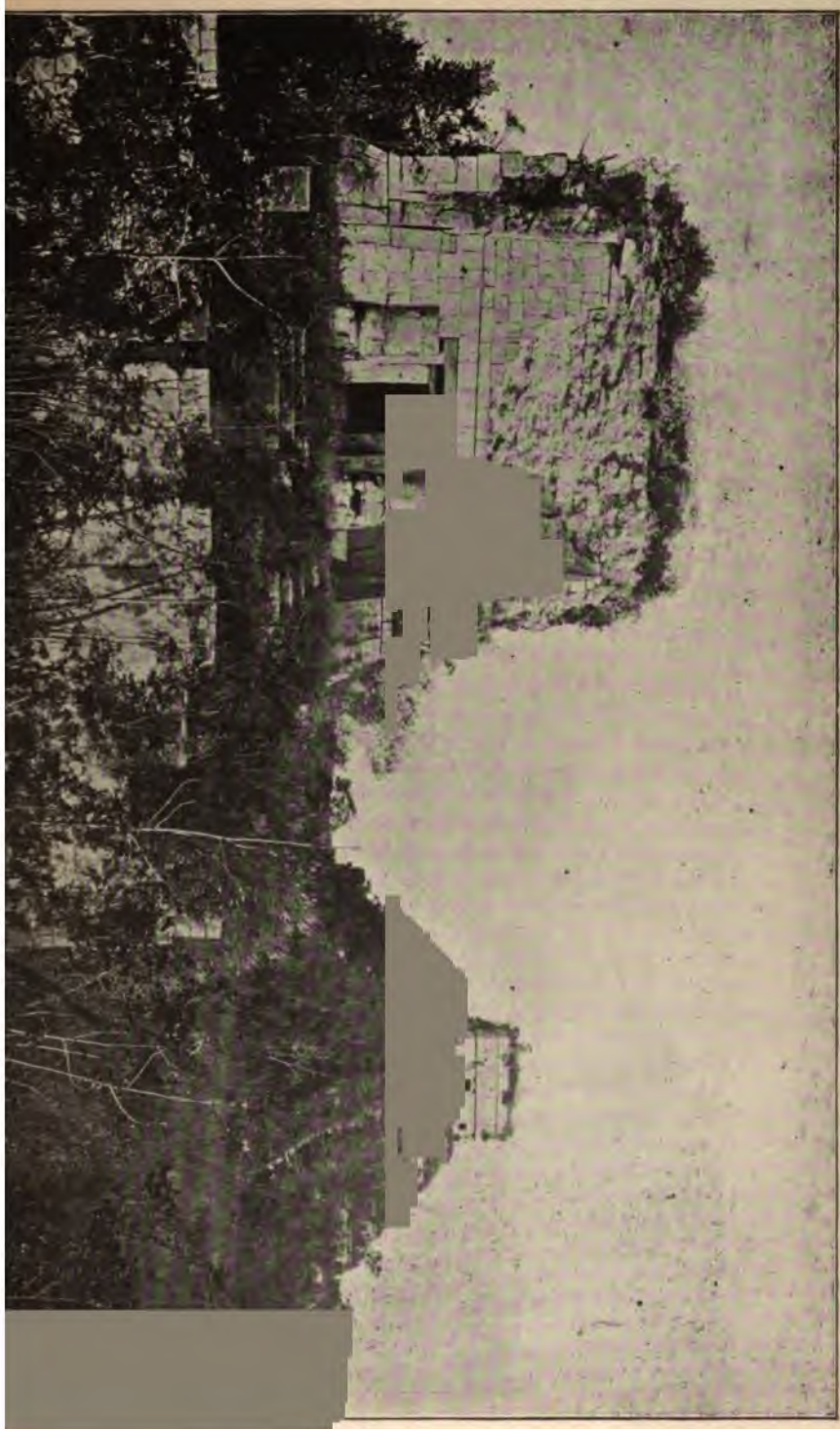
THE SHRINE AT PALENQUE.

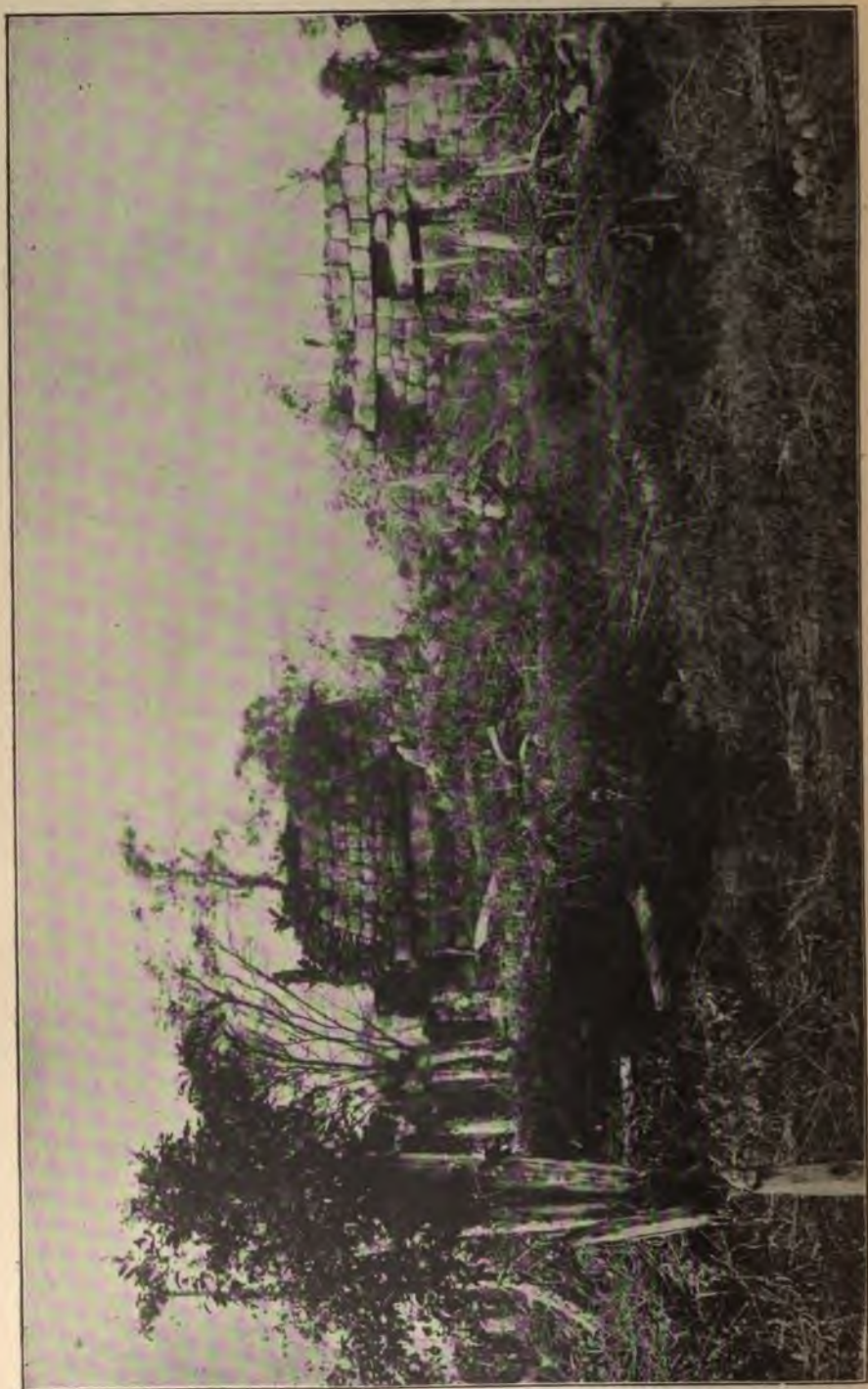
The rectangular shrine is the form of temple which was most common in Central America. This generally had a projecting cornice, a sloping roof resembling the modern mansard roof, but generally surmounted by a high roof-comb on which were sculptured various statues and symbolic figures. It had square piers in front on which mythological figures were sculptured.

The best preserved temples are those found at Xochicalco the hill of flowers. Here is a natural elevation of conical form, with an old base over two miles in circumference, rising from the plain to a height of nearly four hundred feet.

Five terraces, paved with stone and mortar, and supported by perpendicular walls of the same material, extend in oval form entirely round the whole circumference of the hill, one above the other. Neither the width of the paved platforms, nor the height of the supporting walls, have been given by any explorer, but each terrace, with the corresponding intermediate slope, constitutes something over seventy feet of the height.

Shrines upon the summit of pyramids are more numerous in America than any where else, and, for this reason, we will





RUINED TEMPLES AT XUCUMAN, YUCATAN.

—Lent by Field Columbian Museum.

confine our study of them to this continent. It may be said that there were formerly shrines in Mexico, and that here they were situated on the summit of pyramids, but very few specimens remain; one at Xochicalco, and one situated upon the summit of a mountain called La Casa del Tepozteco being the most notable. Altars were an essential part of the Teocallis and were used for human sacrifices. In Central America the temples were generally in the form of shrines and suggested a peaceable form of worship.

There is one peculiarity of the shrines of Central America which is especially worthy of notice. Instead of containing



WINGED CIRCLE IN YUCATAN.

an altar, as do many of the shrines and temples of Mexico, they contain sculptured tablets on which are portrayed the symbols of religion, the cross in one, the face of the sun in another, and the globe with a human figure seated upon it in a third. In one shrine, represented in the cut, there was a winged globe reminding us of the Egyptian symbol, on another were sculptured the figures of females, each bearing a child in her arms. In the rear of the shrine the tablets are so placed that the sun would shine through the doors and make them resplendent by its rays. The shrines were constructed with a double cornice and a sculptured facade, and were reached by wide stairways. The temple of the Beau Relief is however more interesting than this, for in this shrine was a finely sculptured figure seated gracefully upon a globe which was supported by an animal headed throne. There were other shrines in Central America, all of which suggest the worship of the sun and the heavenly bodies, but never suggest human sacrifices as does the Teocalli of Mexico.

The same kind of a construction appeared in all the cities of Mexico. Humboldt says among the tribes from the 7th to the 12th century, appeared in Mexico, five were enumerated as follows: Toltecs, Chicmeccs, Acolhuas, Tsaltecs, Aztecs, who spoke the same language, observed the same wor-

ship, constructed the same kind of pyramidal edifices, which they regarded as houses of their gods. These edifices, though of dimensions very different, had all the same form. They were pyramids of several stories, the sides of which were placed in exactly the direction of the meridian and parallel of the place. The teocallis arose from the middle of a vast enclosure surrounded by a wall. This enclosure, which one may compare to the temple of the Greeks, contained gardens, fountains, habitations for the priests, and, sometimes, even magazines for arms, for each house of the Mexican god. A great staircase led to the top of the truncated pyramid, on the summit of



COLUMNAR TEMPLE AT UXMAL.

which was a platform, on which were one or two chapels in the form of idols of the divinity to which the teocalli was dedicated. This part of the edifice ought to be regarded as the most sacred. It was there, the priest kept up the sacred fire. By the peculiar arrangement of the edifices, the sacrifices could be seen by a great mass of people at the same time, and from a distance. The procession as it ascended, or descended the staircase of the pyramid, made an imposing appearance. The interior of the edifice, served as a sepulchre for the king or priest.

Another temple has been discovered in the Usumasintla

Valley, at a place called Piedras Negras. There were here several temples hidden in the forests, and among them were several sacrificial stones; also a large number of Stelæ or carved tablets with human figures upon them. There was also an Acropolis between two of the temples with a stair-way leading to its summit. One of the most interesting temples in Mexico is one discovered and described by parties from the city of New York. This temple was upon a height that was almost inaccessible, and overlooked the vast plain in the centre of which was the beautiful lake.

It is a most picturesque spot, and, formerly supported a large population. On one of the most inaccessible peaks of the northern range of mountains, at a point which commands a view over the whole region was erected the old temple. Reaching the summit, we find, an irregular surface, divided into two parts, connected by a narrow neck; upon the western part is the temple; the eastern part contains vestiges of low walls, and terraces, occupying nearly the entire area. These may be the remains of the houses of the priests, the guardians of the sacred spot.

It is probable that a fire was lighted upon the altar which crowned the summit of this mountain and it could be seen at a great distance. If human victims were offered at this spot the sacrifice could be witnessed by the multitudes who were assembled in the plains below and the locality, with its surroundings, conspired with the ceremonies to make it a most ghastly scene, and such a sacrifice as would fill all spectators with awe and fear.

VII. We now pass to another and a very interesting class of temples, a class which was numerous in the historic lands of the East, but was also common in America during prehistoric times. The peculiarity of these temples was that they were built in the columnar style and were adorned with cornices and sculptured facades which gave them a very artistic appearance.

There were many columnar temples in America in prehistoric times. They however differed very much from those which have been known to history, as the most of them were placed upon the summit of a pyramid and were reached by a high flight of stairs, but were to a great extent inaccessible to the common people. In fact some of them were guarded against approach by objects which were calculated to inspire every superstitious person with awe and fear. The most notable of these temples were those situated at Palenque especially at Chichen Itza and Uxmal. In the former place there were two such temples, one of which is represented in the cut reproduced from Charnay's celebrated work entitled *The Ancient Cities of the New World*. The following is his description of the temple:

"The castillo, or rather temple, is reared on a pyramid facing north and south, is the most interesting at Chichen. The four sides of the pyramid are occupied by staircases facing the cardinal points. The base measures 175 ft. It consists of nine small esplanades or terraces, narrowing as they ascend, but supported by perpendicular walls. The upper platform is 68 feet above the level and is reached by a flight of ninety steps 38 feet wide, on each side of which is a balustrade formed by a gigantic plumed serpent, whose body ran down the balustrade and whose nose and tongue protruded 8 ft. beyond the foot of the stairway. On the summit is a structure 39 ft. on one side and 28 ft. high. The northern facade consists of a portico supported by two massive columns representing two serpents' heads, while the shafts were ornamented by feathers, showing that the temple was dedicated to Cu-culcan, the god of rain. These two shafts are almost exact representations of a Toltec column unearthed at Tula, though the two columns were found three hundred leagues from each other and separated by an interval of several centuries.

Mr. W. H. Holmes has also described the same temple, but has shown that the capitals of these serpent columns were in reality gigantic serpent tails which projected beyond the cornice and supported the wooden lintels, though the serpent form has been impaired so as to be hardly perceptible.

It is to be noticed that some of the shrines or temples of Central America have winged circles surmounting the doorways which remind us of those which surmount the

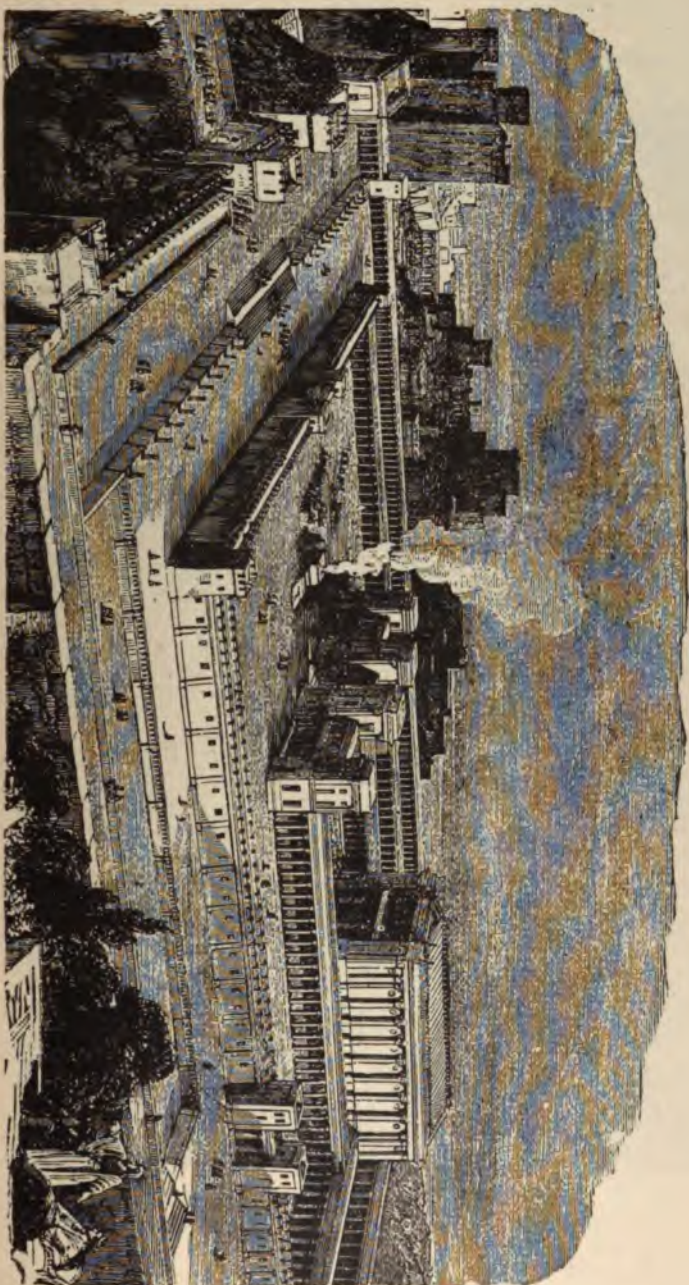
Egyptian temples, though the feathers of the wings are turned up instead of down and the ends rest upon an ornament which resembles a curved bow, one such temple being found at Oca-cingo. There is also a temple on the Island of Cozumel which has columns in front of the shrine, one of which is carved into the shape of a human figure kneeling, but supporting on his shoulders the capital and the lintel.

In Egypt, the tomb was in the shape of a house, and yet, it was a temple, for the friends of the deceased came and sat in the chamber which was a part of the tomb, and partook of their feasts. The spirit of the deceased was also sup-



OBELISKS AND COLUMN AT KARNAK.

SOLOMON'S TEMPLE AT JERUSALEM.



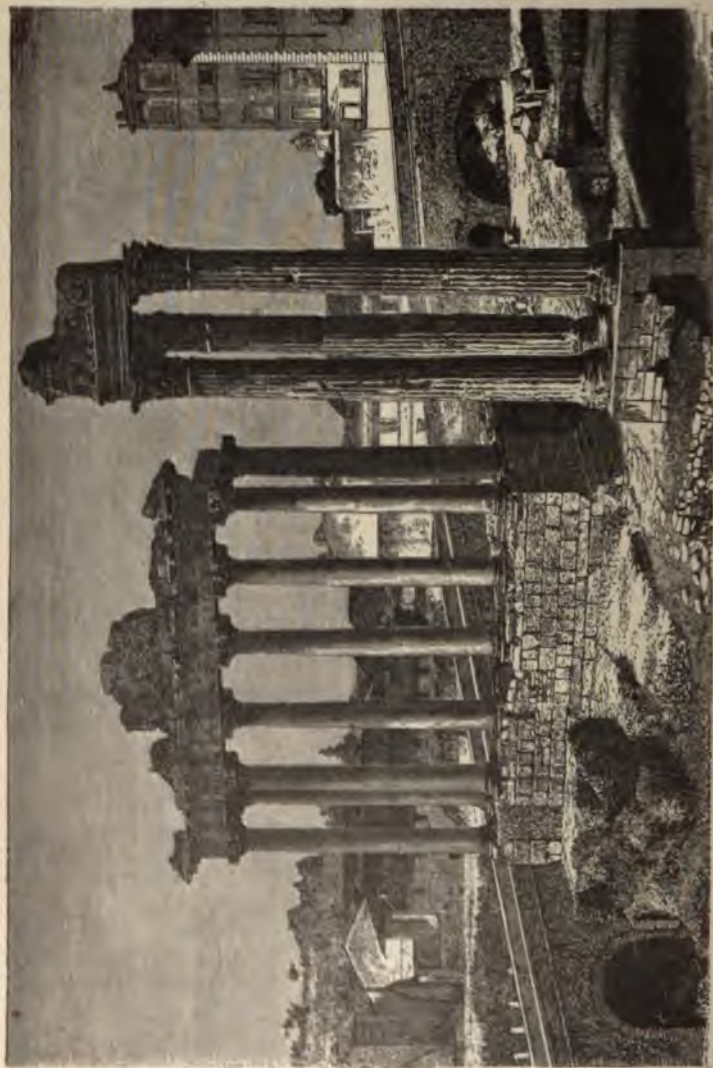


TEMPLES OF SATURN AND VESPASIAN AT ROME.

posed to be present, and to partake of the food which was represented by sculptured figures upon the wall.

The temples of Egypt, became the most attractive structures in the world, but they owed their attractiveness to the fact that they were built in the shape of a palace rather than of a pyramid, and their interior was filled with all the decorations of art and architecture of which the genius of Egyptians was capable. The exterior of the Egyptian temple was somewhat exclusive, for it was surrounded on three sides by a dead wall, without any openings, and covered, only by the sculptured figures of kings and priests; on the fourth side, there was a lofty gateway, which hid the temple partly from view, but the interior was very imposing. In this, the temples of Egypt differed from the temples of Babylonia, for there the outside only, was attractive, the inside had no features worthy of notice. The Babylonian temple was generally a ziggurat or tower which arose in separate terraces to a great height, each terrace being ornamented in a different way and, having a different color. The shrine was upon the summit, but was inaccessible to the people. The Babylonian tower was imposing for its height, and, standing, as it did, near the palace, and overtopping the city, conveyed an impression similar to that of the pyramids, but the art of the Babylonians was expended upon the palace rather than the temple. The temple in both countries, was the place for religious processions, but in Babylonia, the processions were led around the tower, upon the outside very much as they were around the Teocalli or pyramid temple of Mexico; but the processions in Egypt were led into the temples through long avenues guarded by human headed statues or sphinxes until the lofty propyleum was reached; there the ceremony became more exclusive; the worshipers were led into the temple through the various courts, within which were lofty columns arranged in clusters, and finished in the highest style of art with their capitals, carved in the shape of the lotus, which was the sacred flower of the Egyptians, their sides covered with sculptured figures and painted with most beautiful colors. The great stone beams surmounting the columns and the imposing walls gave the impression of grandeur which was superior, if possible, to any thing which could be seen in the world.

The Greek temple was also in the form of a palace, but instead of having the pillars or columns upon the inside, and the dead walls upon the outside, it followed the opposite pattern for the Greek temple was always surrounded by columns, while the interior was occupied by the statue of the divinity, or was a mere shrine, where a few might assemble. Still the Greek temple never lost its resemblance to the house. The decorations of art were heaped upon the frieze and front, and the mythology of the ancients was embodied in the statuary that surrounded it.



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COLUMNAR TEMPLE AND ACROPOLIS AT ATHENS,

THE RUINS OF THE MIMBRES VALLEY.

BY U. FRANCIS DUFF.

The Mimbres river rises in the rugged mountain ranges on the western boundary of Sierra county, New Mexico, and flows in a southerly direction across a portion of Grant, and the whole of Luna county. About half way across Luna it sinks; and it is only during rainy periods that there is water in its channel as far south as Deming, which is located in the center of the last named county.

Along the course of this stream are a considerable number of prehistoric ruins, from which, at different times, skeletons and many accompanying relics have been exhumed. The most southerly of these ruins of which I have knowledge, is near the ranch of Henry Coleman, six miles from Deming, and near the upper end of the Florida mountains. The next above is at Byron's ranch, and there is also one near the Keith ranch. Two miles northwest from Byron's is an old burying ground; there was probably a village, or pueblo, at this place, although all signs of it, so far as I can discover, have disappeared.

The following is a list of other ruins known to me in the valley, although there may be, and no doubt are, many others:

1. One near the ranch of Mrs. Collins, four miles east of Deming.
2. One six miles north of Deming, near Wilson's windmills. Although it is almost obliterated, many arrowheads have been found there.
3. Numerous sites around the base of Black Butte, ten miles from Deming. Some of these are quite extensive.
4. A small group of remains near the Southern Pacific railroad tracks, opposite the western end of Black Butte.
5. Various other ruins between Black Butte and Old Town on the Mimbres. Of these I have heard, but do not know their locations.
6. On a bluff one-half mile south-east of Old Town, which is twenty-two miles from Deming, overlooking a beautiful section of the valley, are very extensive remains. Here part of the buildings were evidently more than one story high, judging from the elevation of a portion of the remains above the level of the surrounding country. The outline of some sixty rooms shows at the surface of the ground. The bluff descends to the valley by an almost perpendicular fall of eighty feet, and the pueblo was built almost to the edge of the sheer descent.
7. A village site on the opposite, or western side of the river, one mile from Old Town.
8. Near the home of Mr. Drew Gorman.

9. A large ruin on the foothills skirting the western side of the valley, almost opposite Mr. W. M. Taylor's store, two miles above Gorman's. From this much fine pottery has been exhumed.

10. Remains of a pueblo near the Allison ranch, above Taylor's. I have in my possession twenty feet of fine large beads which were found in a bowl taken from a grave beneath the floor of one of the rooms of this ruin. Among them are seventy turquoise beads. In the same bowl were many small polished shells, and two small figures carved from shell or bone, representing toads. It also contained some thirty or forty bracelets sawn from some kind of shell; these, however, were all broken when they came into my possession. I have been told that village, or pueblo sites, are found along the whole length of the upper course of the Mimbres.

11. Eight miles from the town of Deming Red Mountain rears its solitary form. Several ruins have been found near its base; one a short distance from Mr. Thomas Word's ranch being of considerable size. Great quantities of broken pottery occur at that place.

12. Thirty miles south-west of Deming, near Colonel Richard Hudson's Cedar Grove ranch. The evidences of occupation here are very marked.

None of these ruins are little more than a great mass of debris, rising above the level of the surrounding country. The buildings at Byron's ranch were of adobe (large sun-dried bricks); these adobes may still be excavated in a fairly good state of preservation. This is owing to the exceeding dryness of the climate. Those on the upper Mimbres, notably the one near Old Town, and the one opposite W. M. Taylor's, were built of flat rocks, laid up in mortar. Beneath the surface the walls of these old homesteads are still intact.

In digging, metates or grinding stones; mortars; pestles; manos, or headstones for grinding, and effigies in the shape of bears and other animals are found. Dr. S. D. Swope and Miss M. A. Alcott, both of Deming, have a number of these effigies, besides many other valuable relics. Dr. Swope's collection is an especially fine one.

Beautiful arrow points, some of them not more than one-half inch in length, carved from obsidian, jasper and agate, are found in considerable numbers. Mrs. A. J. Gilbert, and her sister, Miss Grace Brown, have in their collection, as has Miss Alcott also, several hundreds of these lovely specimens of primeval art as practiced by a people who left behind them little by which we can even attempt to reconstruct the past. In this connection, however, it is presumable that a study of the manners, customs, and architecture of the modern Pueblo tribes, would give a good idea of life as practiced by the people of the Mimbres valley.

The pottery, which is generally of the black-and-white dec-

orated variety, is found, almost without exception, in the graves of the dead, and is in the form of large bowls inverted over the crania of the departed. Each of these bowls, before being deposited in the grave, had a small hole broken in its bottom. Mr. Frederick W. Hodge, of the Bureau of American Ethnology, and a very competent authority, with whom I communicated in regard to this feature, tells me that it is a complete departure from anything hitherto known, occurring in no other part of the country.

The significance of the hole in the bottom of the bowl inverted over the crania of the dead, is a matter for conjecture. It was possibly done that the communication between the dead and "Those Above," or the "Trues," might suffer less interruption. Or may be it was significant of the broken life of its owner. Whatever its meaning, the bowls used for the purpose were many of them fine specimens of ceramic art.

From beneath the floor of one of the rooms in the ruins at Old Town, Mr. David Baker and myself took out four fine large ones, each inverted over the skull of a skeleton. They were found four feet beneath the surface, and were as fresh and nice in appearance as when placed there unknown ages before. The dead had been laid away with their heads to the east, and in the eastern end of the room. At another time Mr. Ralph Byron and myself exhumed a skeleton from a level patch of ground north of the main ruin located at their ranch. The skull had a small decorated bowl inverted over it, but, unfortunately, broken. The skeleton lay about one and a half feet beneath the surface, and had been buried with the head toward the east. At Byron's, on top of a little hill crowned with solid rock, I found many places cut in the stone, which evidently had been used as mortars. They were from five inches to a foot in diameter, and from twelve to eighteen inches in depth. Numerous stone pestles from one to two feet in length have been found in the vicinity. Here, no doubt, they ground their grain and mesquite beans. The latter are very plentiful in the lower valley.

At different places along the bases of the mountains occur carvings on the rocks; painted figures are also occasionally found.

It is claimed by Mr. F. S. Dellenbaugh, in his *The True Route of Colorado's March*, printed some time since, that *Cibola*, so frequently mentioned in Castaneda's account of that *entrada*, was located somewhere near the Florida Mountains instead of at Zuni, as generally conceded, which would probably bring its site within twelve or fifteen miles of Deming, or may be less. If this were so, these ruins could not be considered prehistoric; but I have every reason to believe, after having read the account of Castaneda and Jeramillo, both of whom were with Coronado, that Mr. Dillenbaugh is wrong in his conclusions.

The valley of the Mimbres is very fertile, and where irrigation is practiced fine crops of cereals, vegetables and fruits, are produced.

It is more than probable that in the past a greater amount of water flowed in its channel. The country at that time—before the advent of such vast herds of cattle—being clothed with grass and other vegetation to such an extent that it had a tendency to draw moisture, thus providing for crops where it would now be impossible to get water from the lower river for purposes of irrigation.

Bandelier has suggested that malaria might have driven out the inhabitants of this valley. While it is almost unknown here to-day, it is possible that in times past it might have occurred. Whatever the cause may have been, it is certain that the Old People who once occupied this valley retired from it generations ago; and there is now left to indicate their some time occupation, only the crumbling remains of what was once no doubt, a thriving and happy past.

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ANTHROPOLOGY IN AUSTRALIA.

BY JOHN FRASER, LL. D., SYDNEY.

In some of my notes last year I mentioned the Spencer-Gillen Scientific Expedition into the interior of Australia. On their journey inward they followed the overland railway and telegraph line as far as Alice Springs, in the very heart of the continent, and, after spending some months in that neighborhood, in friendly contact with the natives, they travelled north-east to the western shore of the Gulf of Carpentaria. There they expected to catch a coasting steamer which would carry them to some port in Queensland, or to Thursday Island, but the steamer had just been wrecked, and there might not be another for months. In these circumstances, a vessel was sent especially to bring them off, and two months ago they got back to Melbourne. They have brought about one thousand photographs of natives, and native dances and customs, and a large mass of information about our blacks, such as they are in an undiluted state. In accomplishing this, Mr. Gillen's presence has been a valuable aid, for, as protector of the aborigines in these parts, he was known to the blacks, who, therefore, received the members of the expedition as friends.

In some recent articles in your JOURNAL, I observe two or three erroneous statements about Australian natives which ought not to go un-noticed, for errors are so apt to propagate themselves. For instance, on page 44, of this year's volume, the Australians are said to have an

abundant beard and smooth and straight hair. I know it is commonly said in the Anthropological journals of Britain, that the Australians are straight haired; but that is a mistake which has passed unquestioned from month to month. In my part of the country, I am sure, there were as many curly-haired blacks as smooth-haired, and the beard was as often scanty as abundant. It is true, that the women, usually are smooth-haired, because they use grease for their hair; in fact, it is not wise to declare, in any book of science, that our Australians, are of this type or of that, for they are a mixture, evidently of several types, but always negroid. One man who used to come to my house, was a true specimen of the Australian negro; another had as regular Caucasian features as most of us. The hair, with very rare exceptions, is black and coarse, but it should be described as either smooth or curly.

Again, on page 95, allusion is made to the carved tree trunks in the Australian Museum, Sidney. The Museum prepared photographs of these, several years ago, but half a dozen similar tree-trunks had already been figured, and described in a book of mine which our Government provided for the Chicago Exposition.

On page 101, something is said about the Thoorga tongue, but that is only a sectional part of a tribal language, spoken all along our south-eastern coast from Illawarra to Cape Howe. The writer says: "I have discovered the use of two separate forms for the first person of the dual and the plural," that is, inclusive and exclusive forms, and that seems to be claimed as a "peculiarity not hitherto reported among the Australian aborigines."

But that is a very old discovery. If he will look into Threlkelds *Australian Grammar*, published nearly seventy years ago, he will find inclusive and exclusive forms there, and in Dawson's books of twenty years ago he will see examples of similar forms from the state of Victoria. Mr. Mathews is also very unfortunate in locating sounds to the vowels *i* as in "pie" and *ou* as in "loud." Few scholars will agree with him in that, for his koon-gard koorooroo a philologist would write kungara-kurura.

But a real new discovery in Australian language has been made recently by Mr. Cary of Geelong, Victoria, who had access to Mss. of the Woddowro dialect there, written sixty years ago. He has found that the Woddowro had not only a dual number in their pronouns but also a triple, or, as I would call it, a ternal number. This connects our language with many of the Melanesian dialects

I have examined his examples and think they establish his claims.

There is another mistaken notion about our aborigines which has much popular currency, and has been reiterated by scientists till I am sick of seeing it in print. It is said that the Australian blacks are among the lowest of human races, and are almost destitute of intelligence. Every person here, who is at all acquainted with the natives, cries out against that as a piece of ignorant slander. If you were to see our black fellows in their tribal condition, and in their daily life, you would say so too. The slander was first set afoot by the early settlers here who did not trouble themselves to understand the natives customs, but were content simply to say that the man was "a cursed black fellow," and "no good." Then this opinion got into the books that were first published, about the colony of N. S. Wales, and from them has been ignorantly believed, and handed about as an ascertained fact. It is not a fact—but a fiction. The natural intelligence of native children, was abundantly tested in the State of Victoria, where there were two or three schools for them. The government inspectors of schools, visited these as a part of their duties, and their reports declared that the children in them were quite up to the average of the schools for white boys and girls. Many of our older colonists also, who lived in the bush and had black boys as playmates in their youth, bear their testimony to the same effect. One such, whom I know, taught two black boys about 16 years of age to play chess, and one of these was soon able to beat his master in the game. In the *Sidney Morning Herald*, a few days ago, there appeared a letter signed by "An Old Colonist." In his early days he had been a boarder at the Normal Institution School in Sidney, and this is a part of what he says:

"With me, and other white boys, was John Bungarree, an aboriginal. He proved to be most intelligent. He was a skilled penman, and would have put to shame, in this particular, many young men of the present day."

I have written these notes now in the interests of truth, for I consider it a pity that errors of ignorance should circulate around the world.

EARLIER HOME OF THE BELLA COOLA TRIBE OF BRITISH COLUMBIA.

BY CHARLES HILL-TOUT.

As is well known to students of American ethnology, the Bella Coola, or more correctly the Bilqula, are the most northerly division of the Salish stock. They are separated from their congeners to the south and to the south-east by alien stocks, and are characterized by many peculiarities, physical, social and religious. How they got to their present quarters, whence they came, and to what division of the Southern Salish they belong have been questions that have exercised the minds of students of this Stock. It may, therefore, be of interest to state that my studies among the Salish tribes of the Lower Fraser seem to throw some light upon two at least of these questions, viz: whence they came and to what division they properly belong. Of the Delta, or Lower Fraser tribes, the Kwantlen were formerly one of the most extensive and powerful. In their traditions they record that at the "great flood" their tribe was separated, a portion being carried away up the coast, where they effected a settlement and where they have since resided. They call this branch of their tribe Pelwheli or Pelqeli. The resemblance between this term and Bilqula is striking. They locate the Pelqeli, moreover, in the region occupied by the Bilqula. Now, as it in confirmation of this tradition, we find that among the Bilqula they have an important myth relating to one of their ancestors named Totosong. In this myth Totosong is said to have descended from heaven to a mountain near the Fraser river. Here he built a house and lived in it in company with Raven. Later they traveled down the river in order to find people. In their travels they came upon a house covered all over with abalone shells. A chief whose name was Pelqanemq, i. e., "abelone-man," dwelt here. From here they went to various places, and among others "Rivers Inlet," called in the Bilqula tongue Wanuk. I mention this place in particular, because it is a Kwantlen word, one of the present Kwantlen settlements on the Fraser being called by that very name.

I have also mentioned their meeting with the Abalone chief because of his name Pelqani, which Dr. F. Boas, who recorded this myth, says means "abelone," his totem being the shell term Pelqueli and the tribal name of the Bella Coola when of that name. Now if the resemblance between the Kwantlen correctly written, is merely accidental, then in the name of the Abalone chief I think we may assuredly see the name given

by the Kwantlen of Fraser River to their dispersed tribemen; for the one would appear to be merely a dialectical variation of the other. My studies have not extended yet to the speech of the Bella Coola tribe, but so far as the forms of that dialect have been recorded by other students, I may say that there are some striking resemblances in the use of the definite article, and also in the pronominal forms, and I fully expect to find, when I come to study their language, the fullest confirmation of the tribal traditions regarding their place of origin. But even without this confirmation the fact that the Kwantlen claim direct relationship with a Salish community in the locality of the Bella Coola, and the Bella Coola speak of the Fraser River as the original home of one of their ancestors, warrants us, I think, in assuming that this isolated and interesting body of Salish, is an offshoot of the Kwantlen of Fraser River. The real reason of their separation and their settlement in this northern alien territory we may never learn.



THOMAS WILSON, LL.D.

BY WARREN K. MOOREHEAD.

Read at the Pittsburgh meeting of the American Association for the Advancement of Science.

Mr. Thomas Wilson was born July 18th, 1832, in Beaver county, Pennsylvania. He was a self-made man. As a boy he was apprenticed to David Woodruff, of Salem, Ohio, who conducted a carriage shop. Attaining his majority, he located in Marshall county, Iowa, and engaged in making heavy plows, used for breaking the new prairie land.

He was chosen a deputy clerk of the court, and this position, small though it was, opened his eyes to the possibilities of a legal career, and he engaged in the study of law during evenings after his hard day's labor over the plow. He was admitted to the bar and practiced with success.

At the beginning of the Civil war he enlisted in the Second Iowa Cavalry, arose to the rank of captain, but left that branch of the service for the infantry. He served until the fall of 1864, when he was honorably discharged with the rank of colonel, gained by distinguished gallantry in action.

He formed a legal partnership with the famous Thomas Corwin, of Ohio, and was instrumental in putting some worthy war claims through congress; In 1881 he retired from active practice and was appointed consul to Ghent. His consular duties extended over a number of years and

he represented the United States at Nantes and Nice. His tact, discretion and natural abilities won for him the commendation of his government.

As a boy, Dr. Wilson had observed the mounds, earth works and other prehistoric remains of eastern Pennsylvania. While in France he had opportunity to study the ancient monuments of western Europe, and he made himself an authority. Himself a French scholar, he became familiar with the French School of Anthropology, and when he came to the United States and accepted the curatorship of the Department of Anthropology, of the Smithsonian Inst., he was fitted to pursue the intelligent study of prehistoric man in this country. His training in law, in the diplomatic service and in European archæology broadened his mind and enabled him to weigh carefully archæological problems.

Dr. Wilson was one of the few anthropologists in this country confining themselves, almost exclusively, to prehistoric art. I have frequently heard him say that anthropologists were emphasizing modern tribes and modern conditions at the expense of the prehistoric. He, himself, was not interested in the modern savage, although he did not deny the importance of such study. Many of the problems, he maintained, relating to man in the United States, could not be solved by comparisons with or a study of historic tribes. After all the traditions, the ceremonies, etc., of existing tribes had been investigated, he thought that there would be a reaction and anthropologists would return to a consideration of the truly prehistoric. I once heard Dr. Wilson call the attention of a visiting ethnologist to the thousands of "unknown" stone objects in the Smithsonian collections. Said he: "They (the ethnologists) publish hundreds of pages giving the minutest details regarding the ceremonies of the living Pueblo and Plain tribes. A feather with a notch on the right side has a certain meaning, on the left another, two notches convey a different meaning, and daubs of paint on the tip or on either side yet another meaning. Thus a single feather may stand for fifty interpretations. If so frail and unimportant a thing as a feather engages our attention, what shall we say of these imperishable stone objects with fantastic and wonderful forms, wrought with patient skill and highly polished? Do not they merit our study?"

Dr. Wilson was prominent in the various expositions held here and abroad during the past fifteen years. He was decorated by the Spanish Government and by the King of Belgium. He served as vice-president in this section. His honors were many and varied. The following are some of his reports and publications:

"A Study of Prehistoric Anthropology" (1888), "Results

of an Inquiry as to the Existence of Man in North America During the Paleolithic Period of the Stone Age" (1888), "Criminal Anthropology" (1890), "Primitive Industry" (1892), "Minute Stone Implements from India" (1892), "The Swastika, the Earliest Known Symbol" (1895), "Prehistoric Art, or the Origin of Art as Manifested in the Works of Prehistoric Man" (1897), and "Arrowpoints, Spearheads and Knives of Prehistoric Time" (1898) all of which have been contributed to the publications of the United States National Museum.

Dr. Wilson was possessed of a pleasing personality and a fund of humor. He was unpretentious. He could rebuke affront and ignorance. I crave pardon for relating a personal incident illustrative of his humor.

A very pompous individual came into the exhibition hall one day, and as the Doctor was busy, I was instructed to explain the collections. He was typical of a certain class of persons such as render the life of a museum curator miserable. We had been looking in the cases not more than ten minutes when the visitor announced in loud tones that he had a large archæological collection of his own and that he knew all about such things, and that if the Smithsonian men knew no more regarding prehistoric times than was evidenced by the labels, he would be glad to instruct them.

The door of the office was open and Dr. Wilson, having heard the remark, came out at once. Walking up to the collector, he laid a paternal hand on his shoulder, and said: "My dear sir, if you know all about these things, you are the very man we want. I have studied them all my life and know almost nothing. Come over to Professor Langley's office and I shall resign in your favor."

Dr. Wilson's papers on the Swastika, Art and Flint Implements have been in general demand and were favorably reviewed here and abroad. His classification of Arrowheads can hardly be improved upon and must stand. He insisted upon an archæological nomenclature.

I am convinced that his published observations, save in a few instances, cannot be controverted—that is, so far as they relate to the strictly prehistoric. In his mind, to classify the objects left by the Plains tribes of the past hundred years with those from the truly pre-Columbian sites of the Ohio Valley was an error, "Yet," said he to me, "when I offer a few remarks apropos of some village site of unquestioned antiquity, some champion of the modern origin of all aboriginal remains, gets upon his feet and draws a parallel between my site and the modern Pueblo or gun-armed, buffalo-hunting tribe of the Plains."

It was this lack of distinction between tribes of one region and another which he regretted. He believed that the

mound building peoples of the Ohio Valley had nothing in common with the Plains or Pueblo peoples; that a comparison of their pipes, ornaments, etc., was simply out of the question.

He had his own views regarding folk-lore and its relation to the prehistoric. I recall one conversation of some years ago along these lines. I shall not give this as a direct quotation, for although the substance is clear, I do not remember the exact language.

Said he: How is it that the Sioux give elaborate traditions concerning their origin and other mythical matters, yet cannot recall the visit of Hennepin and other early Jesuits? One would suppose that paintings exhibiting the damnation of the wicked in vivid colors such as the priests carried, would make a lasting impression upon aboriginal minds. They had never seen such mysterious things. And among the more southern tribes the appearance of the men in armour, riding horses, would be remembered in their folk-lore. Yet I fail to find more than a trace of the presence of the Spanish adventurers in southern Plains folk-lore, and a very faint trace at that.

He was wont to tell, with relish, the story common on a certain reservation concerning the enthusiastic young folk-lorist who gravely set down all the story tellers told him and how that the narrators of the tribe, mindful of the loaves and fishes which he distributed with a lavish hand, got an educated Indian to write him that they had thought up a "lot more yarns" and were anxious to have him come and record them.

Mr. Wilson's work was not confined to anthropology alone. He did some literary work and published a creditable book on "Blue Beard," etc. He was a contributor to the *AMERICAN ANTIQUARIAN*, and readers have perused his lines with profit and pleasure.

Socially, his house occupied a high position in Washington and distinguished men and women were wont to attend the receptions held there.

Dr. Wilson was appointed Curator of Anthropology, Smithsonian Institution, in 1887. This position he held up to the time of his death, May 5, 1902. His administration of the department was more than successful, large donations and additions by purchase were made and the entire collection rearranged and systematized. This latter required much of his time for several years.

In his death I lost a dear and personal friend. Students of American archæology will do well to emulate his virtues, his character, his kindly and gentlemanly bearing, and his scholarly attainments. His widow and his son have the sympathy of all who knew and loved Dr. Thomas Wilson.

PAPERS READ BEFORE THE AMERICAN ASSOCIATION AT PITTSBURG.

Notes furnished by H. I. Smith.

EXPLORATIONS OF 1901, IN ARIZONA, BY DR. WALTER HOUGH.

Dr. Walter Hough, of the U. S. National Museum, gave an account of one of the most important explorations carried on in the Pueblo region. The field selected for examination lies in eastern Arizona and extends from Fort Apache to the Hopi Reserve, a distance of 180 miles and east and west of Holbrook, a distance of about 60 miles.

During the month of May Dr. Hough explored the ruins of McDonald's Canyon, and at the Petrified Forest securing about 1000 specimens. On the first of June he took charge of the scientific work of the Museum-Gates Expedition which was financed by Mr. P. G. Gates, a man of wealth interested in pueblo archæology.

Dr. Hough said that in the course of the season's work of five months in 1901, 60 ruins were visited and 18 of them excavated. Some ideas of the difficulties encountered, aside from the 800 miles of wagon travel, may be gathered when it is known that five of the groups required dry camps, water being hauled considerable distances for men and animals. The work, however, was quite successful, 3,000 specimens having been collected. Plans of 24 pueblos, and maps showing the location of the groups were drawn, and ethnological data, specimens and photographs secured from the Apache, Navajo and Hopi Indians visited during the season. This material will be published in the Annual Report of the U. S. National Museum.

THE LATE DR. THOMAS WILSON, BY WARREN K. MOOREHEAD.

Mr. Moorehead made some brief remarks upon the career of the distinguished archæologist, Dr. Thomas Wilson, late Curator of the Department of Anthropology, Smithsonian Institution. Dr. Wilson has conducted researches both in France and the United States, and published numerous reports and papers notable among which are two, the Swastika, and a classification of spear-heads, arrow-heads and knives. Dr. Wilson was greatly interested in young men who desired to take up anthropology as their life-work. He was possessed of a pleasing personality.

EARLY MIGRATION OF MANKIND, BY G. FREDERICK WRIGHT.

Climatic Changes in Central Asia traced to their probable causes and discussed with reference to their bearing upon the early migrations of mankind.

That there have been extensive climatic changes in Central and Western Asia in recent times is made evident by a variety of considerations.

1. The Aral Sea, which now has no outlet, formerly emptied into the Caspian through the well marked channel called the Uzbél, skirting the eastern side of the Ust Urt plateau. This outlet is as clearly marked as the old glacial outlets from Lake Michigan and Lake Erie into the Mississippi Basin at Chicago and Fort Wayne. The Amu Daria and Syr Daria rivers, both streams more than 1,000 miles in length, must therefore formerly have brought into the Aral Sea a much larger volume of water than they now do.

2. Lake Balkash, the Aral Sea, and the Caspian Sea, though they are all enclosed basins in an area that is dotted with salt lakes, are themselves comparatively fresh. The water of the Caspian Sea is only one-third as salt as that of the ocean; while the water of the Aral Sea and Lake Balkash is so fresh that animals drink it. The only adequate explanation of this is that the supply of fresh water has up to recent times been so great that from all these seas there was an overflow which largely carried off their salt deposits; while the time which has elapsed since that period has been too short for them to accumulate saltiness as Great Salt Lake and the Dead Sea have done.

3. The desert of Gobi gives every evidence of being the bed of a recently desiccated inland sea; while even the historical records of the Chinese bear witness to the existence of an extensive body of water called the Han-Hai within its borders.

The depression of the lower Jordan Valley of the Dead Sea gives the clearest possible evidence that at a recent time the water stood at a level 750 feet higher than now, making a lake extending from Lake Huleh the entire width of the valley and many miles beyond the present south end of the Dead Sea. The terraces at this level are everywhere clearly marked; while the accumulation of silt over the whole area was to a great depth—in some places hundreds of feet. From the small extent to which these silt terraces have been washed away by the streams which penetrate them and from the simple fact that the Dead Sea is not filled up, it is very clear that the present conditions have not continued indefinitely or indeed very many thousand years.

In my extensive tour through Asia, I started with the theory that these climatic changes were probably connected with glacial phenomena throughout that region corresponding to

those in North America and in Europe. But, upon not finding the evidences of any extensive glacial occupation anywhere in Central or Western Asia, I turned with more favor to the natural explanation offered by the theory of an extensive subsidence of the Asiatic Continent, approximately contemporaneous with the accumulation of ice during the glacial period over North America and Europe. Such a subsidence would during its continuance, fill up the Jordan depression with sea water and would let it into the desert of Gobi through the Sungarian Depression, producing thus in Central Asia an internal sea as large and deep as the Mediterranean. This vast body of water in Central Asia would add so much to the evaporating surface that it would naturally largely increase the rainfall upon the bordering mountains to the north. When the land had again risen so that the connection was shut off between the desert of Gobi and the ocean through the Sungarian Depression and the present relative land levels had been reached, this vast body of water would for a long time present its evaporating surface to supply increased moisture to the surrounding country. Naturally about half of this increased supply would fall upon the north side of the mountains, thus feeding the Syr Daria, the Zerafshan, the Amu Daria, Talas, The Chu, the Ili, and the innumerable other smaller streams which irrigate the northern base of these mountains and supply Lake Balkash and the Aral Sea with their water. But of course all that portion which flowed off into the plains of West Turkestan and Siberia would be lost to the body of water in the desert of Gobi; so that this would gradually diminish; and, as it diminished, would lessen the supply of water upon the north side of the water shed; thus producing the exact succession of phenomena which we find to have taken place. The explanation which this theory gives on such a complicated problem as is presented in the recent desiccation of the country goes far to prove its correctness.

But it is the relation of these changing climatic conditions to the early history of mankind, which is immediately before our minds on the present occasion. There are numerous indications that Turkestan has been one of the most important centers, if not the original center, from which the human race has radiated. Here the conditions of life are extremely favorable, and in the earlier climatic conditions were even more favorable than now. All Central Asia is most admirably situated for irrigation. All along the base of the Hindoo Kush, the Tian Shan, the Alexandrofski, the Ala-tru, and the Altai range, there is a broad, rich belt of loess, the most fertile soil in the world when well watered, and the water of its irrigation is near at hand. In Egypt the water is stored for use in vast inland lakes in the torrid regions of Africa. But in Central Asia, the supply is kept in cold storage upon the lofty mountains. Upon these vast ranges (the Tien Shan alone be-

ing thirty times as massive as the Alps) the precipitation is largely in the form of snow, which is generally melted during the summer months, thus keeping a constant supply of water available for irrigation.

With such advantages for obtaining a water supply, and with a climate characterized by almost perpetual sunshine, and with vast mountain systems spreading out their flanks for summer pasturage, affording the most majestic scenery, the conditions were pre eminently favorable for the early development of civilization. Even now the population along the irrigated belt is dense. But it is evidently far less than at a former time. Doubtless this is partly due to the disorganized political condition which has long characterized the region, but in no small degree it is probably due to the diminution of the water supply. In driving over the country one finds in various places the remains of irrigating ditches long since abandoned, and sees innumerable mounds indicating a former population where now scarcely any is to be found.

But in the thirteenth century, in the time of Jenghis Khan, there would seem to be little doubt that Samarkand, Merv and Balkah were cities approaching a million inhabitants each; while in the time of Alexander the Great, who for two years made his headquarters at Samarkand, the inhabitants were able to present a more formidable resistance to his army than any other people encountered by him.

In the same line it is also instructive to notice the many indications of a constant emigration from this center. By far the best theory of the origin of the Aryan languages would fix it in Bacteria, from which center Aryan speaking people in prehistoric times migrated to India on the one side and to Persia and Europe on the other. This, too, was the probable center of the Mongolo-Tartar races, whose families radiated thence to Malaysia and China on the oneseide, to Turkey, Hungary and Finland upon the other, and, spreading out over the vast wastes of Siberia, across into America, and peopled the Western Continent.

When we come to know the whole history of those great Tartar migrations which in early times came so near overwhelming Europe, it is likely that we shall find that the gradual desiccation of the country through the climatic changes of which we have spoken had much to do with it all; and thus our studies in geology will aid materially in furnishing the key to some of the most interesting and difficult historical problems.

THE PRESERVATION OF MUSEUM SPECIMENS, BY DR. WM. HOUGH.

The paper summarized the experience gained during the past seventeen years in the treatment necessary to preserve museum specimens from attacks of insects, from dampness, dust, etc., especially from insects.

Other classes of animate nature having had their day, it is the turn of the insects, and, judging from their activities now, the state of affairs at the culmination will require the pen of a Dante. There is no rest for organic materials; when the cells ripen they start on a downward course fought over successfully by lower and lower beings to the end of the chapter, which is the beginning of other chapters.

It is the province of the museum worker to attack these agencies, as far as possible, and to him come chemistry and entomology. The subject is vital not only to the museum but to a vast number of people. Millions of dollars worth of fabrics are destroyed annually by insects and the female portion of Christendom have pinned their faith to camphor, alumn, and other pungent substances to their despair and the fattening of the moth.

The wonderful advance of chemistry has given us a number of substances useful for the deterring or extermination of moth. Some of these are disagreeable and dangerous, unsuitable for domestic use though available for the museum.

Dr. Hough explained the method of poisoning specimens practiced in the National Museum, and suggested that a portion of this process may be employed for domestic use. This may be done, Dr. Hough says, by securing an air-tight box. A packing box lined with manila or grocers' paper answers, placing the fabrics or objects therein, and after pouring in gasoline liberally, closing the lid tightly and leaving it for a day or so. It has been found that woolens, and furs, etc., treated in this way, will not be subject to the attacks of moth for a long time, as the oily substances in the animal fibers on which the moth feeds have been removed to some extent, leaving the fabric undesirable. Decorative objects, with which one does not come in immediate contact, may be brushed with a weak solution of corrosive sublimate in alcohol, one-fourth ounce to the quart.

PRIMITIVE MAN AND HIS STONE IMPLEMENTS IN THE NORTH AMERICAN LOESS.

BY WARREN UPHAM.

The recent discovery of a human skeleton at the base of the Missouri valley loess near Lansing, Kansas, as here related, brings evidence of a somewhat definite and great antiquity of man in this western hemisphere, and of his physical and racial character near the geographic center of our country at that early time. Newspapers in Kansas City gave the first accounts of this discovery last March, which thus, through the kindness of Hon. J. V. Brower, came to the knowledge of Prof. N. H. Winchell, of Minneapolis, president of the Geological Society of America, and myself, in Minnesota. We accordingly planned a visit to examine the locality and study the drift there in its relation to the recognized time divisions of the Ice age. Our visit was on Saturday, August 9th, in company with Profs. S. W. Williston and Erasmus Haworth, in charge of paleontology and geology at the State University, Lawrence, Kansas, and with M. C. Long, curator of the Public Museum of Kansas City, Mo., and Sidney J. Hare and P. A. Sutermeister, also of that city. Mr. Long had examined the locality in March, with Mr. Edwin Butts, of Kansas City, civil engineer of the Metropolitan Street Railway; and they had obtained the skeleton for the Kansas City Museum. Again, in July, the drift section and the skeleton were examined by Prof. Williston, who published a short notice of them, entitled "A Fossil Man from Kansas," in *Science* for August 1st.

An article which I present in the *American Geologist* for September, contains the following report of the discovery, as learned by inquiries and observations of the drift section and vicinity.

The skeleton was discovered February 20, 1902, in excavating a tunnel for storing fruit, vegetables, milk, butter, etc., in (and near the middle of the south edge of) the N. W. quar. of Sec. 28, T. 9 S., R. 23 E., close southwest of the Missouri river, and of the narrow bottom land that skirts it there on the southwest side; being on the farm of Martin Concannon and only a few rods from his house, at the distance of about two and one-half miles southeast from Lansing, and about eighteen miles northwest from Kansas City. His sons, Michael T. and Joseph F. Concannon, found the skull and most of the bones in their digging near the end of the tunnel, 69 to 71 feet

from its entrance, 2 to 6 feet from its east side, and $1\frac{1}{2}$ to 2 feet above its floor. The bones were disjointed, and were partly broken, decayed, and irregularly strewn about, but mainly they were huddled together in one place. The ribs and vertebræ were mostly decayed, so that they could not be preserved. Half of the broken lower jaw had been previously discovered, ten feet nearer the entrance and about one foot lower, that is, only about one foot above the floor of the tunnel; and near that spot a phalangeal bone was found imbedded in the wall of the tunnel by one of our party. The other half of the lower jaw, matching that found before, was with the chief parts of the skeleton. No bones besides those of a single human skeleton were found in the entire excavation of the tunnel; nor were any implements, artificially chipped stone flakes, or other articles of human workmanship discovered. Mr. Concannon and his sons supplied lights for our examination of the section displayed in the tunnel; and they kindly showed us where the bones were encountered, with detailed relation of the circumstances of their discovery. The skull was found entire, but had afterwards been accidentally broken into many pieces, which Mr. Long fitted together, depositing it in the museum; but the other bones, including both parts of the lower jaw, were at the time of our visit in the possession of Mr. Butts, at whose home they were examined by all our party. From where the skeleton was found, the overlying loess deposit has a thickness of 20 feet, as determined by Mr. Butts, to the surface of the ground above. Measurements of the tunnel were also made by him, showing it to be 72 feet long, about 10 feet wide, and about $7\frac{1}{2}$ feet high. Its walls are vertical to the height of about six feet, above which the top is flatly arched, with no other support than is supplied by the well known coherent texture of the loess formation in which this upper part of the tunnel is dug.

Upper Carboniferous limestone, determined from the abundant fossils collected by Mr. Hare in the region about Kansas City, outcrops at the site of the tunnel, and at much higher elevations close southeast, and somewhat farther away to the south, west, and northwest; but mainly it is covered and concealed by the extensive and very thick valley drift deposit of loess. The limestone, in a compact bed several feet thick, forms the floor of the tunnel, rising nearly two feet along its extent of 72 feet south-southeast into the bluff. Fragments of limestone and shale, with much earthy debris, rested on this floor along the area of the tunnel, having a variable thickness of 2 to 4 feet, but mainly about $2\frac{1}{2}$ feet, and being thickest and most stony, as seen in the section, at the east wall of the tunnel. In the debris which thus formed the lower third of the excavation, fragments of the limestone, and of its associated thin shaly layers, are common up to 6 inches long, and several masses one to three feet long were encountered. One

measuring 12 by 20 inches is imbedded in the head of the tunnel, only two or three feet from the site of the skeleton, and at a little greater height. The skeleton lay in the upper foot of the debris, or perhaps in a hollow of its surface; but the half of the lower jaw found separate, a foot lower, was certainly imbedded in the stony debris about a foot below its top where it is overlain by the loess. The Carboniferous limestone, from which its fragments in the debris appear to have been derived, outcrops within 50 feet southeast of Mr. Concannon's house, or only about 150 feet southeast of the tunnel, having there a height of 50 or 60 feet above the tunnel floor. Thence the rock outcrop gradually rises southeastward as a spur ridge, attaining within the distance of an eighth of a mile a height of fully 125 feet above the floor of the tunnel, or about 150 feet above the ordinary level of the Missouri river; and the overlying loess rises onward to a height of 200 feet, or more, above the river, within another eighth of a mile, reaching there the general level of the top of the river bluffs and adjoining uplands.

According to the surveys of the Missouri River Commission, the extreme low and high stages of the river here during the period from 1873 to 1885 were respectively 735 and 760 feet above the sea level, the vertical range being 25 feet. The extreme high water was in 1881, being the highest within the thirty-five years since Mr. Concannon settled here; but it was exceeded, probably six or seven feet, by the high water of 1844, of which a record was made at Kansas City. The skeleton was at a height of 11 to 12 feet above the high water of 1881, or 772 feet, nearly, above the sea; and the house is about 35 feet higher, with the limestone outcrop extending from near it to about 900 feet above the sea, while the higher crests of the loess near by are at 950 feet, estimated approximately.

The coarse debris in the lower part of the tunnel contained, so far as we could observe, no glacial drift pebbles or stones of foreign origin, though they are frequent in the thin glacial drift which overlies the rock surfaces near. Many of these drift stones and boulders are of the red Sioux quartzite, which overcrops 300 to 350 miles northward, in southwestern Minnesota, the northwest corner of Iowa, and the southeast part of South Dakota. It occurs in this Kansan drift mostly in small fragments, but often one to two feet in diameter, and occasionally even measuring five feet, or more, and weighing several tons. The southern boundary of the glacial drift, marking the limit of the continental ice-sheet in its extreme extension during the Kansan stage of the Glacial period, is at a line passing from east to west, as mapped by Chamberlin and McGee, about 12 or 15 miles south of the Kansas (commonly called the Kaw) river, and 25 or 30 miles south of Lansing.

Above the debris, which exhibits no marks of water assort-

ing and deposition, the section, very clearly seen on each side and at the end of the tunnel, consists for its upper two-thirds of the very fine siliceous and calcareous yellowish gray silt called loess, containing no rock fragments nor layers of gravel and sand, excepting a thin layer of fine gravel, with limestone and shale pebbles up to a half inch in diameter, which was noted by Mr. Butts near the roof of the tunnel, having a thickness of about four inches and an observed extent of some 30 feet. Soon after the skeleton was imbedded in the stony debris, or lay exposed on its surface, the geologic conditions that appear to have long prevailed were somewhat suddenly changed, and there ensued a more rapid deposition of the very fine waterlaid loess, deeply enveloping the bones before they had time to be generally removed by decay under the influences of the weather and infiltrating air and water. From the horizon of the skeleton, the loess extends up to the surface, a vertical thickness of 20 feet, and continues in a gently rising slope to a slight terrace on which Mr. Concannon's house stands. With similar irregularly eroded slopes, the loess continues upward to the general elevation of about 200 feet above the river within a distance of a fourth of a mile to a half mile southward and westward, attaining there a general level which was probably the surface of the river's flood plain at the maximum stage of the loess deposition. This plain appears to have been built up by gradual deposition from the broad river floods during many years and centuries, and to have stretched then over the present valley and bottom land of the Missouri, in this vicinity two to four miles wide, from which area it has been since removed by the river erosion. The great valley, as to its inclosing rock outcrops, is of preglacial age; it was not much changed by glacial erosion and deposition of the boulder drift; but it was deeply filled by the loess, in which the valley was afterward re-excavated.

Professor Williston noted a distinct darker layer of the loess, mostly about two inches thick but in part merely a threadlike line, traceable continuously through all the 72 feet of the west wall of the tunnel, running about 3 to 4 feet above the limestone floor, and one foot or a little more above the base of the loess. Pegs driven by our party at the line of this stratum along all its extent were seen to be in a straight plane, which by a hand level was found to have a descent of 7 or 8 inches from south to north in this distance. Other lines of almost horizontal stratification exist, but are less observable, throughout the loess, which is thus clearly shown to be an aqueous deposit. Several small gastropod shells were found in it by members of our party, but they were too delicate to be preserved for determination of their species. Three others, which have been carefully preserved by Mr. Butts, are said to have been found at the same place with the skeleton.

The admirable investigation of the physical and chemical

characters of our loess deposits by Chamberlin and Salisbury in the paper of their joint authorship, "The Driftless Area of the Upper Mississippi Valley," published in the Sixth Annual Report of the United States Geological Survey, 1885, leaves no ground for doubt that the loess of the Mississippi and Missouri valleys was derived mainly from the North American ice-sheet, being a deposit of the flooded rivers during a stage of abundant ice melting, with considerable redistribution over the interfluvial upland areas by winds. A few years later, in 1891, an equally important work by McGee, "The Pleistocene History of Northeastern Iowa," appeared in the Eleventh Annual Report of the same survey, presenting most satisfactory and conclusive evidence that the chief stage of abundant and rapid deposition of the loess was when the ice-sheet still covered a large part of Iowa and stretched thence very far northward, but after it had relinquished the outer area of its drift, which extends south to central Missouri and northeastern Kansas. In 1894 a chronological classification of the series of our North American drift formations was published by Chamberlin in chapters which he contributed to the revised third edition of Prof. James Geikie's "Great Ice Age." Within the next four years this very useful classification, employing geographic nomenclature, was extended, and in part corrected, by Calvin, Bain, and others, of the Iowa Geological Survey; Leverett, of the U. S. Geological Survey; and the late Dr. George M. Dawson and his associates in the Geological Survey of Canada. It may also be added that the labors of Todd in Missouri and South Dakota, Winchell in Minnesota, and the present writer in Minnesota, North Dakota and Manitoba, have likewise contributed toward our present systematic view of the sequence of events during the Ice age in this region, which must be brought before the reader to indicate the antiquity of the Lansing fossil man.

High epeirogenic elevation of the areas which became glaciated, both in America and Europe, to altitudes at least 1,000 to 4,000 feet above their present heights, as shown by submerged valleys and fjords, appears to have been the cause of the snow and ice accumulation of the Glacial period. The North American ice-sheet, in its time of general extension, had at least one very important interval of recession and readvance. The preceding time of ice accumulation is named the Albertan stage of the Glacial period, from the province of Alberta, Canada, and the ice-sheet then reached to southern Iowa; the interglacial retreat of the ice border, uncovering a wide belt as far northward, probably, as the south half of Minnesota, is called the Aftonian stage, from stratified beds with peat deposits covered by later glacial drift at Afton, Iowa; and the ensuing maximum advance of the icefields, to the outermost limits of the glacial drift in Kansas and Missouri, is the Kansan stage. These three stages undoubtedly were long;

and I am inclined to estimate the duration of each as about 25,000 years.

From the maximum of the Kansan ice extension, there was a recession, called the Buchanan stage from the county of this name in Iowa, followed by a renewed growth of the ice-fields, named the Iowan stage, each of which stages may have occupied 10,000 years. At the culmination of the Iowan stage the ice-burdened lands on both sides of the Atlantic sank from their former elevation to their present heights or mostly somewhat lower; and the more depressed areas have since been moderately re-elevated. By this subsidence, the temperate climate belonging now to the northern United States and southern Canada, with mild or warm spring and autumn and hot summers, was restored on the borders of the ice-sheet. Extensive melting over large marginal tracts of the ice followed; and the waters of this melting and of rains swept away much of the previously englacial and at last superglacial drift, depositing it beyond the ice boundaries. To this end of the Iowan stage belong the chief deposition of the loess and the Lansing man.

With slight re-elevation of the land and ordinary climatic vicissitudes, the mainly waning ice-sheet occasionally paused in its retreat, or even sometimes readvanced a little, whereby its bouldery drift became heaped at these times along its gradually receding boundaries, in belts of hills, knolls, and short ridges, called marginal moraines, which especially characterize the closing Wisconsin stage of the Ice age. Where the slope of the land declines northward, lakes were temporarily formed by the dam of the departing ice-sheet. One of these glacial lakes, named lake Agassiz, in the basin of the Red river of the North and lake Winnipeg, I have especially studied; and my estimate of the ratio of its shore erosion and beach accumulation, in comparison with those of lake Michigan and others of our Laurentian lakes during the Postglacial period, indicates for this vast lake Agassiz no longer duration than one thousand years, the time since the Ice age, according to many independent estimates being only about 7,000 years. Next comparing the duration of lake Agassiz with the whole time of glacial retreat from the Iowan and loess-forming stage, I think that their ratio may have been approximately as one to five; or, in other words, that the glacial recession from the Iowa boundary to the north end of lake Agassiz may have required no more than 5,000 years. With Postglacial time, we have, therefore, as the antiquity of the fossil man at Lansing, probably about 12,000 years; but the whole continuance of the Glacial period, from the beginning of the Algonian glaciation to the final melting of the ice-sheet in its Canadian central portion, according to these estimates, was probably about 100,000 years, ending some 7,000 years ago.

In a former paper contributed to the AMERICAN ANTIQUARI-

AN in the March-April issue last year, (vol. xxiii, pp. 81-88), I have explained how primitive men could migrate to this continent, coming from northeastern Asia and probably also from northwestern Europe, during the Glacial period. Even at the maximum of glaciation, they might advance along shores of land narrowly skirting the ice-sheet, like the land margin and the inland ice of Greenland. Mankind may have attained here, during the long course of our continental glaciation, nearly the same stages of culture as in their Solutrian and Magdalenian stages of Late Glacial time in Europe. There man doubtless existed as early as the beginning of the Ice age, fully 100,000 years ago, as I showed in a paper, "Primitive Man in the Somme Valley," published in the *American Geologist* for December, 1898; and even then the men of the Somme district and other parts of France and southern England made very serviceable paleolithic implements.

The Lansing discovery tells of a Glacial man, dolichocephalic, low-browed, and prognathous, having nearly the same stature as the average of our people today. As stated by Prof. Williston, he was contemporary with the *Equus* fauna, well represented in the Late Pleistocene deposits of Kansas, which includes extinct species of horse, bison, mammoth and mastodon, megalonyx, moose, camels, llamas, and peccaries.

It may reasonably be expected that many other evidences of the men of the loess-forming stage of the Ice age will be found, and will give some knowledge or hints of their mode of life. Two such items of testimony are already known in Iowa. Prof. F. M. Witter, superintendent of schools at Muscatine, in a paper read before the Iowa Academy of Sciences, in 1891, described "a rather rudely formed spear point of pinkish chert," found in the loess in that city about 12 feet from the surface, and an arrow point in the same loess section, "at least 25 feet below the surface." Both were discovered in place by Mr. Charles Freeman, the proprietor of a brickyard. Again, in volume XI of the Iowa Geological Survey, published last year, Prof. J. A. Udden, reporting on Pottawattamie county, writes: "In tunneling the cellars into the loess hills back of Conrad Geisse's old brewery, on Upper Broadway in the same city [Council Bluffs], it is claimed that a grooved stone ax was taken out from under thirty feet of loess and forty feet from the entrance to the cellar excavation. The ax has an adhering incrustation of calcareous material on one side, evidently deposited by ground water. The loess at this place has possibly been disturbed by creeping or by rain wash, but its appearance suggests nothing of the kind. It is quite typical loess for this region. The ax was discovered by the workmen engaged in excavating the cellar and immediately shown to Engineer Robert F. Rain, who superintended the work, and who still has possession of it."

The extinction of the elephants, horses, and many other

species of the animals that flourished here near the southern boundaries of the ice-sheet, may have been due to the prowess of the mighty hunters who killed and ate them, using their skins for clothing and as coverings of their lodges. Their stone-tipped spears and lances, even in that early time, many thousand years ago, were probably as effective, for the slaughter of such large animals, as any weapons in use by the Indians when Columbus discovered America.

NOTES ON THE FOSSIL MAN FROM KANSAS.*

In April of the present year, two young men living in the vicinity of Leavenworth, Kansas, in the excavation of a fruit storage cave near their residence, discovered a number of human bones. They paid but little attention to them, supposing them to be of little interest, but a brief reference to the discovery finding its way into the newspapers induced Mr. M. S. Long, the curator of the museum at Kansas City, a gentleman well known for his interest in, and as a collector of, things anthropological, to visit the locality. He recognized the scientific value of the find and secured such as remained of the bones discovered. Unfortunately, while the larger part of it, if not the complete, skeleton had originally been present, many of the bones had been mutilated beyond repair or lost. A newspaper account of the find was widely published as that of a glacial man.

S. W. Williston, of Lawrence, visited the locality and has given the following account of it.

The tunnel or cave excavated by the Concannon brothers is directed horizontally into the side of a hill to a distance of seventy-three feet, near the mouth of a small though deep ravine opening on the flood plain of the Missouri River, nineteen miles northwest of Kansas City, and within a few miles of Lansing, Kansas. The skeleton was found at the extremity of the tunnel twenty-three feet from the surface above, as determined by a ventilating shaft dug near by. The floor of the tunnel is a heavy stratum of Carboniferous limestone six feet in thickness, that outcrops at its mouth. The material excavated, nearly uniform in all parts of the tunnel, is river loess or alluvium, interspersed here and there by limestone fragments.

The age of the skeleton is evidently post-glacial, but is nevertheless very great, its horizon is about twenty feet above the highest water mark of the Missouri River and mere than fifty feet above its present bed. Add to this at least twenty feet of river alluvium covering the fossil and we have evidence of a change of altitude in the Missouri River since the deposition of the fossil of at least forty and probably fifty feet. That is, the skeleton was deposited during the period of depression following the glacial epoch, during the time of the so-called *Equus* beds, the time of *Elephas*, *Mastodon*, extinct bisons, moose, camels, llamas and peccaries. I see no other possible conclusion to be drawn. I have examined the later Pleistocene deposits in Kansas in many places and have fossils of this sub epoch from all parts of the state. I am confident that the Lansing man belongs in the same fauna.

This find is important in that it turns the table on those geologists and archaeologists who have been so confident of their own position and so condemnatory of those who differed from them. It also brings the archaeological horizon of America more into accord with that of Europe, though there is an entire period still lacking, viz. that which is marked by paleolithic relics and by the presence of extinct animals, and by fossil man.

The Editor takes pleasure in referring to the article by Prof. Warren Upham, for his opinion, as well as that of Prof. F. G. Wright and Prof. Winchell, will have great weight among the scientific men throughout the globe.

*These notes were printed before the article by Prof. Upham was received.

FINDS IN AMERICA.

REMAINS OF PRE-HISTORIC ANIMALS.—"A remarkable discovery of mastodon or mammoth bones, has just been made by a party of Japanese workmen, on Union Island, near Stockton, Cal., according to recent press dispatches. Confronted by what they supposed, to be the root of a tree projecting from the ground, they proceeded to dig out the obstruction with shovels, and, speedily unearthed the shattered fragments of a tusk measuring eight and a half feet long, and thirteen inches in diameter at the broadest end. Continuing their search, they were rewarded by finding a large skull measuring four feet across at the eye-sockets. In addition to this, seven vertebræ came to light; a shoulder blade two feet broad, and half a dozen ribs each six feet in length, together with a piece of leg bone."—*The New Century*, June 1902.

MR. M. H. SAVILLE, has returned to New York, after a successful winter's work of excavation in the Zapotecan tombs, of Culiacan near Oaxaca, with the Loubat expedition of the American Museum of Natural History.

A COPPER PICKAX FOUND.—An extremely interesting relic of bygone ages, has just been dug up on the shore of Lake Gogebic, northern Michigan, by A. C. Hargraves, of that locality. It is a pickax of tempered copper that had apparently been used in pre-historic times by people dwelling along the lake. The metallic part of the pick is twenty-three inches long and about half an inch thick. It tapers to a point at either end, and is as finely tempered as a piece of tool steel. At the centre is a place where the tool was bound by thongs to a handle of wood. It is so hard that a steel file makes no impression on the copper. The art of tempering the red metal is unknown at the present day. Occasionally tempered copper knives have been dug up in this region, but this is the largest tool ever found.—*Signs of the Times*.

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CREATION LEGENDS IN BABYLONIA.

On cuneiform tablets which date from the seventh century B. C., and which represent copies of much older originals, we read the story how once upon a time, before even heaven or earth existed, the waters covered everything; it was a period when confusion held sway. This confusion is symbolized by a monster known as Tiamat, whose name, signifying "the deep," is a survival of the very primitive notion found in various parts of the world that makes water a primeval element. The end of Tiamat's sway, is foreshadowed by the creation of the gods, tho' we are not told in what way the gods were produced. For the Babylonian theologians it was sufficient to in-

dicating that the gods are the representatives of order arrayed against Tiamat, the symbol of chaos. Creation, in the proper sense, follows as the result of a conflict between chaos and order, in which the gods eventually prevailed.

BURIAL URN IN MICHIGAN.—A funeral vase is now on view in the American Museum of Natural History, New York. Its circumference is 36 inches; height over 12 inches; contains a skeleton and a human head. It was in an ancient burial mound which was partly destroyed. Burial urns are common in Tennessee, but this is the first one found in the far north of Michigan.

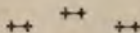
EDITORIAL NOTES.

RECENT EXPLORATIONS.

The department of anthropology of the *American Institute*, has maintained expeditions in several parts of the United States, and in British Columbia, Mexico, Central America, Bolivia, Peru, Greenland, Siberia, Japan, Corea, and China, resulting in large additions to the collections and furnishing much material for description. W. Jochelson and W. Bogoras have entered upon a new field of research on behalf of the Jesup North Pacific Expedition in the extreme northeastern part of Siberia. Their investigations among the Chukchee, Koryak, and Yukagheer tribes on the coast of the Sea of Okhotsk have been completed, and the material collected by them has been forwarded to the museum. The collection of models of totem-poles made by John R. Swanton, of the same expedition, is noteworthy, and serves to illustrate the significance of these peculiar emblems. A well-preserved totem-pole, fifty feet in height, has been received from the Queen Charlotte Islands and placed in the open space of the stairway in the west corridor hall. A. L. Kroeber, has finished his field work in connection with the Mrs. Morris K. Jesup expedition to the Arapaho Indians, and the illustrated manuscript setting forth the results of these important investigations, is ready for publication. The field work of the Huntington, California, expedition, in charge of Roland B. Dixon, has also been completed, and the collections, are all on exhibition.

The explorations of M. H. Saville, of the Mexican expedition, have resulted in the solution of several problems concerning the architecture of the celebrated ruins in the vicinity of Mitla. A pre-Columbian map of "lienzo" on native cloth (a unique example of this class of American codices) and a map of Teotihuacan painted on maguey paper have been obtained. The exploration of the Delaware Valley has been con-

tinued by Earnest Volk, who has gathered important information relating to the occupation of the region about Trenton and bearing upon the evidence of preglacial man in America. Local archaeological explorations have been carried on among the rock-shelters near Westchester and in village sites and shell heaps on Long Island, especially those near Oyster Bay and Glen Cove, and much of importance relating to early Indian life has been learned.



THE CAMPANILE TOWER which so suddenly fell on July 14, was begun in 992, just one thousand years ago. It was completed in 1514. The total height was 323 ft., from which altitude a glorious prospect was presented. The tower was constructed of red brick, coming to an apex in the usual Venetian style, and surmounted by a roof of green tiles. The tower was one of the few monuments which have survived from the so-called dark ages, and yet it has stood through all that period called the middle ages to the beginning of the 20th century. It would be interesting, if we had space, to review the changes in architecture which have occurred since its erection. While the Egyptian, the Assyrian, the Babylonian, Persian, Grecian and Alexandrian preceded it, yet the Norman, the Gothic, the English Gothic, the pointed Gothic, the Italian, the Saracenian, the Geometrical Gothic, the modern Italian, the modern English, have followed. If compared with the Native American structures this tower which has fallen may be supposed to have been built earlier than any of the famous towers and temples of Mexico, and perhaps even earlier than those which are now in ruins in Guatemala, Honduras and Yucatan, and even earlier than those which were erected by the Incas of Peru.

The history of the various temples in China is somewhat uncertain, and yet it is probable that there is not a pagoda, or even a tower, standing in that land of the ancients which dates as far back as does this tower which bears the name of St. Mark. In fact we may regard it as an index on the dial of time—the rising sun of ancient architecture shone upon it upon one side, the meridian sun of modern architecture threw its shadow upon the top, and the glories which shine in the sky of the present were reflected upon its western side, but it has fallen now before we have learned either the beginning or the end of the wonderful structures which have existed and are to exist.

The event is fraught, moreover, with many lessons, and should lead to a greater interest in the study of the ancient and the modern works which man's skill and thought have created to beautify the world.

BOOK REVIEWS.

THE INDIANS OF TO-DAY, by George Bird Grinnell, Ph. D. Illustrated with full page portraits of living Indians. Herbert Stone & Co., New York and Chicago. MDCCCC.

This work is one of the products of the Omaha Exposition and very suitably supplements the various reports and magazine articles which attended that exhibition. It moreover comes between that exposition and the more pretentious and important one which is to appear at St. Louis in the year 1904.

The mission of the book has not been fully accomplished, for the appearance of the Indians at Omaha should be only an introduction to a still larger and more complete representation of them at St. Louis.

There doubtless will be at St. Louis the usual number and variety of prehistoric relics, for that city is in reality at the very center of the Mississippi valley, and the local collections are already very numerous in the vicinity.

There will also, in all probability, be many specimens of the more recently manufactured articles of the same people, for the study of such has become a fad with the American people. The Indian has at last been found to be an artist in his work, and his native taste has at last become known and secures the admiration of the more cultivated.

Basketry and pottery, feather work, textile fabrics, wood carving, grotesque and finely carved stone images, strange as they are, have already secured attention, and books have been written concerning these, and the magazines are full of articles which describe them as they are discovered. But the fact that there are so many live Indians and that they are likely to appear at the great exhibition, makes this work doubly acceptable. One of the advantages offered by it is, that the author, Mr. George Bird Grinnell, is so well acquainted with the Indians as they are, and has made his descriptions as comprehensive as possible. Another advantage is that his publishers at great expense have taken the pains to present portraits of nearly all the prominent chiefs which are now living, and has represented them in their native costumes, as they now are made. Still another advantage is that the peculiarities of the Indians are depicted both in the pictures, and the letter press, their tribal differences are shown and their actual condition portrayed. The description might to be sure have been more definite and specific and a little more pertinent to the portraits given, still a Bird's eye view is given of the social condition, geographic location and present status of the different tribes, so that we have a double picture of the people as they are.

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THE INTERNATIONAL MONTHLY—a Magazine of Contemporary Thought, Burlington, Vt.

This is one of the most valuable Magazines in the United States. It has the same character as the British Quarterlies and is hereafter to be published as a quarterly. For the scholarly man it is worth a dozen of the cheap monthlies. The articles are varied in their subjects, art, archaeology, comparative religion, sharing a place with general literature, jurisprudence and the drama. An article on the laughter of Savages, by James Tully, published a year ago, was a valuable contribution. Another on New Excavations in Aegina, by A. Fortwangler, is very instructive.

PRIMITIVE SEMITIC RELIGION TODAY, a record of Researches, Discoveries and Studies in Syria, Palestine, and the Semitic Peninsula, by Samuel Ives Curtis, Prof. of O. T. Literature, &c, Chicago Theological Seminary. Fleming H. Revell Company, Chicago, New York, Toronto. 1902.

The impression formed from reading this book is that there are many religious customs practiced at the present day in various parts of the world which greatly resemble those described in the Bible as common in very ancient times. Many of these customs resulted in the erection of certain structures such as altars, shrines, high places, "chairs," sacred groves, temples, pillars, phallic symbols, not to speak of pyramids and other more pretentious works. Civilization and Christianity have had the effect to change the customs, and sometimes to destroy and do away with the tokens of them, but religion is very tenacious and holds all these very sacred.

To illustrate. It was the custom in this country in prehistoric times to erect shrines and temples and altars on high places, to place "seats" or "chairs" in sightly places, to consider mountains as the home of the divinities, to erect pyramids and lofty teocalli in imitation of them, to consider the shedding of blood as necessary to appease the divinity, to orientate temples in order to worship the sun, to offer captives in sacrifice to the sun, to make pilgrimages to sacred places, set up pillars and phallic symbols, to consecrate houses by burying slaves beneath the corner posts, to consider fire as sacred and as a sign of the acceptance of sacrifice, to use lustrations in religious exercises, and hundreds of other customs; the specific point with Prof. Curtis was to discover the nature of the Semitic customs and ascertain whether they were primitive or were subjects of revelation, but it is not in the customs or even in the structures or external things that the proof of revelation is to be found, but rather in the thought and the standards of character. Such is the conclusion which we understand the author of this book to have reached, a conclusion which gives great force to the study of the Scriptures, especially when that study is connected with the study of archaeology and comparative religion.

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A NEW ESKIMO GRAMMAR. Grammatical Fundamentals of the Inuit Language, as spoken by the Eskimo of the western coast of Alaska. By the Rev. Francis Barnum, S. J., of Georgetown University, B. C. Boston: Ginn & Co. 1901. Large 8vo. pages 384.

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NATIONAL GEOGRAPHIC MAGAZINE, June, 1902.

THE CARIBS. When Columbus landed at Haiti on his first voyage, he heard much of the warlike people to the south who ravaged the more peaceful natives of Haiti and the northern islands. But it was not until the end of 1493, on his second voyage of discovery, that he landed at Guadeloupe, the stronghold of the Caribs, and first beheld the cannibal race. Washington Irving, in his "Life and Voyages of Christopher Columbus," describes the horror of the Spaniards when they found human limbs suspended from the beams of the houses as if curing for provisions. "The head of a young man, recently killed, was yet bleeding. Some parts of his body was roasting before the fire; others boiling with the flesh of geese and parrots."

The whole archipelago, extending from Porto Rico to Tobago, was under the sway of the Caribs. They were a warlike and unyielding race, quite different from the feeble nations around them. Of the thousands of these fierce people who dominated the Caribbees four centuries ago, only a few hundred descendants remain. In the northern part of St. Vincent a few Caribs are still left, and in Dominica are a few others.

The Caribs were also found in Guiana and along the lower Orinoco. Spain condemned them to slavery, but they were not much molested by her because of their fierce character. In later years the English and French fought bloody wars with them. St. Vincent became their last

stronghold. In 1790 England transported 5,000 Caribs from St. Vincent to the Island of Ruston, where many of them passed to Honduras and Nicaragua.

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ANNUAL ARCHÆOLOGICAL REPORTS, 1901, being part of the appendix to the reports of the Minister of Education, Ontario. Toronto, 1902.

This report contains information concerning the accessions to the museum and such explorations as have been conducted under its auspices. The following are its themes:

1. Accessions to the museum, from 22,130 to 23,809, or about 11,000.
2. Notes on Relics, with illustrations, also ossuaries, mound earthworks, fish weirs, Indian village rites, animal remains, wampun belts. 40 pp.
2. Notes on Huron Villages, including trails and Indian remains, &c., also illustrated. 50 pp.
4. Notes on Relics—Victoria, by Geo. E. Laidlaw. 8 pp.
5. Canadian Pottery, by F. W. Waugh. Illustrated. 6 pp.
6. Article on the progression of the civilized Iriquois of Ontario, by David Boyle. 16 pp.
7. Ethnological Observations in South Africa, by Geo. E. Laidlaw. 18 pp. Illustrated. All of this illustrates the activity of the Society and the growth of the collection.

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BULLETIN OF THE GEOGRAPHICAL SOCIETY OF Philadelphia. Contents. Report of the Brown-Harvard Expedition to Nachvak, Labrador, in the year 1900, by E. B. Delaborre, Ph. D. April, 1902. Philadelphia Geo. Society.

This bulletin, with the numerous half-tone plates, gives an excellent idea of the topography of Labrador, and shows that there is an excellent field for the Naturalist to enter, and one which promises much satisfaction to those who enter it prepared for exploration. The impression, however, gained from this bulletin and from many other preceding books and reports, is that Labrador, notwithstanding its proximity to the various routes which were followed by the Norsemen in their discovery of the continent is likely to be disappointing to those who seek evidence here on the subject of the peopling of this continent. It is certainly true that the Northwest coast has yielded far greater results to ethnography and archæology than the Northeast coast ever has, and the probability is that if we are ever to learn about the time and manner in which this continent was first settled, it will be by studying the tribes and relics which are found in that section and comparing them with those found on the Asiatic continent.

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MEMOIRS OF EXPLORATIONS IN THE BASIN OF THE MISSISSIPPI. Vol. I. Quivira. By J. V. Brower. St. Paul, Minn., U. S. A. 1898.

This book commences with a map of the interior portions of Kansas, with the villages which have been identified by the author, marked upon it, and a plate as a frontispiece which gives a fine view of the prairies and streams, and chert quarries which are found in the vicinity. The map represents the line of Coronado's march. It contains also a plate with the buffalo as represented by Gomara in 1554. Thevet in 1558. Hennepin in 1701. The memoir pertains principally to certain archæological discoveries which have been made near the termination of Coronado's expedition at Quivira. Personal acknowledgments are made, curtailed to one page, but are very suitable under the circumstances. The historical introduction occupies eight pages. Geological and natural history survey occupies about ten pages, some of it written by S. R. Elliot. The discovery of the Elliot village site with prehistoric mounds and relics, occupies ten pages or more, with four full page plates. The Griffing village sites occupies ten pages, four of them being full page plates; the village sites on Mill Creek twelve pages, six of them full page plates, representing chipped instru-

ments, etc. Earlier explorers, such as Prof. Goodnow, Prof. B. F. Mudge, occupy four pages, with two cuts. The discovery of flint instruments on the Smoky Hill River fills four pages more, with one portrait of William J. Henderson, and a plate of tomahawks. Prof. Udden, of Bethany Academy has a village named after him. The McArthur village site is described, and the implements discovered are portrayed on the full page plates.

A translation of Coronado's letter to the king, and the relation of Richard Hakluyt, and the narrative of Casteneda and Icazbalceta, are all given in full; also Gen. Simpson's location of the site of Quivira, and Bandelier's description of the route followed by Coronado, followed by three full page plates. The conclusion is given in Bandelier's language.

A great deal of courtesy is shown by the author to the various gentlemen who have written on the subject, and full credit is given them.

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MEMOIRS OF EXPLORATIONS IN THE BASIN OF THE MISSISSIPPI. Vol. II. Querahay. By J. V. Brower. St. Paul, Minnesota, U. S. A. 1899.

This volume supplements the Vol. I, called Quivira. It commences with a view of Smoky Hill, MacPherson county, and has a map or chart with village sites marked upon it. The village sites come to an end on the plains overlooking Kansas valley and marks the northeast limit of Coronado's march.

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SMITHSONIAN INSTITUTION. Instructions to Collectors of Historical and Anthropological Specimens, by William Henry Holmes and Otis Taffton Mason. Washington Government Printing Office.

This pamphlet is especially designed for collectors in our new possessions. The instructions in reference to sculpture and carving, the ceramic and textile art, also art in metal, also those which relate to religions, such as sacred places, priesthood, native pantheons, worship, private religion, and religious literature, are especially pertinent.

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PRELIMINARY SKETCH OF THE MOJAVE INDIANS, by A. J. Kroeber, from the *American Anthropologist*; Vol. 4, April and June, 1902. New York. G. P. Putnam's Sons, 1902.

The Mohaves lived near the Pueblos, the Navahos and the Apaches, but were strictly California Indians. They have no totemic system but their religion consists more in the individual relations with the supernatural beings than with animal totems. The importance of dreams is with them very great, and their ceremonies are directed by some one who has had a dream. The absence of symbolism also allies them to the California Indians. The art of the Mohaves consists chiefly of nude painted decorations on pottery. They have a creation myth resembling that common in the southwest.

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"YMER." Tid skrift utgifven a Svenska Sallskapet for Antropologi och Geografi. Stockholm, R.-B. Nordiska Bokhandeln, (f. d. Samson & Wallin. 1 dra-Haft also zdra Haft.

The first of these tidskrift has an article upon the archæology of Costa Rica, by C. V. Hartman, with many illustrations. It treats of the temple, and tombs at Mercedes; also, the symbols, with illustrations, and contains a number of plates which represent the stone idols found there. It has also an article on the Kitchen middens of Denmark, by Oscar Almgren.

The second contains an account of A. E. Nordenskjöld's polar finds, by A. G. Nathorst, with maps and cuts. The folding map shows that the lands of Europe, Asia and America form a circle around the polar sea. Behring Straits form a narrow opening to the circle upon the other side. It is a very suggestive map, and furnishes a key to an explanation of the formation of the continents.

BOLETIN de la Sociedad Geografica de Lima. Anno XI. Tomo XI Trimiestre Secundo. (Julio, Agosto Setiembre) Lima. Imprentay Libreria de San Pedro. Calle de San Pedro N. 96, 1901.

This bulletin treats mainly of the linguistics and grammar of the Quichua and other tribes in South America. The Society is apparently doing good work in this line.

Communications del Musco Nacional de Bueno Aires. Bueno Aires, 6 de Diciembre de 1901. Tomo I. No. 10.

LAGEOGRAPHIE.

Bulletin de la Societe de Geographie. Publie tous les mois par de Baron Hulot, Secretaire general de la Societe de Geographie, et. M. Chas. Rabot, membre de la commission centrale de la Societe de Geographie, Secrtaire de la Redaction.

Abonnement: Paris, 24 fr.—Departements, 32 fr.—Etranger, 28 fr. Le Numero: 2 fr. 50. Paris, Masson et Cie, Editeurs, 120, Boulevard Saint Germain (6e) 1902.

This number contains an article entitled "Explorations in Morocco with photographs and maps, by Dr. F. Weisgerber; another, on the operations of surveying the arc of the meridian on the equator, by R. Bourgeois. The society seems to be in a flourishing condition.

MITTHEILUNGEN DER ANTHROPOLOGISCHEN GESELLSCHAFT IN WEIN, XXXI. Band (Der neuen Folge XX. Band) VI. Heft. Miteiner Tafel, und 193. Text. Illustrations.

WIEN. In commission bei Alfred Holder, k. u. k. Hof-und Universitats Buchhandler, 1900; also, XXXI. Band 1901.

SEPTEMBER MAGAZINES RECEIVED.

The Antiquary, September, 1902. London; Elliot & Stock, 62 Pater Noster Row.

An interesting article on "Moated Mounds," by I. A. Rutter in this number, conveys the information that the castles, after the time of William the Conqueror, were often confined within an enclosure with an earthwork mound surrounding it. Sometimes, owing to the nature of the ground, a citadel will present from the outside the appearance of a great mound, while from the court within it has a slight predominance. The only separation between the court and the mound is a ditch. The enquiry arises whether this may not have come from the prehistoric custom of erecting walled enclosures with the ditch inside, and whether we have not another analogy between the earthworks of the Ohio valley and those of Great Britain.

Biblia, September, 1902. Meriden, Conn. Vol. XV., No. 6.

This number contains an interesting article by our esteemed contributor, Mr. Joseph Offord, on A New Science of History, also Notes on Egypt in the Neolithic and Archaic Periods, and other interesting articles.

Man for August contains articles on Prehistoric Egyptian Pottery, by W. F. M. Petrie; An American View of Totemism, by E. S. Hartland; also ditto, by N. W. Thomas,

THE
American Antiquarian

VOL. XXIV. NOVEMBER AND DECEMBER, 1902. No. 6

PYRAMIDS AND PALACES IN AMERICA.

BY STEPHEN D. PEET.

We are now to take up the study of the pyramids as furnishing another illustration of the beginnings of architecture. It is to be noticed that there were different kinds of pyramids, but they all appeared at a period just following the opening of history and may be regarded as among the earliest structures erected during the historic period, the only exception being those found in America at the time of the discovery, and these may be said to really belong to the historic stage of progress, if not to the historic period. The point which we are to make in connection with the pyramids is that they mark the type of structure and the form of religion which prevailed at the earliest period, but which grew out of the structures and the religious beliefs which prevailed before they appeared. It will be profitable to us to draw the comparison between them and see what points of resemblance and contrasts there are to be found, giving especial attention to the motives and beliefs which resulted in the erection of these massive structures.

We have shown already that there were rock cut structures and obelisks and altars, as well as tombs, in the various countries of the East, but whether the pyramids preceded or followed these, remains at present uncertain. Still if we take the line of architectural development for our guide, we would naturally conclude that the pyramids were all subsequent to the erection of the rude stone monuments, and these were subsequent to the mounds and caves, the line of succession making it appropriate to consider the pyramids after the ruined cities and the rock cut structures.

In treating of the subject we shall begin with the Pyramids of Egypt and show their purpose, manner of construction, date of erection, and the motive that ruled, and afterward take the pyramids of Babylonia, and follow these with a description of the pyramids of America.

I. Our first inquiry will be in reference to the pyramids of Egypt and the contrast between them and those of other lands. It is well known that the earliest pyramids in Egypt

were erected by a dynasty of kings who had come into power and who brought the people into subjection, so that they were ready to obey their commands, and by this means, the resources of the kingdom were brought under their control. It is supposed also, that the religious sentiment had great sway. These pyramids stand upon the edge of a desert upon the western bank of the Nile, near the point where the river divides into its many mouths or outlets, showing that the dynasty which was in power held control of the lower Nile and were in a comparatively high stage of development.

The three pyramids of Gizeh, called Cheops, Chephrens and Mycerinus, are supposed to be the earliest, though there are many others of these massive burial vaults near the metropolis of the ancient city of Memphis and scattered along the



PYRAMID AT SAKKARAH.

plateau of the Libyan desert for a distance of 25 miles. They were all erected as monuments of the kings and designed to preserve the bodies of the kings in power, and were really burial vaults, though they were monuments to the kings and designed to preserve the body of the kings. It was the belief in immortality that was the ruling motive, but an immortality which consisted in the preservation of the material form rather than the survival of the spirit as separated from the body.

The first requirement for the actual construction of the pyramid appears to have been the leveling of the rock surface. This was followed by the excavation of a subterane-

The form of this pyramid shows that it was modeled after a series of mastebahs, one above another.

an chamber and the erection of a small truncated pyramid or mastabah in the center of the rock. If the life of the king were prolonged, he added new outside layers of stone, following the outline of the first structure, thus enlarging the mastabah or tomb, the pyramid arising in terraces, and really becoming a gigantic mastabah. The opening to the mastabah or tomb was below the pyramid and was reached by a long channel or passageway which had been cut out of the rock.

The size of the pyramids shows the great power which the king had, and at the same time illustrates the mechanical contrivances which were in use at the period. Still the expense of constructing the first pyramid was so great that it nearly exhausted the resources of the kingdom, and the successors to the first monarch were obliged to build on a smaller scale, and finally to cease pyramid building altogether.

The situation of the pyramids marked the dividing line between life and death. On one side we see the River Nile, with the luxuriant fields bordering the river, but on the other side all is desolation and dreary waste. The drifting sand shines under the glare of the noonday sun, dotted here and there with the crumbling remains of ancient tombs. The pyramids were illustrative of the belief of the people. According to this belief every individual consisted of three distinct parts; the body belonged to this world, the soul belonged to another world, and the double which belonged to the two worlds. A double was generally in the form of a statue and was preserved in the tomb. The pyramid itself, however, was the means of preserving the body, and the utmost precaution was taken lest the tomb should be opened and the pyramid be despoiled of the body. There was orientation practiced in connection with this pyramid. It was, however, an orientation which appeared only at the earliest period, an east and west orientation, proving that the worship was in all probability equinoctial, proving also that the erection of the pyramid had something to do with the rising of the Nile and the sowing time, and the harvest time, the inundation of the Nile being the source of life and prosperity to the people. The erecting of the sphinx near the pyramids was also suggestive of the religious belief of the people. It is not known at present what king erected the sphinx, but as it is situated east of the middle pyramid and in the immediate foreground, and was sculptured from the solid rock so as to look toward the rising sun, it is supposed that it was wrought out at the time when the equinoctial worship was prevalent and before the solstitial worship came into vogue.

To the ancient Egyptian the River Nile was a mystery. They believed that a god dwelt within its waters. It was perfectly natural that the temples should be made sacred to the gods which ruled over the waters, and that the lotus plants which grew in the waters of the Nile should be imitated in the pillars that adorned the temples. The trinity of the Egyp-

tian gods consisted of Osiris, Isis, and Horus. The images of these gods were placed in the temples, but there were no images in the pyramids or even outside of them, except the image of the sphinx, which was represented as having the form of an animal with a human head, and was regarded as a symbol of Horus, the early morning sun.

The association of the pyramid and temple is to be considered in this connection. There are temples in Egypt which were erected long after the days of the pyramids, and by dynasties which were entirely distinct from the pyramid builders, but the earliest temples are supposed to have been contemporaneous with the pyramids. The temple of the Sphinx shown



in the cut is proof of this. It was discovered in 1853. It lies below the level of the sand and was constructed by the pyramid builder. In a deep well in the corner of one of the rooms were found nine statues of Chephren or Cheops. The columns of this temple differ from those found in any of the later temples. They are mere massive blocks of granite without ornamentation, and support other blocks which form the roof of the temple; the principle of the pier and lintel being embodied in them but without cornice or capital, thus allying the columns with the architectural structures of the later

THE PYRAMID, THE SPHINX AND ITS TEMPLE period*

The magnitude of the pyramids of Egypt has impressed every one who has looked upon them; and yet the beauty and symmetry of the temples adjoining have called forth the admiration of all; as the contrast between the two classes of works strengthens the impression. This is illustrated by the

*The cut shows the veneering on the pyramid the rock below the Sphinx and the buried temple of the Sphinx.

description which is given of the pyramid, written by Mr. Ebers, the famous Egyptologist, as compared with the description of the temple at Karnak, written by Miss Amelia B. Edwards. Mr. Ebers says:

"We stand before the largest of the works of man which as we know the ancients glorified as one of the wonders of the world. Only by a comparison with other structures present in our memory, can any idea of their immensity be missed. While St. Peter's in Rome, is 430 ft. high, the great pyramids of Cheops is 482 ft. high, or 52 feet taller. If the pyramid of Cheops were hollow, the great cathedral could be placed within it like a clock under a protecting glass.

Neither St. Stephen's Cathedral of Vienna, nor that of Strasburg, reaches the height or the largest pyramid, and only the new tower of the Cathedral of Cologne exceeds it. In one respect no other building in the world can be compared with the pyramids, and that is, in regard to the mass and weight of the material used in the construction. If the tomb of Cheops were razed, a wall could be built all around the borders of France. If one fires a good pistol from the top, the ball falls half way down its side. "Time marks all things, but the pyramids mark time," is the Arabian proverb."

The following is Miss Edwards's description:

The great hall of Karnak and its columns are enormous. Six men standing with extended arms, finger-tip to finger tip, could barely reach around any one of them. The largest column casts a shadow 12 ft. in breadth. The capital juts out so high above one's head that it looks as though it might have been placed there to support the heavens. It is carved in the semblance of a full blown lotus, and glows with undying colors, colors that are still fresh though laid on by hands that have been dust 3,000 years or more. The beams are huge monoliths carved and painted, bridging the span from pillar to pillar, and darkening the floor beneath with bands of shadow.

Looking up and down the central avenue, we see at one end a flame like obelisk, and at the other a background of glowing mountains; to right and left, and through long lines of columns, we catch glimpses of colossal bas-reliefs lining the roofless walls in every direction. Half in light and half in shadow these slender fantastic forms stand out sharp and clear and colorless. Each figure is some 18 or 20 ft. in height. It may be, that the traveler who finds himself for the first time in the midst of a grove of gigantic oaks, feels something of the same overwhelming sense of awe and wonder, but the great trees have taken 3,000 years to grow and do not strike their roots through six thousand years of history.

Mr. A. H. Keene also says of the construction of the pyramids:

"It was formerly an Egyptian tomb 4 ft. square at the base and tapering up to a point. The Greek term 'pyramid' signifies 'pointed like a

flame of fire.' The pyramids of Egypt are in the first place the tomb of kings. The rise of this type has been ascribed to the 6th or 7th Dynasty 3400 or 3200 B. C. The Royal pyramids are numerous, but none have been the subject of architectural study except the largest. That of Medum, 400 B. C., seems to have been built over a mastabah, but it was sheathed with masonry, and brought to a point. The great pyramids of Gizeh have been supposed to have gained their great size from continued enlarging and recasing through a long reign. The pyramids are mainly cairns. They are solid masses of stone or brick, but each has a chamber with several passages leading to them which are carefully concealed, while false passages exist which are intended to deceive plunderers.*

The sides of the three great pyramids of Egypt face the four cardinal points of the compass. Cheops measures 750 ft on each of the four sides. It is 450 ft. in height, and covers an area of nearly 13 acres. Its estimated weight is about 7,000,000 tons.

There were changes in the construction of the pyramids. The first or oldest is the so called step pyramid of Sakkarah. The steps are six in number and vary in height from 38 to 29 feet, their width being about 6 feet. The dimensions are 352x396 feet, and 197 feet high. Some authorities think this pyramid was erected in the first dynasty. The arrangement of chambers in the pyramid is quite special. The claim to the highest antiquity is disputed by some in favor of the "False Pyramid of Medum." This is a step pyramid 115 feet high and shows three stages, 70, 20 and 25 feet high. This presents the form of the Mastabah more fully than any other pyramid and shows clearly how the pyramids of Egypt originated. The blunted pyramid of Dashur forms one of the group of four, two of stone and two of brick. The dimensions of these are as follows: 700x700—326 feet high; 620x620—321 feet high; 350x350—90 feet high; 343x343—156 feet high. According to Prof. F. Petrie there is a small temple on the east side of the pyramid of Medum. At sunset at the equinox the sepulchre chamber and the sun were in line from the adytum.

The sphinx near the pyramid of Cheops was oriented true east and may possibly be ascribed to the early pyramid builders. It could only have been sculptured by a race with an equinoctial cult. The east and west orientation is seen at the pyramids of Gizeh.†

It appears that pyramid building ceased after the sixth dynasty but was revived in the twelfth dynasty. Just before the Hyksos period King Amenhotep III. returned to the gigantic irrigation works of the pyramid building of the earlier dynasties. Two ornamental pyramids were built, surrounded by statues, and the king himself was buried in the pyramid near the labyrinth.

*See Staff-ord's *Compendium of Geography and Travel* "Central and South America," by A. H. Keene, London. Stanford & Co. 1901.

†See *Dawn of Astronomy*, P. 337, by Norman Lockyer.

II. We turn now from the pyramids of Egypt to those of Babylonia, but shall notice the contrast between the two classes. One of the points of difference is found in the manner of orienting the pyramids. Those of Babylonia are oriented towards the solstices, the corners towards the points of the compass. This has been taken by Mr. Norman Lockyer as evidence that the pyramids of Babylonia were older than those of Egypt, as solstitial worship is supposed to be older than the equinoctial.*

He says: "The east and west orientation is chiefly remarkable at the pyramids of Gizeh and the associate temples, but it is not confined to them. The argument in favor of these structures being the work of intruders, is that a perfectly new astronomical idea comes in, as quite out of place in Egypt, with the solstitial rising river, as the autumnal equinox was at Eridu, with the river rising at the spring equinox.

"We are justified from what is now known of the Nile dominating and defining the commencement of the Egyptian year at the solstices, in concluding that other ancient peoples placed in like conditions would act in the same way; and if these conditions were such that spring would mean sowing time and autumn harvest time, their year would begin at an equinox."

There are other evidences to prove that the pyramids of Babylonia were the oldest in the world, while those of Egypt are orientated toward the equinoxes, their sides toward the points of the compass.

The pyramids of Babylonia have a tradition connected with them which goes back to the earliest time. This tradition has been preserved in the sacred Scriptures. Various interpretations have been given to it and to the whole story of the Deluge with which it seems to have been connected. According to the celebrated author Ihering, the whole story of the Garden of Eden, the sin of the first pair, the banishment, the contest between Cain and Abel, was a pictorial representation of the progress of society from a primitive condition, up through the various stages. The change from a natural state, where the people fed upon fruits, was followed by the shepherd life, and that by the agricultural or the raising of fruit and grain, a contest occurring between the shepherds and agriculturists all represented by the story of Cain and Abel. The building of the first city was by the agriculturists, but the building of the first Pyramid was to escape the floods to which the valley of the Tigris and Euphrates was subject.

The confirmation of the story is founded on the fact that the first pyramid was actually erected to escape the floods which were so common in the valley of the Tigris and Euphrates. Whatever we may say about the correctness of this interpretation, we must conclude that the tradition at least

*Dawn of Astronomy, p. 366.

favors the extreme antiquity of the pyramids of this locality. The recent discovery by the party sent out by the University of Pennsylvania to explore the ruined cities in the valley of the Tigris, also confirms the theory. The opinion expressed by the chief of the party, Professor Hilprecht, is that the pyramids here were built perhaps as early as 6000 B. C., which would make them two or three thousand years older than those of Egypt. It is true that certain graves have been discovered in Egypt which carry back the date of the first or oldest race to a marvellous antiquity, but the pyramids here were certainly not built before the days of Menes, the first king, and no one claims for his reign a date earlier than 3500 B. C.

It is true that burials which belong to the Stone age have been found in Egypt. They carry us back to a more primitive stage, but the date of the Babylonian pyramids is supposed to be much earlier. The discovery of libraries at Babylonia containing tablets with cuneiform writing upon them carries back the date of the Babylonian civilization much further than that of Egypt and confirms the tradition in reference to the valley of the Tigris having been the original home of the human race.

The fact that the pyramids of Babylonia were built in imitation of mountains favors their antiquity. This confirms the tradition in reference to the ark resting upon a mountain, which shows that the pyramid builders here originally migrated from the mountains. The difference in the construction is to be noticed. The pyramids of Babylonia were ziggurats or towers and not pyramids at all, nor were they used for burial places, but rather the foundation for temples or shrines.

Many differences between the pyramids of Egypt and those of Babylonia may be traced.

1. The pyramids of Egypt were for the most part constructed for tombs and had no buildings upon the summit or in the immediate vicinity. The temple of the Great Sphinx, discovered in 1853 below the level of the sand, was constructed by the pyramid builders. This temple was, however, a tomb as well as a temple. Numerous other tombs of great interest have been discovered near the temples; that of Edtoui, the one at Sakkarah, the tomb of Beni Hassen, are supposed to belong to the same period.

2. The pyramids of Egypt were constructed out of heavy blocks of stone which, with incredible toil, were transported from the mountains upon the other side of the river and lifted to their height by mere brute strength. The pyramids of Babylonia were generally constructed out of earth, and were built in terraces; the ends were veneered with stone, pavements of stone being placed on the platforms or terraces, and either palace, or shrine, or temple being placed upon the summit.

3. The pyramids of Egypt were perfect pyramids. They were built in imitation of mastababs or primitive Egyptian houses, or tombs placed upon one another, thus making terraces, but before they were completed the terraces were filled with stone, and the whole was covered with a veneering of polished flint, which made them perfect cubes. The only room or house about them was on the inside or below the surface. The pyramids of Babylonia on the contrary were always built in terraces and were surmounted by a building of some kind, either a palace, a temple, or a religious house, and were never perfect pyramids. They resembled the pyramids of America much more than they did those of Egypt.

4. Another difference is shown in the fact that in Babylonia the pyramids were all orientated toward the solstices, the corners toward the points of the compass. "It is almost impossible to suppose that those who worshiped the sun at the solstice did not begin the year at the solstice, and that those who proposed to arrange themselves as equinoctials did not begin the year at an equinox. Both of these practices could hardly go on in the case of the same race in the same country. We have then, a valuable hint of the equinoctial cult of Gizeh, which in all probability was interpolated after the non-equinoctial worship had been first founded at Abydos and possibly Thebes."

5. We notice another difference between the pyramids of Egypt and those of Babylonia * "One of the oldest pyramids in Egypt is the so-called step pyramid of Sakkarah. The steps are six in number and vary in height from 38 to 29 feet, their width being 6 feet. Some authorities think that this was erected in the first dynasty by the 4th king, but was built after the pattern of a series of mastababs imposed on one another. There are 16 step pyramids in the valley of the Nile.

The question has arisen as to the relative antiquity of the pyramids of Babylonia, some having claimed that those of Egypt were the older, but others have given the precedence to those of Babylonia. The best authority, however, is Norman Lockyer, and he maintains that the pyramids of Egypt were built by an intruding race from Babylonia called the "new race," the name being taken from the fact that it was newly round.

The great pyramids of Egypt were built in the time of the 4th dynasty, but two or three distinct periods had passed before this dynasty began. The first period was marked by a people who were in the Stone age.

The second period was marked by the peculiar burials and the peculiar character of relics. The burial was in the circular grave with an immense number of pottery vessels arranged around the bodies, the deposit indicating that the people lived in circular huts.

* See *Dawn of Astronomy*, page 333

The third period was marked by burial in a mastabah or rectangular tomb, built in imitation of the dwelling house of the people, the body being placed in a cellar or well below the house.

The date of the earliest known pyramids in Egypt may be put down as about 3700 B. C. or 4200 B. C. There is conclusive evidence that the kings of Babylon built ziggurats or towers which were in reality step pyramids, as early as 4200 B. C. There was an equality of arts and the possession of similar tools in Chaldea and in Egypt at about the same time.

If this is a correct explanation, then we may regard the pyramid at Babylon as a monument of one of the most important events of history, as well as the reminder of a great convulsion of nature.

This does not, to be sure, fully account for the peculiar manner in which the pyramid was built, nor does it account for the fact that the different terraces bore different colors and were sacred to the different planets, the shrine upon its summit being sacred to the sun.

Least of all does it account for the presence of courts and columns and other peculiarities of construction such as have been disclosed by recent excavations. Yet notwithstanding all the discrepancies, the traditions of the past and the explorations of the present have combined to make the spot a memorable one.

All of these differences seem to confirm the opinion that upon this very spot near the mouth of the Tigris, the earliest civilization appeared, and from this as a center not only the historic but even many of the prehistoric races began their migrations, the tradition of the flood spreading from the center to nearly all parts of the world. It is also the opinion of the best Egyptologists that these and other pyramids in Babylonia preceded those of Egypt, the civilization of this region having reached a high point even when in Egypt the recently found race called the "new race" were in the stage of barbarism which was peculiar to the Stone age, the circular graves and the pottery vessels recently discovered being supplanted by the mastababs and pyramids which the immigrants from the East had introduced.

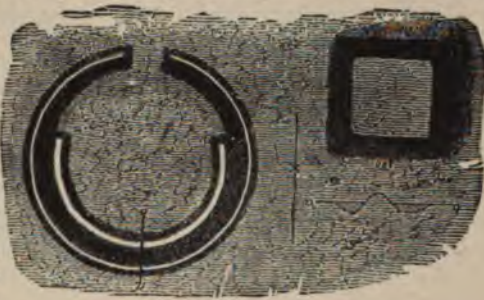
It is then to the pyramids of Babylonia that we look for the earliest tokens of civilization and for the earliest record of history.

III. The pyramids of America will next engage our attention. It is well known that there are many pyramids on this continent. Some of them, constructed of earth, are found in the Mississippi valley, others, made out of stone and earth combined, in Mexico and Central America, still others, made out of stone altogether, in Peru; a great variety of shapes being presented by the pyramids here. It has been the favorite

theory with certain writers, especially the celebrated LePlongeon, that the pyramids of Central America were exactly like the pyramids of Egypt, and were perhaps constructed by a colony from Egypt. In support of this opinion he refers to the various statues which in some respects resemble those found in the valley of the Nile, and claims that even the model of the sphinx has been discovered here. In order to do away with this visionary theory we shall show the probable origin of the pyramids of America.

It was very natural for the people upon this continent to erect pyramids or pyramid mounds for the purpose of raising their houses, and especially the houses of the ruling classes, above the surface, for by this means they could be free from the overflow of the streams, from the attack of wild animals, and from the malaria and heat, which continued upon the surface, and made the nights so uncomfortable and the people so liable to sickness, especially in tropical regions. The largest pyramids were erected here in the same latitude with those of Egypt and Babylonia, and many of the circumstances were similar, but this does not prove any connection between the builders.

It is certainly easy to trace a resemblance between the platform mounds and pyramids earth works of the Mississippi valley and the various pyramids of Mexico and Central America for they seem to have been built after the same general model, the terraces



PYRAMID MOUND IN OHIO

rising above one another in succession, with stairways or graded ways leading up to their summits upon either side. Many of them were placed inside of enclosures and had their sides oriented exactly as were the temples and pyramids in the central provinces. These platforms were surmounted by different official buildings.

A still more striking resemblance may be found in the so-called Chunkey Yards in the Gulf states, for these were generally placed in the center of the village and were used as the place of amusement for the people, the rotunda being at one end of the public square, and in all these respects resembled the tennis courts or gymnasiums which are so noticeable in Central America the very arrangement of the buildings and the yards suggesting a common origin.

This resemblance however, does not furnish any explanation of the origin of the pyramids in America, nor do they prove that the pyramid builders here have any connection with the

pyramid builders of the old world, but on the contrary they must be taken as another illustration of the law of parallel development, the agricultural life and sedentary state of the mound builders leading them to adopt the same form of religion and the same general customs which were adopted by the pyramid builders in the countries of the East.

It should be said that a theory has been advanced in reference to the pyramids of America which would make them the work of a mysterious race who once inhabited the greater part of the North American continent, and who constructed the platform mounds of the Mississippi valley, and erected the many storied pueblos of the interior, and the lofty terrace pyramids of Mexico, and filled one entire belt of latitude with the tokens of their presence.

This theory, however, would be decidedly misleading, for whatever we may conclude as to the time when this continent was first reached, or as to the direction which the first inhabitants took in their migration, the evidence is that all the struct-



PYRAMID AT ETOWAH.

ures which have thus far been discovered are the works of different tribes and races.

We are to notice, however, that the early stages of architecture are to be recognized on this continent, and what is more, the very influences and causes which led the nations of the East to erect their great pyramids and to make them their chief and most lasting monuments, led the natives of this country to erect their structures which have the pyramidal form. What those influences were is not easily determined. Yet it is probable that the mode of life or occupation, the social conditions, the religious belief and the mythological conceptions had as much to do with the forms of their structures as their mechanical skill had, and to these we must look for our explanation of the pyramids. It is well known that the pyramids of the East were built by an agricultural people who never settled in permanent villages or cities and were generally sun worshipers, and that temples to the sun were frequently associated with the pyramids.

The same may also be said of the pyramids of this continent, for there are no pyramids except in those regions where agriculture abounds, and where sun worship prevailed, but pyramids are the most numerous where sun worship and sky



worship prevailed with the greatest force. Many of the pyramids were to be sure erected under the shadow of great mountains, and there may have been an attempt to imitate the mountains in the size and shape of the pyramids, yet we do not learn that there are any shrines devoted to the mountain divinities, as personifications of the sun and moon and the heavenly bodies were very numerous, and nearly all the shrines and temples, as well as the pyramids, were devoted to their worship. In fact we may conclude that the pyramids of America had their origin in the same causes that led to the erection of the pyramids of Egypt and Babylonia, and that the same religious systems were embodied in them that were embodied in the great structures of the East, also those which relate to religions such as sacred places, priesthoods, native pantheons worship, private religion and religious literature are especially pertinent.

The pyramids of America interest us fully as much as do those of Egypt or Babylonia, though less is known concerning them, their builders, or even their history. It is not claimed that they are as ancient as those of the old world, nor is it maintained that as much labor and expense was laid on them, and yet their form and character and the manner of their erection are worthy of especial study.

Some of these pyramids were built in terraces designed for the support of palaces resembling the one shown in the cut which represents the governor's house at Uxmal.

It will be noticed in the first place that there were quite three

distinct regions on the continent in which pyramids were common, and three distinct races who were pyramid builders, the Aztecs having built the majority of those found in Mexico, the Mayas those scattered through Central America, and the far famed Incas having built those found in Peru.

It is to be noticed further that the style of building the pyramids varied according to the locality in which they were found, as those in Mexico are frequently placed upon natural elevations and owe their height to this circumstance, while those of Central America were generally built upon the same level, but reached to different heights according to the purpose for which they were designed, those which were to serve for the support of the palaces were built upon terraces spread over a large plat of ground, those designed for temples were compact and small, but reached a height which overtopped all other structures, while those designed for religious houses or for other purposes, varied in size and height.

There were many terraced pyramids scattered through the country on which large buildings were erected resembling those which were common in New Mexico. These, because of their size and shape, were formerly supposed to be communistic houses like the Pueblos of the north, and the theory was advanced that the people lived in the same manner. This, however, has proved to be a mistake, for all the pyramids of Mexico and Central America, as well as those of Peru, were built and occupied by the ruling class. Their very height and size impressed the common people with a feeling of awe for those who were in power and the many ceremonies which were conducted on the summit of the pyramids served to strengthen the feeling. It was a strange use to make of architecture and of art, and yet there was not a stairway which led up to the summit of a pyramid, nor a figure or ornament on the facade of any palace, or an image on any temple that rose above a pyramid, which did not contribute to the power of the priests and kings and increase the superstition of the people.

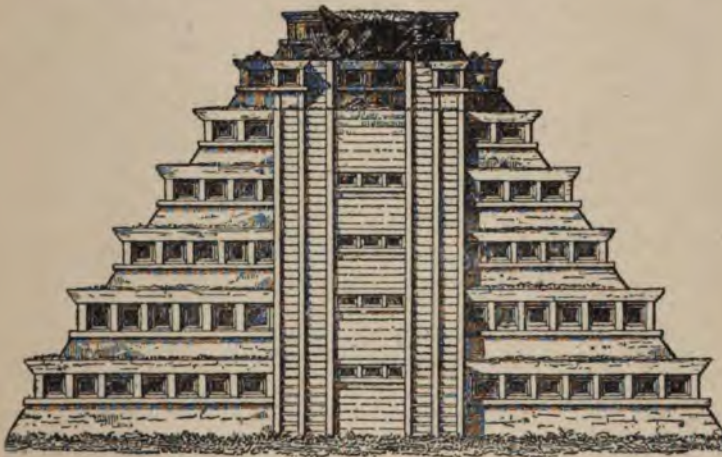
The element of terror was hidden in every ornament which was wrought by the hand of man, and served as a constant guard at the entrance of every temple and palace, the very height of the pyramids on which they were placed making the feeling all the more intense. It was an unconscious influence, for if the sense of the sublime was awakened by the height of the pyramids, the same sense was kept alive by the strange and grotesque figures which appeared on the facades of the palaces and the temples, the very stairways which served as the means of approach being so wrought as to be the most awe inspiring of all.

In this respect we may say that the pyramids of America were in great contrast to those of any other country, for while they were in themselves very plain, and simply served the

purpose of platforms to the temples and palaces, yet the association of the platforms with the buildings upon their summit was so close as to make them appear like one structures. The same spirit that pervaded the decorations of the facade: also filled the mass of the pyramids which supported them.

These points are to be borne in mind as we proceed, for it is not to the size or strength of the pyramids that we shall call especial attention, but rather to the peculiar mission which they performed in connection with the temples and palaces which were raised above them, the close combination of the buildings with the masses which supported them making them more interesting as objects of study.

As to the pyramids in Mexico, it is very plain that the majority of them were designed for the support of a temple or place of sacrifice, and as the height of the pyramid would make the ceremony all the more imposing and would give such effect to the sacrifice as to overawe the people and make them feel the power of the priests and kings. Thus people



PYRAMID AT PAPANTLA.

sometimes resorted to the mountains and placed their altars upon the heights which overlooked the valleys and there lighted their sacrificial fires. We referred to one such temple in another place. The following is the account furnished by Mr. M. H. Saville:

They are all situated upon the summit of pyramids, but were probably so placed for the sake of escaping the malaria and heat, and taking advantage of the cool breezes which would sweep over them at their height.

About a hundred and fifty miles north-westward from Vera Cruz, fifty miles in the same direction from Misantla, forty-five miles from the Coast, and four or five miles southwest from

the pueblo of Papantla, stands the pyramid shown in the cut, known to the world by the name of pueblo Papantla, but called by the Totonac natives of the region, El Fajin, "the thunderbolt."

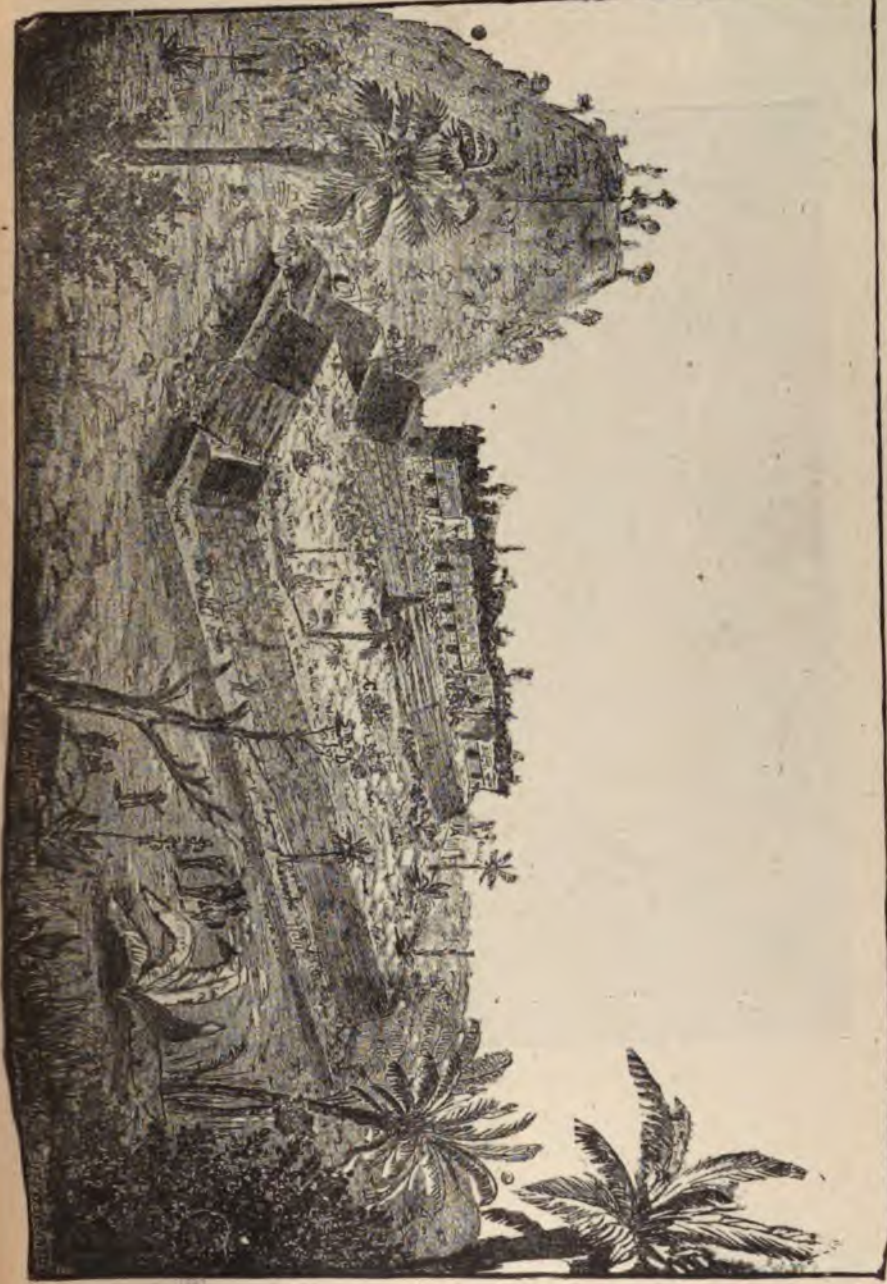
The pyramid stands in a dense forest, apparently not on a naturally or artificially fortified plateau, like the remains farther south. Its base is square, measuring a little over ninety feet on each side, and the height is about fifty-four feet; the whole structure was built in seven stories, the upper story being partially in ruins. Except the upper story, which seems to have contained interior compartments, the whole structure was, so far as is known, solid. The material of which it was built, is a sandstone, in regular cut blocks laid in mortar, although Humboldt, perhaps on the authority of Dupaix, says the material is deposited in immense blocks covered with hieroglyphic sculpture, the whole covered on the exterior surface with a hard cement three inches thick, which also bears traces of having been painted.

There was a temple at Xochicalco, the hill of flowers; this is a natural elevation, of conical form, with an oval base, over two miles in circumference, rising from the plain to a height of nearly four hundred feet. Traces of paved roads of large stones tightly wedged together, lead in straight lines towards the hills from different directions. We find the hill covered from top to bottom with masonry. Five terraces paved with stone and mortar, and supported by perpendicular walls of the same material, extend in oval form, entirely round the whole circumference of the hill, one above the other. Neither the width of the paved platforms, nor the height of the supporting walls, has been given by any explorer, but each terrace, with the corresponding intermediate slope, constitutes something over seventy feet of the height of the hill.

The very fact of its being a pyramid in several stories, gives to Xochicalco, a general likeness to all the more important American ruins. The terraces on the hill slopes have their counterparts at Kabah Cho'ula, and elsewhere; still, as a whole, the pyramid of Xochicalco, stands above all as its architecture and sculpture, presents a strong contrast with Copan Uxmal, Palenque, Mitla, Cholula, Teotihuacan, or the many pyramids of Vera Cruz. It must be remembered that all the graded temples in Anahuac or Mexico, have disappeared since the conquest, so that a comparison with such buildings as that of Xochicalco is impossible.

In the centre of one of the facades, is an open space, something over twenty feet wide, bounded by solid balustrades, and probably, occupied originally by a stair-way, although it is said that no traces of steps have been found among the debris.

The pyramid, or at least its facing, is built of large blocks of granite or porphyry, a kind of stone not found within a distance of many leagues. The blocks are of different sizes, the





TEMPLE AND PYRAMID AT PALENQUE.

largest being about eleven feet long and three feet high, very few being less than five feet in length. They are laid without mortar, and so nicely is the work done that the joints are scarcely perceptible.

It was among the sheltered spots here that, the ancients built their tombs, several of which have been found, being in the form of stone-lined cists. The most prominent peak of this southern range, is at the western end, towering high above the rest, guarding, as it were, the Cuernavaca valley. This mountain is named Chalchihuitepetl, or, hill of the Chalchihuite, the sacred green stone of ancient Mexico and Central America. There are said to be old quarries of it on the southern side of the mountain, which have not yet been investigated.

It was placed on a very conspicuous point upon a mountain height which overlooked a wide valley, the temple itself being built in the form of a pyramid, but with the altar in front instead of upon the top. The temple was divided into two parts. At its entrance were two square pillars, making three doorways, but in the rear was a shrine with hieroglyphics on the walls. There was a fire bed in front of the temple which gives the idea that human sacrifice may have been offered upon this spot, thus making the mountain itself serve the same purpose as an artificial pyramid.*

The eastern end of the temple, shows a structure composed of four parts, the lowest, simply a wide foundation built of rough stones connected together. This serves as a foundation for the second part, the two forming a truncated pyramid. Against the eastern side of the pyramid are the remains of a steep flight of steps; resting upon the lower pyramid is a smaller flight one of the same form. Accordingly we reach the lower platform and, are in front of the old temple, which faced the west. The temple is slightly smaller than the pyramid. Nothing remains of the front wall with the exception of two square columns, showing a wide central door, with a narrow one on either side. This temple is divided into two rooms. At either end of the front room was a narrow bench or seat built against the wall; in its centre was an altar, where the sacred fire was lighted. The importance of this altar, is found in the fact that it was upon the summit of a mountain overlooking a wide valley and was probably used as a place of sacrifice. It is well known that, human sacrifice was practiced by the Aztecs, and that the Teocalli reeked with human gore. The most important feature of the ruin is, the hieroglyphic inscription. This establishes the date of the temple at 1502, A. D.; seventeen years before the entry of Cortez into Mexico. It is one of the few ruined temples which have been discovered, and its discovery shows that the same form of temple architecture prevailed among the Aztecs that had pre-

*Human Sacrifices seem to have been practiced by the Aztecs and perhaps by the Toltecs but not by the Mayas.

vailed among the Toltecs, but the temple among the Aztecs was devoted to human sacrifice.

The pyramids of Central America are similar to those of Mexico in many respects, and yet differ enough to warrant a separate account of them.

The cities here, are all very much alike. There was, in each a palace, which was generally arranged in a quadrangle, and furnished with courts and plazas, having wide terraces or platforms, in front of them, while the temples, were single buildings, placed on the summit of a lofty pyramid and, were approached by stairways, some of which were in the shape of serpents, whose heads projected beyond the stairway. There was a slight difference between the temples of the Mayas and Nahuas, but the difference consisted more in the ornamentation than in the construction.

Bancroft says: "Having fixed upon a site for a proposed edifice the Maya builder invariably constructed an artificial



PYRAMID AT IZAMAL.

elevation on which it might rest. If it was a palace or a Nunnery so called, or some other public building, the elevation would consist of a series of wide terraces and platforms, which were surmounted by the buildings which were generally a single story in height, but so covered with heavy cornices and entablatures as to make them appear to be at least two stories in height. The tower in the centre, often arose to a height of three and four stories, thus giving them an imposing appearance. The palaces were generally long buildings, and had many doorways, some of which opened outward toward the terraces; others inward, toward the court."

"All of the pyramids are truncated; none forming a point at the top. A few of them have been found to have contained tombs, which were probably the tombs of kings or priests,

Some of the temples have tombs in the lower stories, with stairs leading down to the chambers. The edifices supported by the mounds, were built upon the summit platform, and, generally, cover the platform with the exception of a narrow esplanade around them. The palaces are built in receding ranges, one above another, on the slope, and are quite imposing in their appearance. One building usually occupies the summit, but in several cases, four of them enclose an interior court



TEMPLE OF THE MAGICIANS.

yard. The buildings are low and narrow. Thirty-one feet is the greatest height; thirty-nine feet the greatest width; three-hundred thirty-two feet the greatest length. The roofs are flat, and like the floors, covered with cement."

The walls are in proportion to the dimensions of the building, very thick, usually from three to six feet, but sometimes nine feet. The interior has generally two, rarely four, parallel ranges of rooms, while in a few of the smaller buildings an uninterrupted corridor extended the whole length. Neither rooms nor corridors ever exceed twenty feet in width or

length, while the ordinary width is eight to ten feet, and the height fifteen to eighteen feet; sixty feet is the greatest length noted. The walls of each room rise, perpendicularly, for one-half their height and, then approach each other by the stone blocks overlapping horizontally to within about one foot, the intervening space being covered with a layer of wide flat stones, and the projecting corners being beveled off to form a straight or rarely a curved surface.

This shows the general characteristics of the various pyramids and palaces but we shall need to take specific cases to understand them fully. We have given a number of cuts which illustrate the different pyramids, especially those on which temples were erected. One of them represents the pyramid at Izamal which Charnay visited and has described.

He says: "The great mound is called Kinich-Kakmo 'the sun's face with fiery rays,' from an idol which stood in the temple crowning its summit. The monument consists of two parts, the basement, nearly 650 feet long, surmounted by an immense platform, and the small pyramid to the north. Facing this to the south was another great mound. The third pyramid to the east supported a temple dedicated to Zamna, the founder of the great Maya Empire. The fourth pyramid to the west had on its summit the palace of the 'commander-in-chief of 8000 flints.' On its side near the basement, consisting of stone, laid without mortar, stood the gigantic face reproduced by Stephens. It is 7 feet 8 inches high. The features are rudely formed of small rough stones and afterward covered with stucco. On the east side is the colossal head 13 ft. high, the eyes, nose, and under lip formed of rough stones covered over with mortar, while double spirals, symbols of wind or speech may be seen, similar to those in Mexico at Palenque and Chichen Itza."

The pyramids and palaces at Uxmal are also worthy of notice. They have been described by different writers, among them Mr. J. L. Stephens, Charnay, Mr. W. H. Holmes, Mr. Bancroft and others. Mr. Holmes has furnished a panorama which shows the number and shape of these pyramids, and a general description of them from which we make brief extracts:

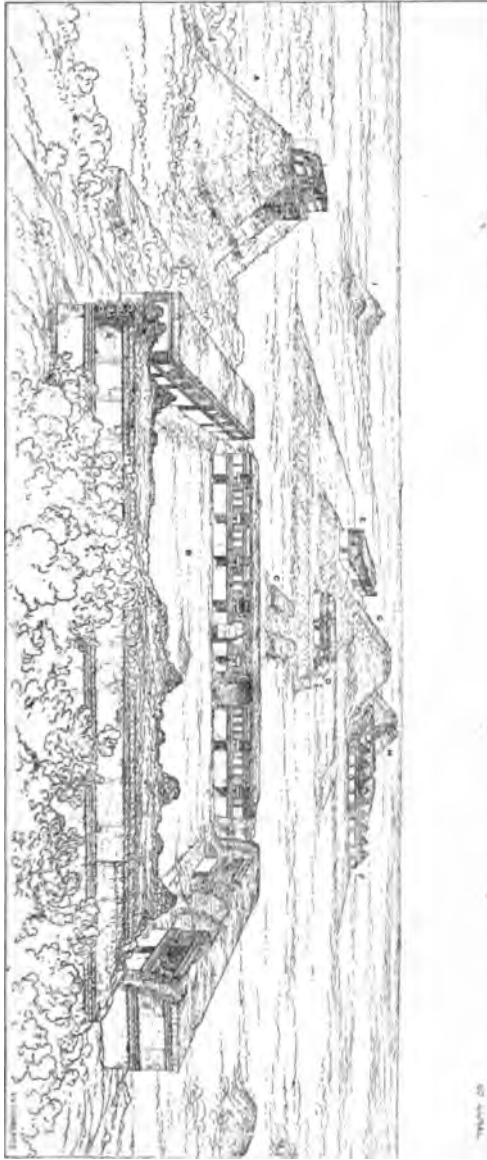
"The pyramid Temple of the Magicians (A); the Nunnery quadrangle (B); the Gymnasium (C); the House of the Turtles (D); the Governor's palace (E); the House of the Pigeons (F); and near it the massive pyramid (G); also the temple crowned pyramid (H); and a group consisting of two pyramids (I); and further away ruined masses."

A pyramid at Uxmal is described by Charnay but he calls it the Dwarf's House. He says: "It is a charming temple crowning a pyramid with a very steep slope 400 feet high. It consists of two parts, one reared on the upper summit, the other a kind of chapel, lower down, facing the town. It was richly ornamented and presumably dedicated to a great deity. Two stairways facing east and west led to these buildings."

Of this House of the Magicians (A) Mr. Holmes says: "This temple may well be regarded as the most notable among the group and is the first to catch the eye of the visitor. The temple which crowns the summit is some 70 feet long by 12 feet wide and contains three rooms the middle one being longer than the others.

The Nunnery quadrangle (B) he says, is among the best known specimens of Maya architecture. Four great rectangular structures, low, heavy and formal in general conformation, stand upon a broad terrace in quadrangular arrangement. The terrace measures upwards of 300 feet square. The four great facades facing the court are among the most notable in Yucatan and deserve especial attention at the hands of students of American art. Of the Governor's House he says:*(E) "This superb building crowning the summit is regarded as the most important single structure of its class in Yucatan and for that matter in America. It is extremely simple in plan and outline being a trapezoidal mass some 320 feet long, 40 feet wide and 25 or 26 feet high. It is partially separated into three parts, a long middle section, and two shorter sections, with recesses leading to

PANORAMA OF THE PYRAMIDS AND PALACE AT UXYAL.



*The plate represents the Governor's House and the House of the Magicians.

two great transverse archways. The front wall is pierced by nine principal doorways and by two archway openings and presents a facade of rare beauty and great originality."

"One of the grandest structures in Uxmal is the great truncated pyramid (G) seen in the panorama rising at the south-west corner of the main terrace of the palace. It is sixty or seventy feet in height, and measures, according to Stephens, some 200 ft. by 300 ft. at the base. This author described a summit platform 65 feet square and three feet high, and a narrow terrace extending all around the pyramid fifteen feet below the crest. The surfaces seem to have been richly decorated with characteristic sculptures."

Of the House of the Pigeons (F) he says: "This unique structure is a remarkable quadrangle which could appropriately be called the Quadrangle of the Nine Gables. The court of this quadrangle is 180 feet from east to west and 150 from north to south. Here was a great building of unusual construction and size with an arch opening through the middle into a court bearing upon its roof a colossal masonry cone, built at an enormous expenditure of time and labor."

The pyramids at Palenque are also described by various authors, Del Rio, Dupaix, Waldeck, Stephens, Charnay, Bancroft, and Maudsley. Mr. Holmes has drawn a panorama of this city with its ruined palaces and temples.

He says of the pyramids: "There are upward of a dozen pyramids of greatly varying style and dimensions, eight only retaining the remains of their superstructures. Some are built on level ground and are symmetrical, while others are set against the mountain sides. With respect to the stairways by which the pyramids were ascended Stephens and others seem to convey the idea that the temple pyramids had stairs on all sides covering the entire surface. As stair builders the Palenquians were superior in some respects to the Yucatecs. Some of the short flights which lead from the courts to the adjoining galleries are of special interest."

THE CULTURAL SIGNIFICANCE OF PRIMITIVE IMPLEMENTS AND WEAPONS.

BY ALTON HOWARD THOMPSON, TOPEKA, KANSAS.

PART II. THE PSYCHIC EMERGENCE OF MAN.

The struggles of the first man ape to maintain his existence amid the hostile surroundings in which he found himself, are fraught with peculiar interest, and are even pathetic when we consider the great odds that were against him in the fight. He well employed what gifts nature had bestowed upon him with such skill as he possessed, and by the cultivation of that skill made of himself a new being, who, in the process of evolution, dominated not only over the rest of the animal world but made nature herself his slave.

His own natural weapons of defence, the teeth and claws, were being reduced with a rapidity that must have speedily brought about his extinction, but for the development of the grasping powers of the hand which enabled him to employ the extra-natural resources around him. These natural weapons came in to supplement his own waning powers. The reduction of the jaws, teeth and claws, we can readily perceive, were a correlative variation, due to the evolution of the grasping powers of the hand and the assumption of the erect attitude. From the primitive arboreal prototype it is probable that the later ancestor of man descended again to the earth and became semi-terrestrial in habit, like the anthropoid apes of to-day. But the grasping power of the hand still remained and developed for other purposes than climbing and with its development the seizing and prehensile functions of the jaws and teeth were superceded, and becoming useless, these parts were correspondingly reduced according to nature's well known laws of economy of growth. For, as Darwin well says, (*Descent of Man*, 562): "As man gradually became erect and continually used his arms and hands for fighting with sticks and stones, as well as for other purposes of life, he would have used his teeth and jaws less and less. The jaws, together with their muscles, would then have been reduced through disuse, as well as the teeth, through the principles of correlation and economy of growth." This correlated variation is one of the most wonderful chapters of human evolution! The jaws and teeth are of such embryonic form in man to-day that some other influence must have supervened to accomplish their reduction, aside from mere food selection. This power in man's primitive, ancestral type, was undoubtedly the development of the grasping power of the hand with the consequent relieving of the demand upon the jaws and teeth for fighting, prehension and food seizing. With the evolution of the manual grasping power, an immense resource was placed at the command of pithecanthropic man for combat with his enemies. Indeed, it

was apparently sufficient to enable him to survive in his struggle for existence and was the cause of all his subsequent marvellous evolution. He could not only fight better but he could procure food easier, and this marvellous new faculty thus contributed to the better solution of the two greatest problems of primeval life.

While the ancestral form of man became gradually adapted to terrestrial locomotion, he retained the erect attitude acquired in the arboreal existence of his predecessors. Thus it came about that the upper limbs, the hands and arms, were left free to be employed for other purposes than locomotion. As Charles Morris says, (*Man and His Ancestor*, 51): "The organization of man renders it questionable if his immediate ancestor was arboreal to the extent of the apes and lemurs. He probably made the ground his habitual place of residence at an early period in his history and that the result of this new habit was a change in the relative length of his limbs, * (56) so that the man-ape was, in his early days, more truly a biped than any of the living apes and lemurs." Unlike the kangaroo, the extinct dinosaurs and other animals which have learned to walk on the hind legs alone, the front limbs were not excessively reduced in man, for the reason that they were gradually diverted to the performance of other services and were kept employed. "It is quite probable that the man-ape, at an early date, became more omnivorous in his diet, that he added flesh food to his fruit and nuts, and this would demand a more active employment of his hands and arms in the capture of animals. This would not fail to modify to a great degree, the use of the arms, and would interfere with their utility in locomotion, so that more and more freedom would be necessary to render them effective."

The original man-ape, the *pithecanthropus* of the trees, probably chased or sprang after his prey and seized it with his hands: but he also probably discovered, before he became terrestrial in his habits, the uses of the club as a missile, and added these resources to his powers of overcoming and capturing living prey. The acquisition of these two habits of life, i.e., the addition of carnivorous food to his dietary and his descent to the ground, contributed largely to the evolution of the faculty of employing clubs and stones for striking and throwing, and he thereby became a distinct being. To this shadowy beginning,—when and where we know not,—we owe the beginnings of the divergence which led to the evolution of man.

The most important consideration in connection with the evolution of the grasping power of the hands is, that as primitive man learned to use the club or a stone as a tool or weapon,—even in a simple and automatic way,—and as he came to attempt more precision and skill that these efforts *taught him to think*, and this important result marked the era of his psychic emergence from the purely animal kingdom and his

emancipation from the thralldom of mere animal mentality. The awakening of the consciousness of a desire for greater precision in the use of the hand, acted as a stimulus of the nerve centres controlling motion and these centres became enlarged by the efforts put forth to accomplish the desire. The first observation that a sharp pointed stick was better than a blunt one, and suggested the possibility of sharpening it by hand, was a forward step of the greatest possible importance. It made the difference between the man-ape and the ape-man,—between the mere animal with his automatic mind and the predestined, thinking man. The vital spark that first lit up the mind of pithecanthropic man acted as a stimulus on the nerve substance and it grew, and as it grew he thought more, and as he thought more his brain grew more,—and he became a man. As Prof. J. D. Cunningham has well said, (Proc. Brit. A.A. Science, 1901, SCIENCE, 641): "In man certain parts of the cerebral cortex have been greatly enlarged,—and there is no corresponding increase in the simian brain. I do not think it difficult to account for this important expansion of the cerebral surface. In the forepart of the region involved are placed the groups of motor centers which control the muscular movements of the more important parts of the body.** Within this are the centers for the arm and hand,* and others. In man certain of these have undoubtedly undergone marked expansion. The skilled movements of the hand, as shown in the use of tools, have not been acquired without an increase in the brain mechanism by which these are guided. So important, indeed, is the part played by the human hand as an agent of the mind, and so perfectly is it adjusted with reference to this office that there are many who think that the first great start which man obtained on the path which has led to his higher development, was given by setting his upper limb free from the duty of acting as an organ of support and locomotion. It is an old saying "that man is the wisest of animals because of his hands." Thus the brain received a stimulus by the dawning of the idea of using the hands, with the consequent reactions in both directions, i.e., the increasing of manual skill and the evolution of thought power. For as Prof. Russell, (of Yale College) says, "The manual concept reacts upon the mental concept," and the stimulus is mutual and retroactive. This mutual effect is well understood and is utilized in special fields of training for both the muscles and the brain. It is a well known fact that in dealing with criminals, incapables and defectives in reformatories and special schools for the defective classes, that the training of the muscles is the first step in the process of awakening the dormant powers of the mind. The results of this method have been simply marvellous, as all who are engaged in the blessed work of reclaiming defectives, can well attest. As Dr. E. S. Talbot says, (Degeneracy, 362): "Manual training is a principle long

adopted in idiot schools, where training of certain muscles through both mental and physical methods precedes intellectual training alone." Manual training in the common schools is now looked upon,—and its results well attest its value,—as a desirable, if not necessary adjunct in the work of the awakening and development not only of the physical powers but also the mental life of children. Its effect upon dullards is like an inspiration. The reflex effect upon the brain of manual effort, of the consciousness of manual precision, is well understood where ever displayed. This effect, we are bound to believe, was the potent power that awakened the mind of primitive man, and that his psychic emergence was due to that awakening. From that moment he ceased to be a mere animal and became a man.

(TO BE CONTINUED)

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SOUTH AMERICAN ARCHÆOLOGY IN THE AMERICAN MUSEUM OF NATURAL HISTORY, NEW YORK.

Hall 308, the South American Gallery in the American Museum of Natural History, New York, contains archæological collections from Peru and Bolivia, collected by Mr. A. F. Bandelier on expeditions instituted in 1892 at the expense of the late Mr. Henry Villard, and continued for the Museum until 1900; a number of older collections from the same region; collections from Colombia; and archæological material from Brazil.

The greater part of the hall is filled with collections illustrating the various forms of cultures prevailing in the empire of the Incas, which was inhabited principally by two groups of people,—the Kechua and the Aymara. The people inhabiting this empire were tillers of the soil. They raised maize, potatoes, yucca, tobacco, and cotton. They had domesticated the llama, which was used as a beast of burden, and the wool of which served in the manufacture of garments. They were excellent road-builders. Their architectural structures were composed of immense boulders fitted together without mortar. The arts of the people differ somewhat in different regions.

The railing cases contain objects from the plateaus near Lake Titicaca. In the southern part of this district the Aymara were located, while northward extends the area inhabited by the Kechua.

Typical pottery and wooden vessels, and some coarse fabrics which were used for a mummy covering are here in a wall

case. On top of the case are a number of large pottery vessels which served as water-jars.

In this district is found pottery painted with delicate patterns similar to those found on woven fabrics. Some of the most beautiful objects made by the ancient inhabitants of this district were wooden vases and cups inlaid with elaborate designs. Shallow stone mortars and slabs for grinding corn were found in great numbers.

Here are also located the ruins of Tiahuanaco, which were deserted at the time of the Conquest. Stones cut in peculiar forms, to be used for architectural purposes, were found here. A model of a monolithic doorway illustrates the type of architecture of this district.

In other railing cases a number of smaller objects, particularly copper pins, small pottery, spindle whorls, and beads, are exhibited. The northern part of the coast was inhabited by the Yuncas where culture differed somewhat from that of the tribes of the interior.

A wall cave contains a number of garments and implements taken from mummies. A tattooing implement is shown in this case, while in Railing Case 9 may be seen the traces of tattooing on a mummified arm. The ancient Peruvians had no system of writing, but used knotted strings as mnemonic aids.

On the mummies were garments made of wool and of cotton, illustrating the style of dress and ornamentation. Numerous bags contained coca, corn, meal, and similar substances, were buried with the mummies.

Mummies of women are accompanied by spindles, looms, and other implements used in their handiwork.

The forms of pottery differ considerably in different localities. In some of these, comparatively simple forms prevailed, while in others imitations of natural objects were most frequent.

At Chapen, Peru, many vases in the form of human heads were found, and others representing frogs, lions, fish, shells, and other animals.

Specimens of beautiful ware in great variety of form and color are here exhibited.

Elaborate ornaments in shell and feathers were worn by the nobility. A remarkably well preserved series of these is shown in this case (the gift of Mr. J. Pierpont Morgan).

A wealth of material was procured from the large graveyard at Ancon, Peru, not far from Lima. A number of complete mummy bundles from this place are exhibited. The Peruvians were in the habit of placing over the mummies false heads, some of which were elaborately decorated. A great variety of utensils and implements used in the industries of the people were found with the mummies.

The burial-grounds of Cuzco and Pachacamac, Peru, yield material of similar description. A number of feather head-

dressess, complete work baskets, black pottery ware, and pouches, deserve special mention.

A number of excellent pieces of pottery, and false heads of mummies, are exhibited.

A well-preserved mummy from Ancon, Peru, and two work-baskets which were buried with it, are exhibited in Case F.

A remarkable collection of beautiful specimens from various parts of Peru, made by Dr. E. Gaffron, was recently secured by the Museum, and is temporarily exhibited. The collection contains the most exquisite specimens of pottery, weaving, work in metal, and of inlaid work.

North of the empire of the Incas was the territory inhabited by the Chibcha and allied tribes. Their culture differed considerably from that of the Peruvians. Pottery, stone-work, and beads, that were obtained from ancient burial-places in northern Colombia from a region that was under the influence of Chotcha culture are exhibited.

The east coast of South America never attained a culture as high as that found on the western plateaus, but the pre-historic inhabitants of the region around the mouth of the Amazon River left behind them masses of pottery of a peculiar type, differing from that made by the more recent inhabitants of that area, and exhibiting excellent workmanship.

The Peruvians were in the habit of deforming the heads of the infants by means of bandages. In cases of sickness they frequently resorted to trephining. Specimens are exhibited which illustrate these customs, and show that enormous portions of bone were sometimes removed.

A number of beautiful pouches were found in a stone chest near Lake Titicaca. The colors and designs are remarkably well preserved. In the same case are several ponchos made of feather-work.

Coverings of mummies, two elaborate false heads of mummies, and a number of exquisite specimens of Peruvian pottery collected by E. G. Squier, are exhibited.

ANON.

CAVE PAINTINGS IN WEST AUSTRALIA.

BY JOHN FRASER, L. L. D., SYDNEY.

Sir George Grey was one of the Pro-consuls who have done so much to build up the British Empire in distant lands. Whether as Governor of an Australian province or of Cape Colony or of New Zealand, his energetic spirit found employment both in the field of action and in the field of letters. His "*Library of Philology*" is an example of the one direction, and his "*Two Expeditions in North-West and Western Australia, 1837-39*," in the other. While leading one of these expeditions—Capt. Grey he was then—he lighted on the Glenelg River (Long. $125^{\circ} 10' E$ and $15^{\circ} 45' S$.) which falls into the Western Ocean near that latitude. The ridges and rocks on the river are mostly of sandstone formation, and there are numerous caves. Of these, one which he discovered and entered, presented to the eye and the mind a startling and mysterious appearance. "It was a natural hollow in the sandstone rock; its floor was elevated about five feet from the ground, and something like steps of rock led up to it. The roof was a solid slab of sandstone, nine feet thick, sloping rapidly towards the back. The cave was eight feet high at the entrance, thirty feet wide, and sixteen feet deep.

The cave itself was of little significance, but the flat surfaces everywhere in it—above or end side,—were covered with painted figures, chiefly human, in brilliant colors, red, yellow, blue, black, white. The principal figure was painted on the sloping roof in bright red and white; the neck, shoulders and arms were bare, but the body from the arm pits was clad in a loose gown, like a *Sarong*, with a figured pattern on it, the eye-balls were colored black and surrounded with a yellow oval; there was the outline of a nose, *but there was no mouth*. Another remarkable thing was that this human figure had the face down to the neck surrounded by something like a hood in bright red, and from all parts of the edge of this hood streamed a row of short, sturdy, wavy lines, as if meant to stand for hairs or days. On the left hand side as one entered the cave, were two similar figures with faces, necks, arms and bodies portrayed as the other, but not so nicely done; and on the heads of these two were two other faces and heads superimposed. These four faces were each surrounded by narrow hoods in red with a yellow line for a margin, but around this was something like the front view of a wide coal-scuttle bonnet, with a border lined in red. Another like figure, but merely in red outline, is carrying on his hooded head a kangaroo whose body and head and tail are well drawn, and these are carefully and neatly patched all over with red lines. The number of drawings in this cave was about fifty. In the dark recesses at the back of the cave was the outline of an arm and hand in black, but thrown into vivid relief by the rock in the back ground being painted pure white.

Since Sir George Grey's time, other travellers and explorers have found many cave paintings in that region as well as in other parts of Australia; in Queensland for instance. But my purpose to-day is to tell that only last year the Government of Western Australia sent out an expedition to explore the north-west part of the Kimberley Division of that State, and a narrative (with illustrative plates) of that expedition has just been issued. They left Freemantle April 13, fully equipped with pack-horses, stores, astronomical instruments, etc., and were absent nearly seven months. The Naturalist of the party reports that, at a spot near their camp marked FB. 25 on their map,—that is about 70 miles south east from Sir George Grey's cave—they found native drawings on rock-faces in the same style as his. A specimen of these is given here.

He says: "The place was one which had been used evidently for a great number of years for depositing the bones of the dead. It will be seen that the figures are clothed, and all in a similar kind of garment, with what appears like a neck-tie, just below the throat. Curiously this same style of figure similarly dressed, occurred wherever painting's of any extent were found. In all there is the absence of the mouth, and there is what appears to be a halo round the head. These figures agree in these particulars with those found by Grey on the Glenelg in 1837. The colours used are red, yellow, black and white, the black being charcoal and the other colours argillaceous earths, packets of which we found carefully wrapped up in paper-bark parcels in most of the native camps which had been vacated hurriedly owing to our approach. The drawings are finished with greater care and attention to detail than one would expect to find in such a primitive race, and they apparently value them considerably, choosing places, as far as possible, where they will not be injured by the weather. In all the more elaborate drawings the colors appeared to have been simply mixed with water and could be smudged by rubbing with the fingers, but in one or two places on the Glenelg I saw smaller drawings and marks in red, which were made with some other pigment, and were not effected even by wet."

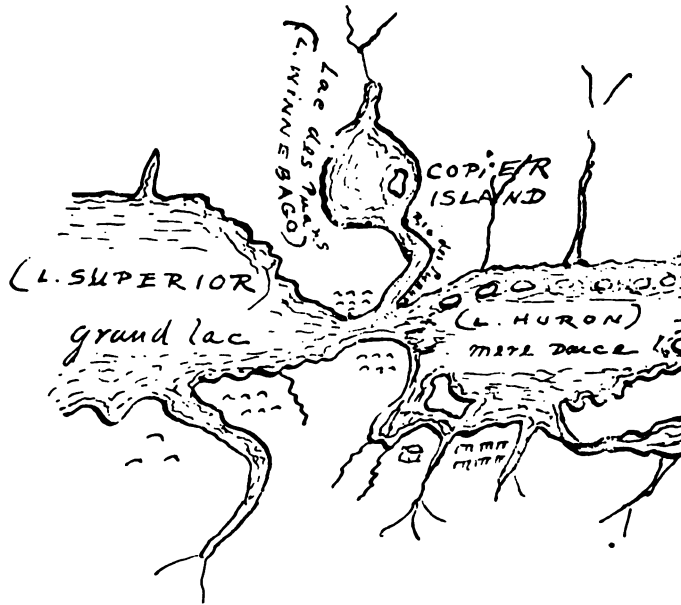
At Camp FB. 49—about fifteen miles south east from Sir George Grey's cave—on Bachsten Creek which flows into the Calder River, they came upon another rich find of drawings of the same kind. The one given here very much resembles another cave painting a long way off, in Queensland, called the Lake of Fire, from a fancied notion that the hands and arms stretching up from the depths are the supplicating members of bodies writhing in pain below.

No sufficient explanation of the origin of any of these paintings has yet been given. In my next communication I will offer my views of the whole question.

COPPER AGE IN THE UNITED STATES.

BY PUBLIUS V. LAWSON.

In North America is found the only pure copper age in the world. The stone age in Europe was followed by the age of bronze, a compound always artificial, metal usually made up of nine parts copper and one of tin. Sir John Lubbock remarks, that the absence of implements made either of copper or tin, proves that the art of making bronze was introduced into, not invented in Europe. Sir Charles Lyell thinks the copper period was short if any. Most European copper implements have been found in Ireland, and yet of 1,300 articles of the



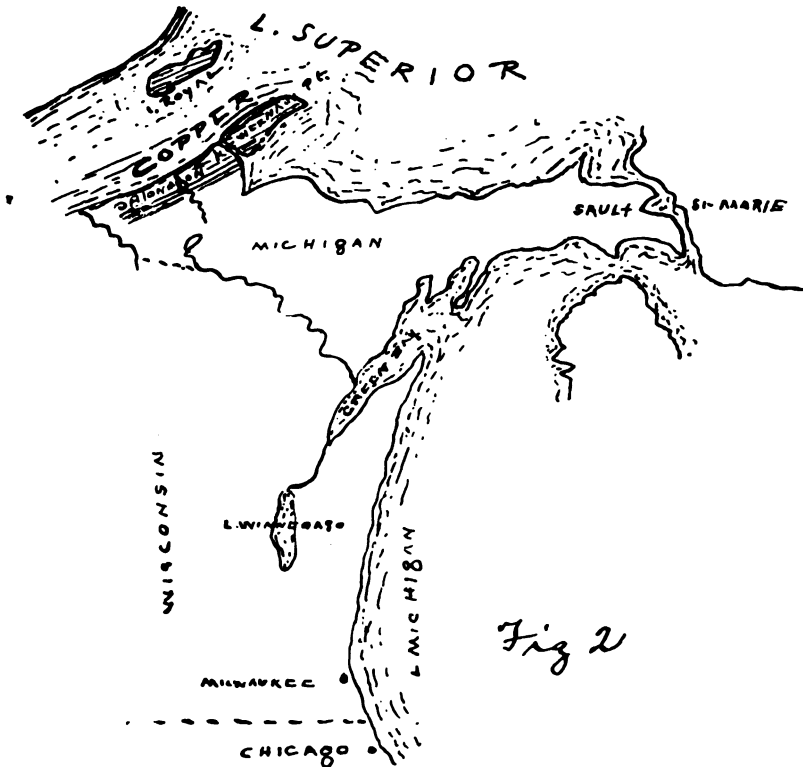
CHAMPLAIN MAP 1632.

bronze age in the Dublin Museum only thirty celts and one sword were made of pure copper. The Roman bronze contained lead. The Etruscans, Phœnicians and Carthaginians had bronze; and Egypt had bronze more than 6,000 years ago. The student of antiquity seeks in vain for the country where the metal worker first changed copper into bronze, or rather seeks the original copper country and the author of Atlantis suggests America.

The Peruvians had bronze. They obtained their tin in Mexico and Chili (Foster). Humboldt analysed a chisel from an ancient silver mine in Cuzco, Peru, which contained ninety-

four parts copper and six parts tin. The Mexicans had bronze, but native copper predominated.

Columbus found in the Gulf of Honduras an Indian canoe; "in which were small hatchets made of copper, also small bells and plates; and a crucible to melt copper"; Diaz mentions copper implements on the coast of Yucatan, though no copper exists there. He also records gold and copper trinkets on Cozumel Island near there. The early writers describe the discovery in 1552 in Mexico by Cortez of trinkets made of gold, silver, lead, bronze, copper and tin; bronze axes and



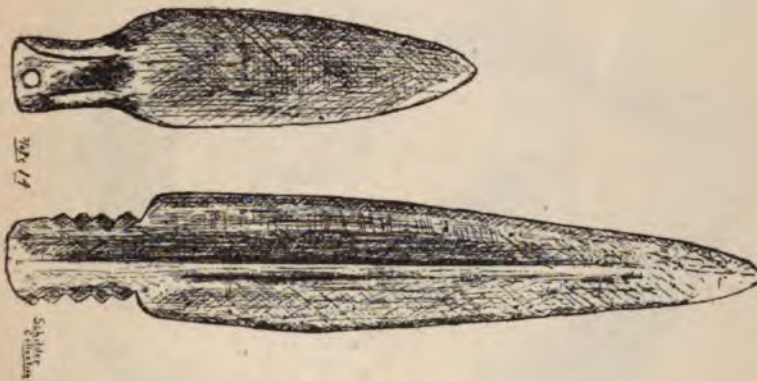
MAP OF NATIVE COPPER MINES.

copper and tin axes. Cortez had cast for his use 8,000 bronze arrow heads within one week by the native metal workers. Copper was cast in a mould. They cast axes, ear-rings and bracelets. Engravings have been published, of ancient Mexican carvings, of the foundry men at work.

There is no evidence of the finding of bronze artifacts in the United States, except in a few instances of undoubted European origin. It is possible that the smithy trade, which is now the occupation of a few among both the tribes of the

Navajos and Pueblos, may have been handed down from vast antiquity; as these sedentary tribes of New Mexico may have learned from old Mexico. These smiths to-day with their rude appliances have great skill. The rude Indians of British Columbia and Alaska who wrought gold ornaments are said to be allied by language to the Navajos.

The Navajo forge can be made upon the ground in a few moments by plastering mud over crossed sticks, and using a bellows made of a goat skin. They forge smelt, cast and hammer. Their crucible is made of baked clay or some fragments of Pueblo pottery, in which to melt their silver or bronze. Hard stones are often used for anvils, and their moulds are cut out of soft sandstone. For fire they use charcoal. (Washington Matthews in Bu. Eth. Rept. 1880-81).



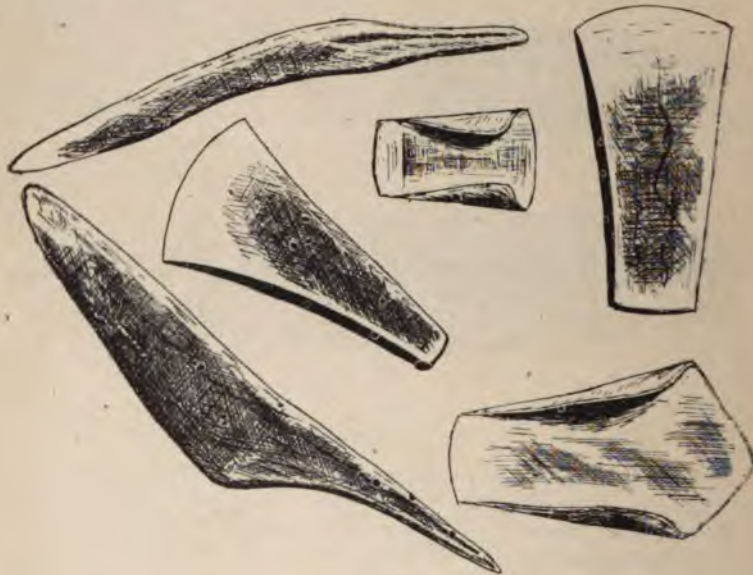
COPPER SPEARS.

Hendrick Hudson learned of the existence of copper among the Indians along the Hudson River. Jacques Cartier in 1534 on the St. Lawrence River, near Montreal, met with the information that "red copper" came from "Saguenay," (which Shea says was the name for the Lake Superior region), and in 1536 he saw a large knife of "red copper" brought by Indians from that region. Brereton relates in 1602 of the Indians of Virginia having great store of copper, observing "there are none but have copper chains, ear-rings, collars arrow-heads and drinking cups covered with copper." Dr. Abbott reports a clay pipe having been found in Massachusetts covered with thin sheets of copper.

In 1610 on the St. Lawrence above Montreal, Champlain was presented by an Indian with a piece of copper, a foot long, which the Indians brought to him rolled in a bag and informed him it was found on the bank of a river near a great lake, where it was gathered in lumps by them, which having melted they spread it in sheets, smoothing it with stones. In

1632, when Champlain made up a map of the lake region, from Indian information, he named Garlic Island in Lake Winnebago, "Copper Island," and located the lake north of Lake Superior. Two years later he sent Nicolet to discover the Chinese Empire on Winnebago Lake supposing the Winnebago Indians were the Celestials, and we suppose he intended to discover his copper island also. Nicolet found the lake but not the copper. Pierre Boucher in 1640 mentions a copper mine on an island in Lake Superior. Roger Williams says of the Indians of Rhode Island: "They have excellent art to cast our pewter and bronze into very neat and artificial pipes."

Along the North Pacific Coast from Yakutat to Comox, "Coppers" were made in ancient times of native copper, said



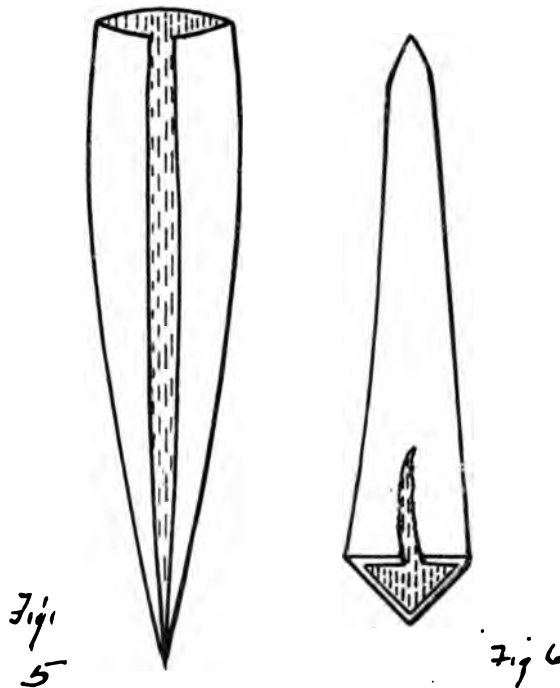
COPPER AXES SPUDS AND KNIVES.

to have been obtained in Alaska, but now obtained of the whites. The Kwakiutl Indians made large thin sheets two feet long by one foot wide into a money or medium of exchange, which were known as "Coppers," and their value was determined by the number of blankets which would purchase them. One of these "coppers" in Fort Rupert in 1893 had been exchanged for 7,500 blankets, and another had a value of 6,000 blankets. These were blanket values, while their intrinsic value was very little.

There is negative and positive evidence that none of the historical tribes of Wisconsin or Michigan ever worked copper

in any form, but they knew of its existence and had it in their possession. The Jesuit Missionaries, Dablon and Allouez both write of it in the Relations, and seek its source. Charlevoix the historian of New France also mentions it as being treasured as a god, and says: "They made no use of it." Allouez sought its source and frequently mentions it.

None of the explorers, discoverers or missionaries of the Northwest mention any fabrication of copper in any way whatever. Thus it seems that forging copper was a lost art about the west shore of Lake Michigan, in the beautiful oak openings

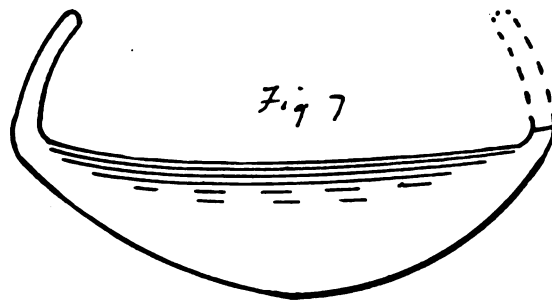


COPPER SPEAR OR LANCE POINTS.

and prairies of Wisconsin, when discovered by white men, though the border of lake and stream swarmed with savages who cherished the copper boulders as a divinity, while along the Atlantic sea board and south of the Rio Grande the tribes still knew its value in the arts. However, in pre-Columbian days, throughout Wisconsin the copper smiths swarmed along the border of every river, lake and forest, the symphony of the click, thud, thump of his stone hammer as he fashioned the copper in thousands of forms upon his stone anvil rose

Fig. 5. Javalin, half size. Fig 6. Javalin half size.

with the songs of the hearth and the woodland. They were the clam eater tribes, the effigy mound builder, the men of the fortification mounds, the builders of the truncated, temple, hill and oval mounds. Their earth mounds are found in Wisconsin by the tens of thousands. Their population was numbered by the host who fed off the corn rows which still cover hundreds of square miles of this beautiful country. Their lost or abandoned copper implements are found in every cabinet. Their number is legion. From Wisconsin the copper tribes traded in their copper wares to the furthest limits of the United States and Canada. They were the Phœnicians of the New World. Mexico obtained its copper from them. In return these copper kings lined their cabins with the best of savage days; with the loot of the finest stone and other savage artifacts from near and from far. They obtained the Chalcedony, Jasper and flint from all parts; the



COPPER KNIFE.

shell and wampum from the Atlantic and the Gulf; Obsidian from Mexico and the Rocky Mountains, Pipe stone from Minnesota, Ivory from Greenland. Thus it happens that living in a most beautiful land barren of most of the material from which to fabricate implements of war, the chase and adornment which give the savage his only chance for future fame, by the magic trade of red copper, they left behind them a mine of Archæological wealth which is the wonder and admiration of all.

Wisconsin soil contains an abundance of copper in boulders, stringey masses and aboriginal artifacts. Every farmer finds from one to a dozen pieces varying in weight from a pound to several hundred pounds. Every foundry purchases numerous solid boulders of native copper annually. Even fifty years ago Dr. Lapham reported several hundred pounds annually taken in by foundry men in Milwaukee. Every junk dealer can relate his experience with the numerous pieces purchased along

Fig. 7. Meat chopper, one-third size.

the country roads. Every relic hunter has these pieces of float or glacial copper in abundance. Only a portion of Wisconsin is farmed as yet. When the Northern country, fast opening up to agriculture, makes its report; the annual yield will be beyond belief.

The copper boulders were torn from their place in the Huronian trap of Northern Michigan, when the great glaciers with their miles of ice crushed down over Wisconsin and crumbling away the gangue rock left the copper free. It was spread by the

Fig 8



COPPER KNIFE.

glacier into Indiana, Ohio, Illinois, Iowa, Minnesota and Michigan. But Wisconsin being directly south and nearer to the source retained the most of it. It is found wherever the glacial drift lies, and all through the drift.

One boulder reported from Dodge County weighed 487 pounds, and it is common to find them weighing one or two hundred pounds. The one in the cut weighs forty-six pounds. Boulders have been recovered in Michigan nearer the vein weighing several tons. One such weighing three tons is now

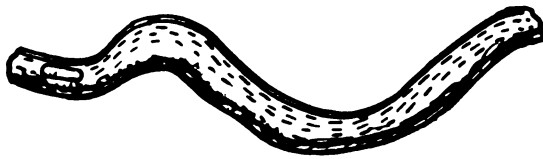


Fig 9

SNAKE PENDANT.

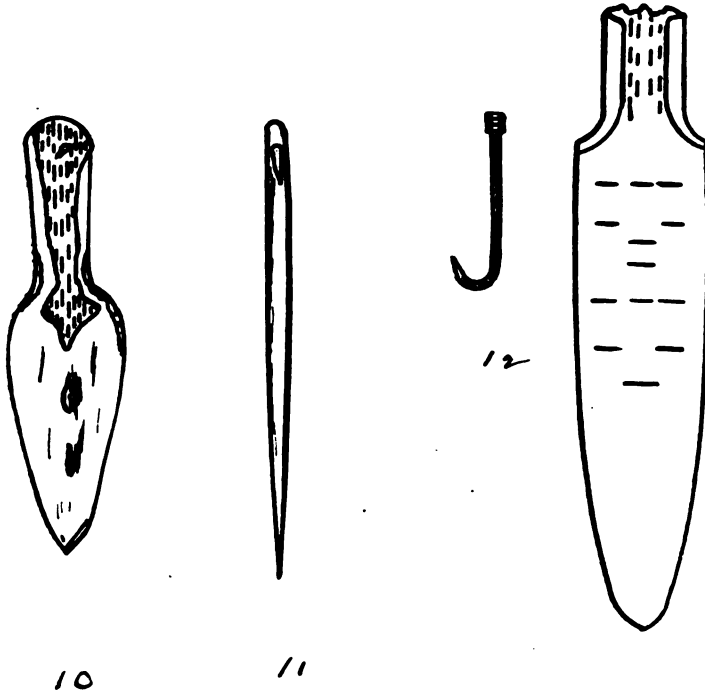
lodged in the National Museum, having cost five thousand dollars to recover.

The southern shore of Lake Superior presents some of the most picturesque scenery in the world. For one hundred and fifty miles it is made up of jagged bluffs composed of alternate layers of trap beds, and red sandstone conglomerate of the Lower Silurian age. Associate with these beds are veins of native or nearly pure copper, sometimes running with the

Fig. 8. Knife, half size. Fig. 9. Snake pendant, full size.

formation and often cutting across. It occurs in great masses of pure copper, and sheets as well as strings and grains. One great sheet of copper opened to view in mining was forty feet long and weighed two hundred tons. (Dana).

Keweenaw Point (which extends into the lake from Northern Michigan) and Ontonagon are the great mining centers, eighty miles long. Isle Royal near the opposite shore, is the same geologically. Native silver, chemically pure, is frequently embedded in the copper in the form of white blotches

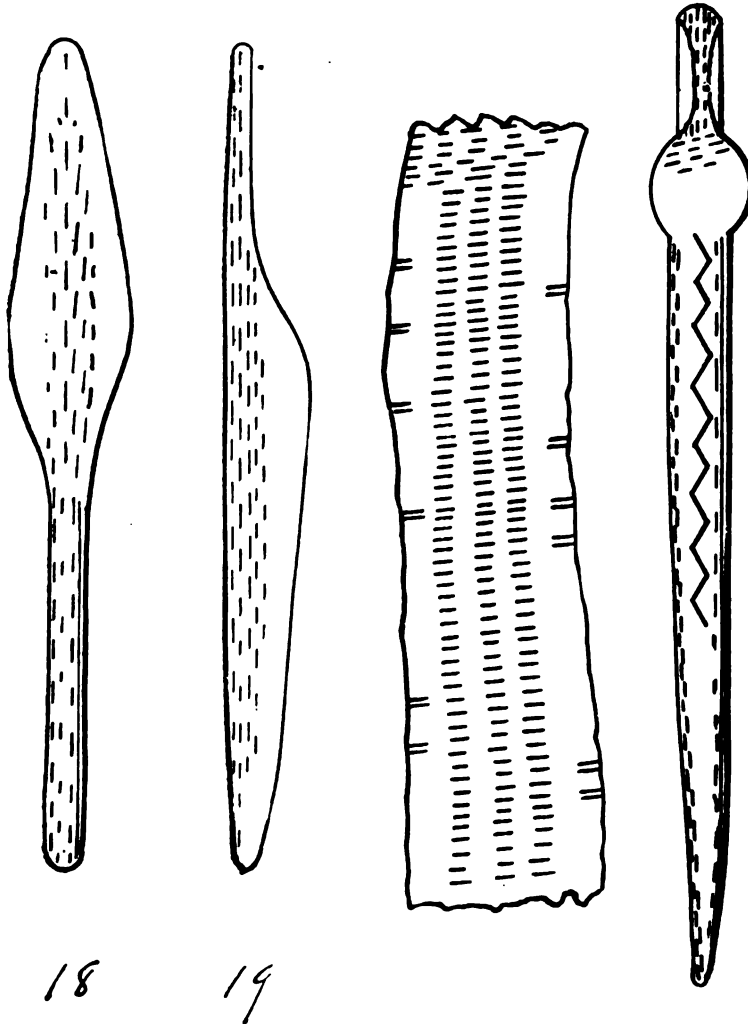


JAVELIN, NEEDLE, AND FISH HOOK.

or fibres or grains, not alloyed, sometimes an inch or more across. Some specimens are spotted white with the more precious metal. Native copper is not mined elsewhere in the United States, and no other location on this continent furnishes copper with visible silver. For this reason, the native copper for the hundreds of specimens discovered in the mounds as far south as Florida which contain visible silver was obtained at the lake. By extensive analyses caused to be made by Mr. Clarence B. Moore, of specimens of the copper art obtained from aboriginal graves in the mounds of Florida; Little Etowah mounds of Georgia; stone graves of Tennessee;

Fig. 10. Lance point, full size. Fig. 11. Sewing needle, many found in sand dunes on Lake Michigan. Fig. 12. Fish hook, commonly found with needles. Fig. 13. Lance point, with thirteen record marks.

the Hopewell mounds of Ohio; float copper of Illinois; and numerous specimens of mined copper from Lake Superior, it was well determined that the undoubted source of most of it, and the probable source of all of it was the native copper deposit of Lake Superior. Lake Superior native copper alone,

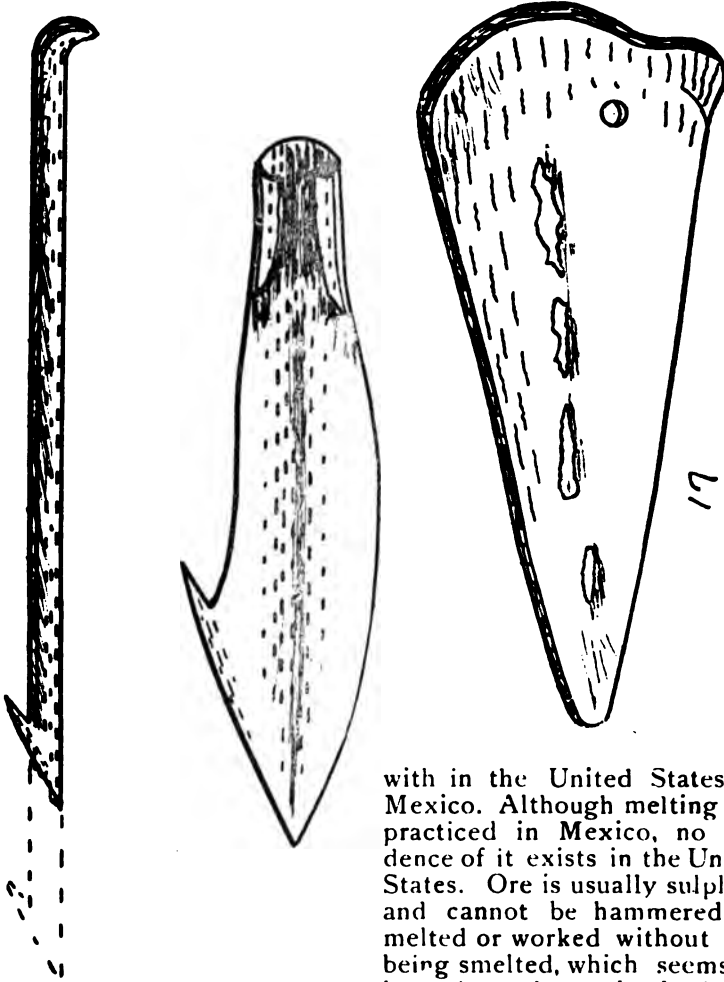


COPPER LANCES KNIFE AND BRACELET.

contained all the characteristics of mound copper. All the specimens contained copper, silver and iron, and no lead. No

Fig. 18. Javelin with long tang, half size; Fig. 19. Remarkable knife 18 inches long.
 Fig. 14. Fragment of bracelet with incased dots. Fig. 21. Pencil lance with zig-zag decoration.

bronze or brass has been discovered in the United States of aboriginal origin. (Moore, Copper from Mounds, St. John River, Fla.) All other copper in the United States is an ore, which must be smelted, and no evidence of smelting is met



COPPER FISH SPEARS.

In 1848 the evidence of aboriginal mining was discovered. It has since been found to have been carried on extensively along one hundred miles of the shore and on Isle Royal. Most modern mines were first opened by aboriginals. They worked surface veins in open pits and trenches. They excavated vast quantities of rock, reaching in many pits to a depth of sixteen

with in the United States or Mexico. Although melting was practiced in Mexico, no evidence of it exists in the United States. Ore is usually sulphide and cannot be hammered or melted or worked without first being smelted, which seems to have been beyond aboriginal attainment.

Fig. 17. Copper pendent full size

and twenty six feet, and often sixty feet. These mines were excavated in the solid trap rock. Heaps of rubble and dirt surround them. On cleaning out there are found copper utensils, knives, chisels, lances and arrow points; stone hammers to break away the matrix; wooden bowls to bale the mines, wooden shovels to clean them; props and levers for handling the rock; and ladders to enter the mines. The gangue or trap rock was broken away by alternate heating, and cooling with water, as shown by masses of charcoal present. The copper was then worried off by hammering and bending. The marks of the hammer is found on fragments remaining in the abandoned mines. In some of these ancient mines were found masses of copper which were too large for the primitive miners to secure. One mass of native copper ten feet long, three feet wide, two feet thick weighed six tons. It rested on billets of oak, which rested on sleepers, and had been raised five feet,



COPPER KNIFE WITH HANDLE.

From an ancient pit of Mesnard mine, a mass of copper had been taken out and moved forty eight feet which weighed 36,000 pounds. In some mines were left pillars and props for the overhanging wall. Ten cart loads of hammers and mauls were taken out of one mine. They were made of greenstone and porphyry boulders. The modern excavators used them to curb up a well.

All of the hundreds of ancient mines were completely filled with wash from the surrounding soil, vegetable mould leaves and rotten trees. Over the debris of one there grew a hemlock tree with 396 concentric annual rings. From appearances Prof. Foster thought they had been abandoned at least five or six hundred years, and possibly much longer; Mr. Henry Gillman estimated seven or eight hundred years; and Prof. Winchell concludes they are later than the Champlain Sea. As

stated above the Indians did not know of them and no tradition survives them. The ancient miner has left no traces of his domestic activities about that country, which has the most delightful weather in summer, but excessively inclement in winter, as the thermometer often reaches fifty and more below zero. From the thousands and tens of thousands of the manufactured copper articles found and being constantly gathered in Eastern and Southern Wisconsin, the number of which far exceeds all those found in all the balance of the United States, (The writer has a list of 13,000 fashioned coppers found in Wisconsin) it is supposed that the ancient miner occupied these lands with his villages and domestic relations, and made summer excursions of three and four hundred miles either by portage in Northern Michigan between the head waters of rivers running north into Lake Superior and south into Green Bay; or made the long canoe voyage via the Sault Ste. Marie. The copper knives and other articles found in the mines resemble those of Wisconsin. The amount of copper taken from these lake mines is simply incalculable. It must have reached into the millions of pounds. Dr. Butler supposes enough to sheath the British navy; Donnelly, more than twenty years of modern mining; and Mr. Henry Hamilton estimates enough to fabricate millions of articles. As scientific men and relic hunters excavate more of the mounds, the cupriferous art comes to



light, and it is found in the stone graves of Tennessee. It is not found in the Marine shell heaps, nor among the stone art of the River Drift man of the Delaware, nor as a part of the remains of the Cliff Dwellers. The first aboriginal man who followed the receding glacier could have found this native copper and easily hammered it cold into nearly any desired form. It was far easier to work than diorite, porphyry, or flint

Fig 20. Copper axe, half size. with hole in center and pike head.

which lay beside it on the river bank. No possible economy in the selection of materials could prevent the comingling of stone and copper in their handiwork, the moment that the migration of primitive man had reached the boulders of the drift.

From native copper, primitive man has hammered out the adze, celts, axe single and double, gouge or spud, chisels, drills or gravers or awl made square and often long, lance, spear or javeline knives or daggers or swords, gads or wedges, pendants, bracelets, beads, gorgets, and a great variety of trinkets. They used copper rivets to patch or enlarge their sheet copper (Moore); to attach extremities of bracelets (Putnam); and to attach shaft to lance, and many lances still retain the rivets. The copper chiefs of Wisconsin seem to have been peaceably inclined as no evidence of copper shields have been reported, while most of the mounds from Ohio to Florida abound in beautifully figured shields made of sheet copper hammered into bowl shapes and etched with mythologic figures, or carved with geometrical figures hammered in repousse or figure the Swastika. Even the warrior who sleeps in the stone graves had his copper shield. Copper hammered into thin sheets was made into beads; and beads made of wood shell or stone were covered with it. Jaws of animals were covered with it. Copper effigies of serpents, turtles, the cross and other figures were made of sheet copper. There were copper plumbobs (Squier). There were mechanical, domestic, hunting, fishing tools, and arms for war, and articles for personal adornment. The crescent shaped articles so frequently met in Wisconsin are supposed to have been used to arrange the headdress. From Connet mound, Ohio, over 500 copper beads were taken; some cut out of sheet metal and rolled, not joined, others were solid with a hole bored in them. There are found long square and round rods (one was three feet long), and fragments of flat copper. Many pieces of bulk copper, exhibit hammer marks, and cuts of their former owner. The bulk copper boulder in the Figure, has a hatchet cut in one end. Many of the implements have a sharp tang to enter the shaft; and many of them have the sides or butt end rolled over to form a socket for the shaft or handle. Some tangs are serrated for the thong used to attach the handle. There are fish spears or harpoons with one or more barbs. The fish hooks often have their ends bent over for strings but no barb. The needles with holes for the thread are interesting. In Wisconsin both the flame shaped and long pencil lances were frequently decorated with indentations in parallel lines. A gouge or spud (which some think was a tanner's tool for scraping hides, and others suppose a carpenter's tool), which is deposited in the Milwaukee Public Museum, is also decorated with these indentations. Dr. Perkins supposed these were record marks, but they seem more like similar decoration effected by aboriginals.

in the notching of the edges of stone arrow points, such as those of Aztalan, and similar notches on the edge of stone gorgets and snell, and the dotting and lining of pottery. In all ages and degrees of civilization mankind seems averse to a plain surface. On the back of the above spud there are also zig zag lines from the point to the other end, and the same patterns appear on a long pencil lance. There are some very fine markings on other implements which appear as if made with a file.

Most of these articles are deeply coated with poisonous copper acetate or verdigris which is produced by vegetable acids; or the green coating of carbonate gathered in damp places; or oxidized black; and mostly badly corroded and seamed with these wasting elements. Many of them are reduced to mere films of green carbonate. Nearly all the sheet metal pieces are a bad wreck.

Prescott says: "With bronze tools assisted by silicious dust the Aztec cut the hardest substances." The Author of the "Ancient Cities of the New World," has discovered that in Mexico copper was used by carpenters and joiners while stone was used for carving stone. It would only be possible in the mechanical arts to use copper as a wood working tool. But as they had not then and never had any means of tempering the copper, it was an inferior tool. Dr. Abbot remarks: "Pure copper is not so valuable for cutting purposes as newly chipped or even polished stone." He suggests the copper celts of the Atlantic coast were not designed as weapons or implements, but intended for display on special occasions as dances or religious festivals, and then wrapped and hidden by the owner or special tribal keeper. This may explain why so many coppers such as celts, bracelets, breast plates and even unworked pieces of copper have been discovered enclosed in cloth. Hundreds of specimens have been found in graves and mounds preserved in cloth from oxidation and in return preserving for our astonished admiration the excellent textile fabric of bygone ages. Allouez refers to the Natives of Lake Superior region having bulk float copper weighing twenty pounds. He had seen them in the hands of savages, who held them as divinities, or as presents from the water god. They keep them wrapped with precious things and transmit them to descendants. Copper effigies of snakes, turtles and spools have been found thus wrapped.

Those interested in tracing the territorial limits of the Toltec mythology will note the often recurring emblems or tokens of the Toltec Neptune the god Tlaloc who was adopted by the Aztecs. His symbol was the Cross. A copper Latin cross cut from sheet metal was taken from a stone grave in Tennessee, which resembles cross effigy mounds in Wisconsin. And the serpents so universally adopted in the mythology of all the world, and so often depicted in the sculpture of Central

America where it represents Quetzalcoatl, the god of wisdom, was found hammered from sheet copper in Florida and designed in earth mounds in Wisconsin. So also the turtle represented in Mexican galaxy of gods, is often cut or hammered from copper found in Florida and Illinois mounds, and shoveled into earth effigies in Wisconsin.

There is a popular belief of aboriginal tempered copper. The only hard copper, is an alloy of tin, making bronze, which is not very hard. Lake Superior copper in its matrix is as hard as the ancient implements, and both are harder than the copper of commerce, (Whittlesey). Hammering native copper (Lake copper) hardens it, to heat and plunge it in water softens it. In this it is the reverse of iron. There is no evidence, as



COPPER NUGGET OR BOULDER.

we have stated, that these ancient people ever smelted copper. It was unnecessary as the native copper can be hammered or melted without smelting. Neither is there any evidence that the copper chiefs ever melted copper. The pottery, by recent experiments made by Mrs. S. S. Frackleton of Milwaukee, has been shown to have been burned under a very low heat. Nothing has been found which would answer for a crucible. There was no reason why they did not melt it. Wood will produce a heat of 3000° . Copper melts at 1996° and its silver buttons would melt at 1873° F. The supposed mould marks or sand ridges on corroded copper are only the result of corrosion. Some of these have visible silver specks in them which would be an alloy and invisible if melted. Besides experiments made

with weak acids produce similar mould ridges. There are no two articles the same size, shape or ornamentation; no flow marks of melting; no "tags" or "sprue" seen; no rings or bracelets attached; no round sockets to the implements; no sandstone moulds found; welding and lamination are found in ridge marked copper; wrought copper cannot be mistaken for melted copper. Hammering copper hardens it unequally and oxidation would be irregular, oxidation is even irregular in bulk boulders; no patterns found; chips left in mines give evidence of no melting, as they are best for the purpose.

Neither is there any evidence of soldering or brazing, though silver would have made an excellent brazing material.

All the copper art of primitive man in the United States and Canada has been fabricated by hammering either hot or cold. Numerous breast plates, trinkets, effigies, needles and fish hooks have been cut, hammered or worked out of copper, which has been first hammered into a sheet. But few articles made of such sheets have been discovered in Wisconsin. We have taken the native copper with the gangue or trap rock still filling its cavities, which has been obtained from the Calumet mines, and by carefully hammering down, cold, one of its ragged fingers, drawn the copper out several inches in length and shaped it into half of a primitive spear. The ragged knobs and fingers of copper were turned over into the center core and all beaten down together. By thus doubling the copper into itself, it will not weld cold, and small parts will scale off. By hammering cold it is impossible to obscure the parts doubled over and bring the instrument to a smooth finish in all its parts. Still a fair piece of work can be turned out to compare with much of the aboriginal copper. If all the projections are first cut off, leaving a clean core to work upon, the hammer can then draw it out, shaped into any desired design, and do so while it is cold. Many of the designs have been fashioned in this way. Many coppers are too smooth and homogenous to have been wrought cold. They are free from scale or perceptible lamination and have the regular compact appearance of moulding and casting. Actual trial has however proved that hammering and heating gives it this appearance.

ANTHROPOLOGICAL NOTES.

ALEXANDER F. CHAMBERLAIN.

EARLIEST SARDINIAN CULTURE.—The grotto of St. Bartholomew, near Cagliari was partially explored by Orsoni in 1878. In 1891 Patroni, superintendent of archæological investigations in Sardinia, instituted further researches with interesting results. Patroni concludes, in opposition to Orsoni, whose examination was incomplete, that the floor-structure indicates not several different "civilizations," but one uniform culture only, mixed with superficial debris due to recent habitations. Also the finds belong to an epoch anterior to that of the *nuraghi* and represent the oldest vestiges of Sardinian culture. The pottery is rude and primitive *impasto*, heavy in form, and ranging over a few uniform types. The stone implements, all of obsidian, exhibit little variety. The only ornaments found are some perforated shells and fish-bones. The primitive people of St. Bartholomew hunted the hare, boar, etc., and as the osseous remains show, were acquainted with certain domestic animals,—dog, horse, sheep, hog, ox, rabbit. No ashes were found in the grotto, and the "traces of incineration" reported by Orsoni are thought by Patroni to be the result of chemical alterations of the rock. Patroni's account of his investigations is to be found in the "Notizie dei Scavi," for August, 1901. A brief *résumé* is given in "L'Anthropologie" (Paris), Vol. XIII, pp. 112-113.

BULGARIAN BRAIN-WEIGHTS.—In the "Archiv für Anthropologie" (Braunschweig), Vol. XXVI, (1900), Dr. S. Watoff, of the Hospital at Sofia, publishes the results of the examination of 87 brains (men 70, women 17) of mentally and physically normal Bulgarians, together with certain measures of body, head, etc. The average weight of the male brains was 1382 gr. (range 1185-1585) and of the female 1226 gr. (range 1095-1360). Dr. Watoff also examined the brain of A. Konstantinov the Bulgarian *littérateur*, who was assassinated. His brain weighed 1595 gr., ten grains more than any one of the others, and more than any Bulgarian brain yet investigated. Town, country, occupations, age, stature, circumference of head, etc., seem to exert no appreciable influence upon the weight of the brain. The tallest man (1870 mm.) had a brain of 1282 gr. A youth of sixteen had one of 1462 gr. A skull with a circumference of 520 mm. contained a brain of 1450 gr., while one of 550 mm., had a brain of 1260. The lightest and the heaviest cerebellum (138 and 205 gr.) belonged both to brains of 1500 gr. The number of cases studied are too few to justify dogmatic conclusions, but the suggestions are of value.

MAGYARS AND DRAVIDIANS.—In his "Tamulische (Dravidische) Studien," Bálint sought to demonstrate some grammatical and lexical identities between Magyar and Tamul,—between the Finnic and Dravidian tongues. Dr. H. Winkler, whose valuable article on "Das Finnenthum der Magyaren" appears in the "Zeitschrift für Ethnologie" (Vol. XXXIII, 1901, pp. 157-171), holds that all that Bálint has succeeded in proving is that Magyar contains a number of loan-words from Dravidian,—there is no evidence that Magyar is a Dravidian tongue, or that the Altaic and Dravidian linguistic stocks are closely related. These have been borrowed during the residence of the Magyars in the Central Asian steppe-region. During the steppe-life of the Magyars they borrowed likewise from Uigur-Turkic, Mongolic, and Iranic sources. Traces of contact with the peoples of the Caucasus are also present in the language of the Magyars. The "Tamul" words in Magyar are thus, evidence of historic contact not proof of linguistic relationship. They are culture-data rather than language-phenomena. The Magyars are, physically and linguistically a Finnic people. The Magyars of Alföld represent according to Dr. Winkler, the pure type of the race.

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CORRESPONDENCE BY REV. JOHN MACLEAN.

MANITOBA HISTORICAL SOCIETY.

This Society whose museum is located in Winnipeg has been doing good service in the history of the North-West by the publication of papers relating to noted places, old inhabitants, trading posts, mounds, and the native tribes. Some of the members are living in the far north and by their observations are enriching the archives of the Society. Among the printed transactions may be mentioned "Madame Lefmoinere,, the first white woman in the Canadian Northwest" by Abbe Dugast; "The Old Crow Wing Trail," and "A Longfoughten Fortress" by Sir John Schultz; "Notes and Observations of Travels on the Athabasca and Slave Lake Regions in 1879," by W. J. McLean, "Lake of the Woods" and other interesting papers by Rev. Dr. Bryce. In connection with the library there is an excellent Northwest Department devoted to works relating to the country and the tribes, in which are to be found some rare volumes. The museum is still in its infancy, but lately there have been added some old coins, stone-pipes, three steel discs from old Hudson's Bay post at Michipicoton, a number of articles illustrating Blackfoot life and customs, some relics commemorating the regime of the Northwest Fur Trading Company in Fort William, and a good collection of Eskimo articles from the far north.

REVISING THE CREE BIBLE.

The British and Foreign Bible Society is going to issue an edition of the Bible in the Plain Cree, the former version of the Cree Bible being in the Swampy Cree, which is not well suited to the western Indians, whose dialect is the Plain Cree. During the past year a committee has been at work translating the Bible, based on James Evan's syllabic characters, which were used in the former translation. On August 26th the committee met in St. John's College, Winnipeg, for the purpose of examining the manuscripts already finished, and preparing them for the printer, also to arrange for the completion of the enterprise. The sessions lasted about a week. It is expected that the translation of the entire Bible will be ready for the printer in a year from the present time. The Bishop of Athabasca presided at the meetings, and the Rev. Rural Dean Burman was secretary. The members of the committee are: The Metropolitan of Rupert's Land, the Bishop of Athabasca, the Bishop of Moosonee, and others. The Presbyterian Church contributed a manuscript of Luke's Gospel in Roman characters by the late Rev. G. McVicar. Different portions of the Bible have been translated by the respective members of the committee. The Rev. E. B. Glass who had as his portion of the work, the books of Isaiah and Jeremiah, is a good Cree scholar, and the author of a "Primer and Language Lessons" in English and Cree syllabics of forty lessons. This work is intended for students of the language and missionaries who wish to learn the language by means of the syllabics. The lessons embrace all words and expressions necessary in common conversation and ordinary business, every lesson being in Cree with the English explanation. When the Plain Cree translation is completed, another version will be printed in the dialect of the Cree, which is used in Southern Moosonee, using the extended Syllabarium employed by the late Bishop Horden.

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NEW DISCOVERIES.

NEOLITHIC WORKSHOP—An interesting discovery of prehistoric remains has been made near Calais. The sand dunes on the sea coast have revealed the presence of ancient soil, with many evidences of ancient man, e.g. a Neolithic Station and Workshop for making flint swords, knives, javelins and arrows.

DRUIDIC CIRCLE called a Bull Ring has been recently explored near the village of Dove Holes, in Derbyshire. It proves to have been a Neolithic Station resembling Stonehenge.

BAALBEC.—The work of exploring this Temple under the patronage of the German Emperor is nearly completed. In the centre of the whole is a great rock altar—rock-hewn, but the later buildings are constructed in the Roman style—a magnificent colonnade being the chief object.

THE LION OF CHERONEA—This monument erected in honor of the heroes who fell in the battle of Thebes against Phillip is to be restored by the Greek Government.

FOUNTAINS AND AQUEDUCTS, ANCIENT AND
MODERN.

The comparison of the ancient and modern art and architecture is very instructive. It appears that modern art has come to us from the East, but ancient art and architecture had a separate development and starting points which were as wide apart as the continents of Europe, Asia and America. The American archaeologists realize this more than the European. We give below cuts which exhibit specimens of sculpture



placed near certain modern fountains, also specimens of arches found in Spain. These are in great contrast with the sculptured figures and arches which abounded in America in Prehistoric times, and illustrate the point very clearly,

The fountain of the Moor, in Rome, has a group which was sculptured by Bernini, who has been called the "modern Michael Angelo"; he has been criticised in the following language:

"Leaving behind him true principles of art as seen in the antique sculptures and in nature, principles of purity and

simplicity of design, he rushed onward at his own will, mistaking facility and ingenuity for genius, and, wishing to carry grace and beauty beyond their proper confines, his work became full of affectations. The same is true of other artists.

As one critic says, "he suffocated beauty with the luxury of of useless ornamentation." In his later years the sculptor himself acknowledged his mistake and confessed that his early work, before he became so lavish and extravagant in his ideas, was his best.

Sculptured ornaments which adorn the fountains in many of our cities are borrowed from ancient heathenism. There is



AQUEDUCT AT SEGOVIA.

very little that is modern, and even less that is historic, or has any tendency to awaken the historic sense.

The cut illustrates this point. It shows a modern style of Architecture in the buildings, but the figures which are seen in the group are so complicated that an ordinary person would not understand them. More simplicity would undoubtedly be an improvement, or if complicated designs are to be used they should be such as would be understood, and at the same time awaken the historic sense among the people.

The aqueducts of the ancients, however, have a lesson for us. The aqueducts of this country are so plain that they are rarely noticed and are often an offense to the public taste.

The Romans exceeded all other nations in their skill in connecting such works. There were under the Emperor Neroa, no less than nine different aqueduct's, which were afterwards increased to twenty-four, with several channels placed one

above the other, one of which was sixty-three miles in extent. The Aqua Martia contained nearly 7,000 acres. Strabo said that whole rivers flowed through the streets of Rome. The Romans built other aqueducts in their provinces. That of Metz in Belgic Gaul, is among the most remarkable. The aqueducts on the Island of Mitylene, of Antioch, of Segovia of Spain, and of Constantinople, are to be mentioned. The cut represents the aqueduct of Segovia, and shows the manner in which such structures were erected by the Romans.

The comparison of these fountains of modern times with those adorned by the ancient sculptors is instructive. There were in America, fountains and aqueducts which attracted the attention of the early discoverers, some of which have been described, as follows:

"Water was brought over hill and dale to the top of the mountain, by means of a solid stone aqueduct. Here it was received in a large basin, having in its center a great rock, upon which were inscribed in a circle the hieroglyphics representing the years that had elapsed since Nezahualcoyotl's birth, with a list of his most noteworthy achievements. * * *

From this basin the water was distributed through the garden in two streams, one of which meandered down the northern side of the hill, and the other down the southern side. There were likewise several towers or columns of stone having their capitals made in the shape of a pot from which protrude plumes of feathers, which signified the name of the place. Lower down, was the colossal figure of a winged beast called by Ixtlilxochetl, a lion lying down, with its face toward the east, and having in its mouth a sculptured portrait of the king; this statue was generally covered with a canopy adorned with gold and feather work.

A little lower yet there were three basins of water, emblematic of the great lake, and on the borders of the middle one three female figures were sculptured on the solid rock, representing the heads of the confederated states of Mexico, Tezcuco and Tlacopan.

Upon the northern side of the hill was another pond; and here upon the rock was carved the Coat of Arms of the city of Tulan, which was formerly the chief town of the Toltecs. Upon the southern slope of the hill was yet another pond, bearing the coat of arms and the name of the city of Tenayuca, which was formerly the head town of the Chichimecs. From this basin a stream of water flowed continually over the precipice, and being dashed into spray upon the rocks, was scattered like rain over a garden of odorous tropical plants. In the garden were two baths, dug out of one large piece of porphyry, and a flight of steps also cut from the solid rock; worked and polished so smooth that they looked like mirrors, and on the front of the stairs, were carved the years, months, day, and hour in which information was brought to King Nezahualcoyotl of the death of a certain lord of Huexotzinco, whom he esteemed very highly, and who died while the said staircase was being built. The garden is said to have been a perfect little paradise. The gorgeous flowers were all transplanted from the distant terra caliente; marble pavillions, supported on slender columns, with tessellated pavements and sparkling fountains, nestled among the shady groves and afforded a cool retreat during the long summer days. At the end of the garden, almost hidden by the groups of gigantic cedars and cypresses that surrounded it, was the royal palace, so situated that while its spacious halls were filled with the sensuous odors of the tropics, blown in from the gardens, it remained sheltered from the heat."

"Montezuma's Baths" have also been spoken of. These were situated upon the mountain top, and were surrounded by

*Bancroft, Vol. II. p. 167-172.

seats which probably resembled those of the Incas in Peru. In connection with them there was an aqueduct that led across the valley.

The following is a description from Bancroft:

"About three miles eastward from Tezcuco is the isolated rocky hill which rises with steep slopes in conical form to the height of perhaps 600 feet above the plain, a portion on the side of the hill is graded very much as if intended for a modern railroad, forming a level terrace with an embankment from 60 to 200 feet high connecting the hill with another three quarters of a mile distant, and then extends toward the mountain ten or fifteen miles distant, the object of which was to support an aqueduct or pipe ten miles in diameter, made of baked clay or blocks of Porphyry.* At the termination of the aqueduct on the eastern slope of Tezcocingo is a basin hewn from the living rock of reddish porphyry, known as "Montezuma's Bath," four feet and a-half in diameter, and three feet deep, which received water from the aqueduct, with seats cut in the rock near it."

Several persons have described this aqueduct, among them Brantz Mayer, and Edward Tylor; and have spoken of the perfection of the work. The seats which adjoined it have also been described by Col. Mayer, as follows:

"The picturesque view from this spot over small plains, set in the frame of the surrounding mountains and glens which border the eastern side of Tezcocingo, undoubtedly made this recess a resort for royal personages for whom these costly works were made. From the surrounding seats they enjoyed a delicious prospect over this lovely but secluded scenery, while in the basin at their feet were gathered the waters of the spring. On the northern slope is another recess bordered by seats cut in the living rock, and traces of a spiral road and a second circular bath, and sculptured blocks on the summit."

Bullock speaks of the ruins of a large building, a palace whose walls still remain eight feet high, and says that the whole mountain had been covered with palaces, temples, baths, and hanging gardens.

There were also other aqueducts which supplied the gardens and fed the fountains which so beautified the various cities. These have been described by the Spanish writers.

Peter Martyr, describing the Palace at Iztapalapan, writes:

"That house also had orchards, finely planted with divers trees, and herbs, and flourishing flowers, of a sweet smell. There are also in the same great standing pools of water with many kinds of fish, in which divers kinds of all sorts of waterfowl are swimming. To the bottom of these lakes a man may descend by marble steps brought far off. They report strange things of a walke inclosed with nettings of canes, lest any one should freely come within the voyde plattes of ground, or to the fruits of the trees. Those hedges are made with a thousand pleasant devises, as it falleth out in those delicate purple crosse alieyes, of myrth rosemary or boxe, al very delightful to behold."*

"The love of flowers was a passion with the Aztec's, and they bestowed great care upon the cultivation of gardens. The finest and largest of these were at Iztapalapan and Huastec. The garden at Iztapalapan was divided into four squares, each traversed by shaded walks, meandering among fruit trees,

*Bancroft, Vol. IV., p. 525.

*Peter Martyr's Dec. V., Lib. ii.

blossoming hedges, and borders of sweet herbs. In the center of the garden was an immense reservoir, of hewn stone, four hundred paces square, and fed by navigable canals. A tiled pavement, wide enough for four persons walking abreast, surrounded the reservoir, and at intervals steps led down to the water, upon the surface of which innumerable water-fowl sported. A large pavilion, with halls and corridors, overlooked the grounds."

DOUBLE HEADED SERPENT AND THE MIGRATION OF SYMBOLS.

The migrations of symbols has been discussed by the Duke de Alviella who reached the conclusion that many of the symbols found in America, came originally from the Asiatic continent; the Suastika, the Cross, being the most notable of the migratory symbols. One other object or symbol is found in America that has heretofore been considered as peculiar to the continent. We refer now to the double headed serpent. There are however some evidences to prove that even this was originally derived from extra-limital sources, or if not the symbol, the idea embodied in it was. All archæologists know that this is common among the tribes of the Northwest Coast, as well as among the more civilized tribes of Central America, and probably signified about the same thing. On the Northwest Coast there are pictures of priests or medicine men, holding the badge of their office. This represents the fabulous double headed snake, that has one head at each end and a human head in the middle, with a horn on each terminal head and two in the middle:

"This fabulous monster was obtained by the ancestors of one clan Kwakiutl tribes as a helper to the tribe, and therefore became the crest. It had the power to assume the shape of a fish. To eat it, to touch it, or to see it, was sure death except to those who enjoyed supernatural help. To them it brings power. Its skin used as a belt, enables the owner to perform wonderful feats. It may become a canoe that moves by the motion of the fins. Its eyes when used as sling stones, kill even whales. Its blood wherever it touches the skin makes it hard as stone. It is essentially the helper of warriors."

This is called the Sisiul; and is often used as an ornament to the person, for belts are made in this pattern with which blankets are held up; knife handles are often carved in this shape. Whether or not the double headed serpent of Central America came from the same source, the resemblance between

*Bancroft, Vol. II., p. 575.

•See Smithsonian Report, 1895, p. 513.

the two is very striking. The fact however that it was a clan emblem and a religious symbol on the Northwest Coast, helps us to understand its significance when seen on the facades of the palaces.

It is noticeable that one ornament in Central America represents two serpents intertwined with the head and tail projecting at both ends or corners of the building, with a human head in the mouth of the serpent or dragon instead of in the center of the body; still there are bars in the form of double headed serpents, with a mask in the center which form a conspicuous ornament over the doors of the palace. These bars have been noticed by all travellers in Central America, and are supposed to represent some inherited symbol, though they probably had become conventional architectural ornaments, possibly symbolizing the sun and the rain cloud. They however resemble the emblem of the double headed serpent which is common on the Northwest Coast, so closely as to suggest the idea that they originally came from that region, or were transmitted from ancestors who had migrated from the Northwest.

It is remarkable that a figure resembling the double headed serpent, is used as a Coat of Arms in Sumatra.

Here there are two serpents with their tails near together and tigers below the serpents. The fact however that it had about the same significance makes it an object worthy of careful study. Mr. Henry O. Forbes says:

"In a very old village I was greatly interested in finding what I may call a "veritable Coat of Arms," carved out of an immense block of wood, and erected in the central position where one would expect an object with the significance of a Coat of Arms would be placed. From what I could learn it had such a significance in the estimation of the chief of the village; for he told me only such villages as could claim origin from some distant village could erect such a carving in their Balai. I am not, however, master enough of the terms of blazny current in the College of Arms to describe it in fitting language. The shield had double supporters; on each side a tiger rampant bearing on its back a snake defiant, upheld the shield, in whose center the most prominent quartering was a floral ornament which might be a sun flower shading two deer, one on each side—the dexter greater than the sinister. Above the floral ornament was a central, and to me, unintelligible half moon-like blazoning. Below the tips of the conjoined tails of the supporting tigers were two ornate triangles, the upper balanced on the apex of the lower. I feel inclined to assert that it is as good an escutcheon and as well and honorably emblazoned, as any that ever emanated from the College; and who dare say it is less ancient?"

What is still more remarkable is that there are houses among the Kwakiutls on the Northwest Coast, on which the same symbol may be seen. The two serpents or the double headed serpent painted over the door. The serpent is here seen as attacked by birds, the crane and the thunder bird on one side, the eagle and the raven on the other side, two human faces on the body of the bird over the doorway. The resemblance of this figure to the Coat of Arms at Sumatra is very striking.

*See *A Naturalist's Wanderings*, by H. O. Forbes, p. 180.

EDITORIAL.

MAJOR POWELL AND HIS WORK.

The death of Major Powell has made a vacant place in the ranks of the scientific men of the world which will be difficult to fill. A self-made man, who came up from the humble walks of life, and from the home of a preacher of the Methodist Church, has made his mark upon society such as few men have ever made.

He was born in Mount Morris, N. Y., March 21, 1834. His



father was a preacher of the Wesleyan Church in England, but came to America and settled first in New York, afterwards in Ohio, later in Walworth Co., Wisconsin. His early education was fragmentary, and gained mainly in the fields. At the outbreak of the Civil War, he enlisted in the 20th Ill. Volunteers as 2nd Lieut., but became Major in the U. S. Army. In 1867 he was a Professor in Bloomington, Ill., and with a party of sixteen students he crossed the great plains, to Pike's Peak, and afterwards made the famous expedition which no man had

ever dared to undertake through the Grand Can \acute{o} n of the Colorado. From Aug. 13 to Aug. 29, the party was lost to the world, but Major Powell and a few of his companions came out famous for the exploit. In 1871, the survey of the Rocky Mountains was undertaken, and the Ethnological Bureau was established. In 1881, Major Powell was appointed Director of the Geological Survey, but continued his work of Ethnology in connection with that of geology.

He was a great explorer and a wonderful organizer, and was so enthusiastic that in the early days of his Governmental work he drew no salary, expended all appropriations upon the work itself. His greatest achievement was the development of a systematic topographic map of the United States, which became the necessary base for all geologic and scientific study, forestry, irrigation and mining. He was able from his standpoint as an explorer and organizer and a scientific man, to turn the attention of the Government to the scientific needs of the country. In the department of Ethnology he was aided by a large number of specialists, and not only made a map showing the location of native tribes, but did much toward the classification of the native languages.

The books which bear his name as Director of the Government Geological Survey, and the Bureau of Ethnology, make a library in themselves, and will serve as reference books for scientific students for many years to come. Few men have ever accomplished as much in the world as he. His work is his monument, and shows to the world how much may be accomplished by one man. The poverty of his early days never seemed to be a hindrance, for he rose from obscurity to the highest honors, and can be accounted a successful man in all he undertook. He learned self-reliance as a boy on the farm; he learned also the art of commanding men when a Lieutenant in the Army; he learned his first lessons in exploring when with a few companions, he passed through the Grand Can \acute{o} n. His whole life work was accomplished through the exercise of the same qualities that received their training in this practical way. In his last days he was engaged in the work of classifying the departments of science and thought into a general system, but his best work was in connection with the two surveys.

The portrait given above was taken some ten years ago, and was furnished to the editor by Major Powell himself. It appeared in the XIVth Volume of *The American Antiquarian*, along with a sketch of his life up to that time. Some important work has been accomplished since then, and the facts are concentrated into this short sketch, though the actual products of his life are scattered through many places, and will remain as his monument.

THE INTERNATIONAL CONGRESS OF AMERICANISTS.

One of the most interesting and notable gatherings of Scientific men has just occurred at New York, in connection with the thirteenth session of the International Congress of Americanists. The object of the Congress is to throw light on the archæology, ethnology and the early history of the two Americas. The subjects discussed related to The Native Races, their origin, distribution, language, inventions, customs, and religions; the history of the early contact between America and the Old World; The Evidence of the Antiquity of Man on this Continent; The Decipherment of the Hieroglyphics which have been discovered in Central America; The Character of the Art and Architecture of this Continent; The Mythology of the Native Races, and their Physical Anthropology.

There were present at this Congress, gentlemen who have been engaged in the study of these various topics from Germany, France, Sweden, Holland, Argentine Republic, Mexico, Costa Rica, and from various parts of the United States. The most notable papers were those which had relation to the pictorial and hieroglyphic writings of Mexico and Central America, by Edward Seler; The Rites and Ceremonies of the Ancient Mexicans, by Mrs. Zelia Nuttall; the Mural Paintings of Yucatan, by Edward H. Thompson; The Archæological Researches in Peru, by Max Uhle; The Current Work of the Bureau of Ethnology, by W. J. McGee; The Folk Lore of Northeastern Siberia compared to that of Northwestern America, by Waldemar Bogoras; Star Cult, by Alice C. Fletcher; The Languages of California, by Roland B. Dixon, and A. L. Kroeber; The Archæology of the Delaware Valley, by F. W. Putnam.

The topic that engaged most attention and excited the most interest was the Discovery of the Lansing Skull. This was on exhibition, and discussed by W. H. Holmes, George A. Dorsey, Ales. Hrdlicka, and others. All agreed that the find was a genuine one, and that it was likely to revolutionize the ideas of Scientists in reference to the antiquity of man in America. The skull was pronounced by those who are specialists in anatomy and physical anthropology to be similar to that of the ordinary Indian of the *northern type*, as it is what is called Kumbo Cephalic, or keel-shaped, differing in some respects from that of the southern Indians, which is generally broader and shorter; but the uncertainty is in reference to the age of the deposit in which the skeleton was found. This is a question to be decided by the geologists rather than the archæologists, and fortunately they have taken up the subject thoroughly.

It will be remembered that the archæologists and geologists met together at one session of the American Association at Philadelphia, and discussed the evidence of the presence of man, presented by the gravels of the Delaware Valley; but

there was great uncertainty in reference to the relics discovered, and still more in reference to the age of the deposits. There seems to be no uncertainty in reference to this skull, and all are agreed that the deposit belongs to the geological period, which followed the last glacial period, thus making the age of man to be, on this continent, 10,000 years.

Fortunately the find came to the knowledge of such geologists as Prof. N. H. Winchell, and Prof. Warren Upham, and Prof. S. W. Williston, soon enough for them to examine the locality, and we are thus spared the uncertainty which has always hung over the Calaveras Skull. No one now claims that the Table Mountain has become a Valley, since the presence of man; though a few years ago that was asserted with a great deal of positiveness.

Another open question which was discussed at this Congress, was the one which relates to the continued contact between the American and the Asiatic continent. New evidence was presented by Waldemar Bogoras, who is a native of Russia, but speaks several languages, and has explored the region along the northeastern shore of Siberia. He finds that the natives of Siberia have myths which are very similar to those on the coast of America. The Sedna myth is common on both continents. He finds also that the languages spoken by the tribes spoken on the Siberian Coast are very different from those of the Mongolian tongue. They show some evidence of being inflected, and differ from agglutinated languages of the Mongolians. The evidence of contact is also presented as we have shown elsewhere, in the similarity of the symbols, especially that of the double headed serpent, which is found upon both continents.

The subject of art and ornament, especially the conventionalism in art, was brought by Dr. Franz Boas, and Carl Lumholtz, and others. Mr. C. B. Hartman had a paper on the Archæology of Costa Rica, and Mr. Hjalmar Stolpe had a paper on Swedish Ethnological Work in South America and Greenland; Mr. M. H. Saville had a paper on the Cruciform Structures at Mitla. Other papers were read by Mr. G. A. Dorsey, George Bird Grinnell, W. P. Blake, J. W. Fewkes, Franz Boas, H. I. Smith, A. L. Kroeber, F. W. Putnam, Prof. F. Starr, J. F. Hewitt, Stuart Culin, J. L. Van Panhuys, Stansbury Hagar, J. D. McGuire, F. S. Dellenbaugh, F. W. Hodge.

An interesting paper was also presented by Miss Alice C. Fletcher, on the Star Worship of the Pawnees, which was followed by an account of the Sun Dance of the Pawnees, by Mr. G. A. Dorsey. Mr. Leon Lezeal read a paper on the Peruvian Vases, in which he stated that some of them were as elegant in form as any ever made in old Greece. A familiar figure was a sad feminine face, too singular to be forgotten. This same face was found all over Peru. Dr. Boas spoke of the resemblance between the Siberian natives and those of the

Columbian river northward, and seemed to think there was a race which he called the Behring Race, a position which was confirmed by Waldemar Bogoras.

The exploration of this region has been sustained by gifts from Mr. Morris K. Jesup of New York, who was elected President of the Congress. The Duke de Loubat, has also done much toward the encouragement of the exploration in Central America, and with propriety he was designated Honorary President, and occupied the Chair at the beginning of the Session. The Duke holds that the charge which has been made against the monks, that they destroyed the archives, was not well founded; that the palaces containing them were fired by the Indian allies of Cortez, and not by the Spaniards themselves.

At the close of the sessions at New York, a number of the Americanists took a train for Philadelphia, Washington, Cincinnati and Chicago. They spent two or three days in the latter city. They visited the Field Museum, the University, attended the levy at the President's house, and took a carriage ride, along Michigan Ave., and other parts of the city. They were entertained at the Hotel Del Prado. The majority of them returned to New York by special train, though Mr. and Mrs. Seler took the train for Mexico and Central America. The opportunity for forming acquaintance between the archæologists of the two continents was a good one, and was improved by all.

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EDITORIAL NOTES.

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VIRCHOW.—The death of this noted man recalls the process through which the science of Anthropology has passed in reaching its present condition, for no other man has been so fully identified with it. During the previous century Blumenbach and Camper had directed attention to physical anthropology and the races of man. Virchow also made this his specialty, and took a leading part in forming the society of Anthropology and Ethnology in Berlin.

His studies in prehistoric archæology however brought him into contact with the students in that department and his theory in reference to the descent of man was very conservative as he claimed that the Neanderthal skull was not sufficient to prove the existence of a lower race.

He maintained that different types of man may be combined to form one race as well as one nation.

The gradual introduction of metals into Europe and its effect upon the stone age people was sufficient to solve the problem of the peopling of Europe.

The presence of bronze indicated that the new culture arose in the East but was transmitted to the West.

Virchow's position in reference to the find of the so-called Pithecod man in Java was also that of a conservative. He showed a rare combination of critical judgment with great diversity of information. The limits of human types do not coincide with the dividing lines of culture and of language, was a fact which he recognized everywhere.

ETERNALISM. A book by this title has been written by Mr. Orlando J. Smith, President of the American Press Association, and takes the ground that the soul of man is by its very nature immortal, eternal uncreatable and indistructable, but by successive incarnations its qualities developed. A doubt comes in however in this connection, for with some souls continued existence brings out the worst qualities. The effects of surroundings do not improve the character. Huxley even says, "the cosmic process has no relation to moral ends." Andrew Lang says, "The universe is a large subject, and we must brace our scaling ladders much more firmly before we can climb the mountain peaks of the Eternal.

A LIBRARY BEFORE ABRAHAM'S TIME.—A library dating back before the age of Abraham has been unearthed in Babylonia by Professor Hilprecht, and presented by him to the University of Pennsylvania, of whose faculty he is a member. It consists of a large number of clay tablets, in excellent preservation, from the Temple of Bel. A partial examination of the tablets leads to the hope that they may throw some new light on the first eleven chapters of Genesis.

JOSEPH PRESTWICH is another of the distinguished men who have passed away within a short time. His name was connected with the discoveries of Boucher de Perthes of 1847. He was awarded a medal by the Society in 1865 for his original researches in the valley deposits yielding weapons of paleolithic man. The study of the drifts of the south of England was important. His views on the primitive character of the flint implements of the Chalk Plateau of Kent, have opened up a new and interesting inquiry as to the age of man. He held to the submergence of western Europe, at the close of the Glacial Period and to the confirmation of the tradition of a flood. He received the honor of Knighthood from Queen Victoria, and was esteemed and beloved by all, and in this respect had the same position in England that Virchow had in Germany.

PRIMITIVE MAN. An article by Talcott Williams in the Annual Report of the Smithsonian for 1896, discusses the question, "Was Primitive Man a Modern Savage?" and argues in the affirmative, holding that the relics of paleolithic man point to his wandering over various parts of the globe. Mr. G. Frederick Wright in a recent article of the *Record-Herald* of Chicago, takes the other side of the question, holding that man in Egypt began with a high state of civilization and degenerated. There is no doubt that the law of progress and degeneracy have both characterized the history of the human race, but the evidence is strong that man began in a very low condition, and perhaps resembled the modern savage; and yet the truth is that the human animal was a prime motor in the progress of the world. He was endowed by the Creator with the capabilities for improvement which when supplemented by the supernatural power have overcome all the tendencies to degeneration.

ISRAEL'S RELIGION, Wellhausen declares, was gradually developed out of heathenism. The mountain and steppe divinity gradually develops into the god of the heavens and earth. Gunkel finds in the Bible, myths indicative of beginnings of religious ideas. Winkler identifies Abraham, Isaac, Jacob, with Babylonian Astral divinities; but recent discoveries in the East have proved that their personal history like that of others, was as real as that of the Egyptian kings, such as Ramses, but their character was in contrast.

COAL.—According to a contributor to Engineering (September 26), the formation of coal may be summarized as follows: Certain plants or trees grow in morasses; they decay and sink; more plants grow on the first layer, and sink in their turn. The weighted down residue decompose through the influence of microbes, with the generation of methane and carbonic acid; and when the decomposed mass is afterwards exposed to high pressure, we find, according to the age of the deposit, peat, lignite, coal or anthracite; graphite does not appear to have the same genesis as coal.

BOOK REVIEWS.

JOURNAL OF THE ASIATIC SOCIETY OF BENGAL. Vol. LXX., Part I: Extra No. 1.—1901. Edited by the Philological Society, Calcutta: Printed at the Baptist Missionary Press, and published by the Asiatic Society. 57 Park Street, 1902.

This number contains a long article on the antiquities from Central Asia, being a Report by A. F. Rudolf Hœrnle, Ph. D.* The antiquities consist of manuscripts, some of which were genuine and some fabrications, dating 300 to 700 A. D. The pottery terra cotta objects are very interesting. Many of these have been described by D. Sven Hedin, as they are in his collection. Some of them represent heads and busts, male and female; others masks used as ornaments; others figures made in the round and represent heads and bodies of the horse, boar and bull. They were originally handles for jars which have been broken off, and are quite artistic in their style and finish.

DITTO. Vol. LXX. Part I. No. 2,—1901.

This contains an article on the symbols and devices on copper coins, by W. Theobald. The symbols are the vine, the threskelis; the hour glass, the lotus, the stupa, the elephant, winged lion, the buffalo, trees with paddle shaped branches, boats, swastika, wheel, trisul, bow and arrow, etc.

HOMERIC SOCIETY. By Albert Galloway Keller, Ph. D. Published by Longmans, Green & Co., 91 and 93 Fifth Ave., New York, London, and Bombay.

This book presents an admirable picture of the Homeric Age, and will be welcomed by all archæologists who desire to know the state of society which prevailed in that age. The first chapter is devoted to the weapons, relics, metals and artifacts of the period; the second, to the employments, hunting, fishing, agriculture; the third, the religious ideas and usages; the fifth to the social customs; and the sixth to the government.

The sources of information have been drawn largely from the study of the text rather than the archæological studies, but one who is familiar with the recent discoveries will see the general correctness of the author's position. We can imagine how a book on the same subject illustrated by cuts which would represent the art products of the times, would be welcomed by archæologists, but in the absence of one, the word pictures contained in this book are very suggestive.

WIGWAM STORIES. By Mary C. Judd. Boston, U. S. A. Ginn & Company, Athenæum Press.

Myths and Tales of the Indians are always interesting, but strange to say, are not so well known as those of the nations of the East. This volume, however, entitled "Wigwam Stories," gives them in a brief but attractive way. It begins with a description of the canoes, houses, the wampum, and turns to Indian traits, to the Medicine men, to the Indian totems, Indian names for months, also the Indian games, the pottery vessels, and clay dishes, and then treats of the various Indian stories. The story of the First Man and Woman; Giants and Fairies; The Blue Heron and the Wolf; The Legend of Niagara Falls; Legend of Minnehaha Falls; Legend of Macinaw Island. There are stories about the Magic Moccasins, about Manabozho, about the Pleiades, the North Star, the Thunder Bird, about Hiawatha, all told in a short and entertaining way. Many of the illustrations are taken from photographs and sketches made by a young Indian artist. The book is calculated to interest young people.





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