From Page 215

claws on the larger creatures of its kin are in this one mere stubs ending futilely in bristles. But its antennae or feelers have grown out of all proportion, into long, beaded horns, with many long, whiplike branches. And at the other end of the creature are eight fantastic appendages that look like feathers—as if this creature of the sea had ambitions for the air!

But Frank Long does not confine his efforts to single specimens. Community life in the animal world catches his eye and his swift fingers picture scenes among our lesser cousins.

The simplest community, perhaps, is a colonial jellyfish. Here, strung along a winding cable of living stuff (represented in the model by a bent glass tube) are a dozen or more many-armed little animals. Each lives its own life, unable even to approach its neighbor; yet all share in peaceable communism one gas-filled float at the end of the string, that keeps the whole little community near the surface.

A more settled sea-community is shown in a bottom grotto of sea-anemones. Despite their name and their flower-like appearance, sea-anemones are animals. Their "petals" are really clutching fingers, wherewith they seize their prey when it swims too close.

Of all Mr. Long's pictures in glass, perhaps the one with the largest element of drama is a battle scene between two tribes of ants. The story is old, perhaps one of the best known in all natural history, and for that very reason most relished by the crowds of museum visitors. We see the onset of the attackers, fierce red Amazon ants. The defenders, black ants, fight valiantly for their home, but with their weaker jaws are no match for the raiders. The Amazons carry off their helpless young to be enslaved.

Science News Letter, April 3, 1937

ARCHAEOLOGY

False Teeth Are Fitted to A Million-Year-Old Ape

Dental Plate Designed for Research Not for Use Is Shown to Scientists at Symposium on Early Man

FALSE teeth for a million-year-old ape were exhibited before prehistorians attending the International Symposium on Early Man at the Academy of Natural Sciences in Philadelphia.

It's ages too late to do the snaggle-tooth primate any good now, of course. But the beautifully made dental plate, including natural fossil teeth belonging to the real ape, serves the greater purpose of revealing man's evolution from ape-like form.

Discovery of jaws and teeth of a fossil ape found in the Siwalik hills of India opened up this new evidence on man's ancestry, Dr. William K. Gregory and Dr. Milo Hellman, of the American Museum of Natural History, told the Symposium.

Lower molar teeth of the Indian ape grew to form five cone-like points or cusps. As the cusps grew to mature size, grooves formed between them in shape of V or Y lines. This pattern of tooth is called the Dryopithecus pattern.

Dr. Gregory says:

"We think they represent the kind of molar teeth that belonged to the common ancestor of apes and man."

The common ancestor himself is still a missing link in evolution. But teeth of the Indian ape are so significant that the two specialists in anatomy said:

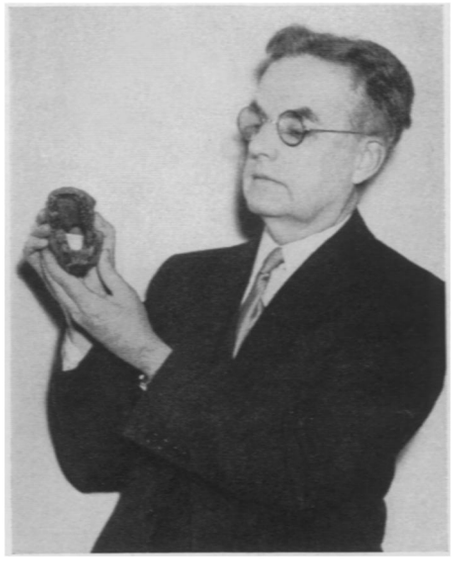
"We have in progress a re-study of the entire problem of origin of the dentition."

The ape's teeth are much below man's level, the scientists reported. But the subtle changing of the pattern in various fossil apes and men traces evolutionary history. In man the Y-shaped groove has changed to a cross line between the four cusps that remain in advanced types.

Teeth of the Indian ape, discovered by two different expeditions and exhibited thousands of miles apart in the Indian Museum and in Yale University, are now proved to belong to the self-same individual ape.

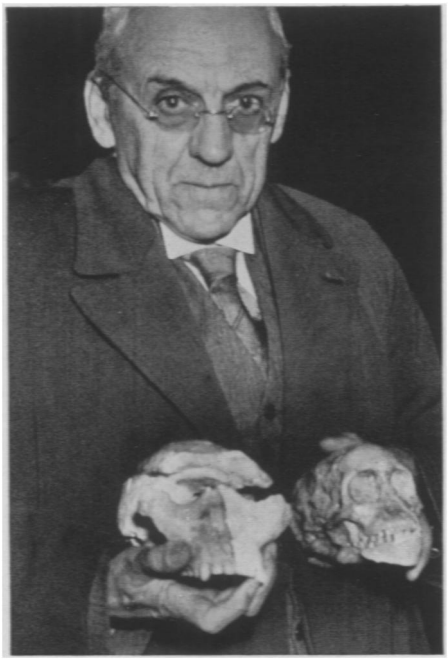
When Dr. Hellman, former dentist, now anthropologist, tried to fit the fourteen teeth discovered, he saw that they belonged together, and that enough teeth were represented for him to make a dental-plate reconstruction of the ape's mouth. The portion of the teeth found by the Yale expedition are to be presented to the Indian Museum, so that the set may be kept there complete.

Evolutionary evidence carried by man in his teeth, the two anatomists believe, shows that early men of the Old Stone Age were structural ancestors to the curious types of Neandertal man on the one hand, and to modern man, *Homo sapiens,* on the other.



TEETH FOR AN APE

Dr. William K. Gregory, shows the plate containing fossil teeth of an ape.



MISSING LINK

Dr. Robert Broom displaying the skull of a creature that had the brain of an ape, but the teeth of a man.

Ape Ate Like Man

Where, oh where, on man's family tree to hang an ape-brained creature with strangely human teeth?

This problem ape that ate like a man was thrust into the scientific limelight at the Symposium.

From South Africa, where it has rested in a cave for thousands of years, the extraordinary skull of this ape has emerged into a world that has living apes and living men, but not missing links like this.

Dr. Robert Broom of the Transvaal Museum in Pretoria reported his recent finding of the skull, and displayed a cast so that his fellow prehistorians might inspect the long, narrow chimpanzee type of skull with meager brain capacity, and human-like mouth.

Dr. Broom tentatively gives this ape the distinction of revealing a new species. It bears the name *Australopithecus Transvaalensis* Broom. It lived, he has reason to believe, about the middle of the Old Stone Age or even the latter part. And that is puzzling.

For by that time in prehistory, men were no novelty on earth. Various species of man had evolved and some had already become extinct. If this South African ape was on the way to human evolution, it must have started extremely late. And it never arrived. Dr. Broom told of unearthing the skull while he was searching South African caves in hope of solving another ape puzzle. Twelve years ago, Prof. Raymond Dart had announced the startling discovery of this other ape, called the Taungs ape, which he considered the long-looked-for missing link, and a near common ancestor of ape and man.

"As the Taungs skull belonged to a child ape, four or five years old," said Dr. Broom, "this was not entirely convincing to the scientific world, and it seemed necessary if possible to get an adult specimen."

Comparing the Taungs skull to the one now revealed, Dr. Broom said:

"The skull is manifestly closely allied to the Taungs ape, but I am placing it in a new species because the associated mammals are all different, and I think later."

Dr. Broom expects to continue the search in caves at Sterkfontein. Before the year ends, he said, he hopes to have evidence which will settle the question of age, and to reveal a complete skeleton of the species.

Praising the Symposium at its close for drawing together the tangled threads of man's prehistory, Prof. George Grant MacCurdy of Yale University said that much progress is being made in a hard scientific task.

"Hardly a year has passed since 1895," said Prof MacCurdy, "without an important discovery of the skeletal remains of fossil man. During the past 42 years the growth of our knowledge of fossil man's culture has also been unprecedented."

Stone Age Chewing Gum

Stone Age man chewed gum, it seems.

In the course of his address, Dr. V. Gordon Childe of the University of Edinburgh told of the discovery, in a peat bog near the Baltic, of lumps of conifer tree balsam apparently used for chewing, associated with the bone and stone weapons used in hunting and fishing just before the beginning of the New Stone Age.

First American Debated

Did the first American represent a mysterious and unknown pre-Indian race, or was he just a plain Indian redskin? Did he manage to get here as early as 25,000 B.C., or as late as 2000 B.C., which is practically yesterday in terms of human history? Clashing scientific ideas enlivened the International Symposium.

Firing a shot for extremely late arrival of first Americans, Dr. Herbert J. Spinden, Brooklyn Museum, declared:

"My thesis is that the red man was the first human to enter America, and that he came bearing Neolithic (New Stone Age) arts, which represented the contemporary civilization of nomadic hunting and fishing tribes of northern Europe and northern Asia at the time of his departure."

This migration, which led Asiatics to cross Bering Strait and set foot on American soil, happened not much earlier than 2000 B.C., Dr. Spinden believes. It was so late that written history had already begun in civilized areas, and therefore American prehistory can be entirely fitted into sequences of the world's known history.

The fact that America's early people hunted mammoths, wild horses, and other Ice Age animals does not upset this theory, Dr. Spinden pointed out. Elephants have been found in China dating from a much later era than was supposed possible, and America, too, may have had its late-surviving Ice Age beasts.

Skeletons Known

Supporting Dr. Spinden's argument was the report of Dr. Ales Hrdlicka of the U. S. National Museum that every supposedly ancient skeleton found in America is of some known Indian type, and therefore presumably not very old.

Aligned on the side for early discovery of America, several geologists reported that man appears to have been in this country while the last ice sheet was retreating.

Dr. Kirk Bryan of Harvard told of studying the neighborhood where the only known home of Folsom Man has been located. This site in Colorado, where hunters cooked and ate Ice Age animals and worked at the Folsom type of stone weapon, is tentatively linked with the retreat of the Wisconsin ice sheet, but whether it should be called late glacial or post-glacial, Dr. Bryan said, will have to (*Turn to page* 222)

MEDICINE

Artificial Siamese Twins Show Role of Sex Hormones

Pairs of Mice Joined by Surgery to Have Single Blood Supply Throw Light on Cancer Causation

PAIRS of male and female mice, joined Siamese-twin fashion by surgical operation so that they had a common blood supply, have helped to identify the sex hormone that might play a part in breast cancer causation. The studies were reported by Dr. William S. Murray, of the New York State Institute for the Study of Malignant Disease, Buffalo, at the meeting of the American Association for Cancer Research in Chicago.

One of the female sex hormones, the luteal fraction of the ovarian hormone, is the hormone that may lead to the formation of breast cancer in mice, it appears from Dr. Murray's studies.

Scientists had previously found that the ovarian hormones, acting upon or accumulating in the breast tissues of mice, upset the balance between the various hormones in the body, and instigate the formation of cancers. Whether it was the amount or the kind of sex hormone that led to cancer formation was the question Dr. Murray set himself to solve with the paired male and female mice. Male mice of the strain he studied never developed breast cancer. In breeding females of the strain, breast cancer appeared in from 65 per cent. to 100 per cent. under the stimulation of the hormones of oestrus, pregnancy and lactation, whereas in virgin females the ovarian hormones producing oestrus caused breast cancer in only 50 per cent. of the mice.

By pairing the male and female mice so that they had a common blood supply, both came under the influence of the same amount and kind of sex hormones, both male and female. Introduction of the male hormones into the blood stream of the females upset the sexual cycle in the females. The ovaries were stimulated to precocious development of follicles which degenerated so that no luteal tissue or hormone was formed. Neither males nor females developed breast tumors. Since the luteal fraction of the ovarian hormone was absent, Dr. Murray concludes that this is the hormone that plays a role in the development of breast cancer in mice.

New Cancer Yardstick

A new yardstick for distinguishing between three cancer-like diseases, which takes a leaf from the book of statisticians who study birth rates in populations, was reported at the meeting of the American Association for Cancer Research by Dr. Albert E. Casey of St. Louis University.

Just as excessive birth rates may bring difficulties to a whole continent like Europe through population pressure, so too, pointed out Dr. Casey, the excessive birth rate of cancer cells is an index to the degree of malignancy in cancerlike diseases such as lymphosarcoma, lymphatic leukemia and Hodgkin's disease.

Death from cancer, finds Dr. Casey by his new method, is in direct proportion to the cancer cells' birth rate. Tumors with low cell birth rate almost never spread to other parts of the body and never cause death except by accident of location.

Swift-growing tumor cells, however, tend to run over into neighboring territories just as nations with a high birth rate tend to seek more room by territorial expansion.

Dr. Casey's analysis of the three diseases based on this population birth rate idea show lymphosarcoma has a high cellular birth rate and—as in real life—a high death rate from the affliction. Tissues from cases of lymphatic leukemia look almost like lymphosarcoma under a microscope but have a low birth rate. This disease, concludes Dr. Casey, is a harmless tumor growth of the lymph tissues but is not infectious or malignant. Hodgkin's disease has a low birth rate in its cells and there is no evidence that this condition is true cancer.

Science News Letter, April 3, 1937

ORNITHOLOGY

Migratory Bird Treaty With Mexico Ratified

WITH the exchange of ratifications of the Mexico-U. S. migratory bird treaty, and the already existing treaty with Canada, North America rounds out a safety-for-birds policy that holds from the Arctic Ocean to the boundaries of Central America.

International agreements are established regulating the maximum length of shooting seasons, prohibiting all shooting whatever during spring and summer, and designating permanently closed sanctuary areas. Neither game birds nor mammals, dead or alive, may be transported across the Mexican border without a permit from the government of each country.

A large list of bird families receives the benefits of protection under the treaty. It includes not only game birds like ducks, geese, snipe, and pigeons, but also small songbirds such as mockingbirds, finches, thrashers, and buntings.

The Bureau of Biological Survey, U. S. Department of Agriculture, has worked patiently for many years to bring this agreement to pass. Conservationists and sportsmen alike have expressed gratification over the consummation of the treaty.

Science News Letter, April 3, 1937

From Page 219

be determined by figuring the stages of retreat of glaciers in the Rockies and Middle West.

To add to complexity of the problem, Dr. E. B. Renaud of the University of Denver reported finding 3,700 pieces of worked stone, representing early American handiwork crude and primitive and closely like various stages of the Old World's really ancient stone arts. These implements, found on the surface at 40 sites, are not believed by Dr. Renaud to be as old as Europe's Dawn Men or other types several hundred thousand years old, but they apparently show America's earliest inhabitants in a new light, as people who did cruder work on occasion than has been associated with them before.

Science News Letter, April 3, 1937