sentimental thinking about one of the greatest of social problems.

L. J. HENDERSON

HARVARD UNIVERSITY

SPECIAL ARTICLES

OCCURRENCE OF HUMAN REMAINS WITH PLEISTOCENE FOSSILS, LAGOW SAND PIT, DALLAS, TEXAS

THE closing of the Lagow Sand Pit, Dallas, Texas, is a matter of regret to students of Pleistocene fossils in the southwest. This sand pit has been operated for seventeen years, excavating an area of about five acres. The pit is a part of a large featured terrace which follows the Trinity River for a number of miles. The top of the terrace is about fifty feet above the flood plain of the stream. The number of fossil finds has been large, though few of the finds have been saved. Of the fossils now preserved in the museum at Southern Methodist University, Dr. R. S. Lull has described seven species, with two new species and one new genus. Included in the list are a sabre-tooth tiger, deer, four-horned antelope, bison, camels, horse and mammoths. Since the closing of the pit makes it impossible that further knowledge will be gained from the locality, it seems a proper time to put on record the finding of a human skeleton associated with the Pleistocene fossils of the pit.

Section of Lagow Sand Pit

Top soil. Medium grained sandy loam, dark red to black.....2 ft.

Sandy clay, hard, tenacious. Red.....3 ft.

Fine sandy clay with light calcareous segregations and streaks. Texture of sand varies. Color yellow.

Fossils: Antelope, bison, mammoth, man .....2 ft., 10 in.

Fine to coarse clean white sand and gravel. Gravel usually under one inch. Cross-bedded. Forest beds not over 12 to 14 inches, usually 3 to 4 inches.

Fossils usually found at bottom, especially larger bones. Bones clean and usually white or cream in color. Mammoth, camel.....14 ft.

On October 26, 1920, I was notified by the owner of the pit that the workmen had uncovered bones which seemed to be human. Taking with me Dr. Robert T. Hill, I visited the pit, but found that the bones had been removed from the sand.

Referring to the above section, it is noted that only the lower part of the pit, the cross-bedded white sands, are commercially valuable. The upper layers constitute an over-burden. The over-burden is removed first. All of the workmen were agreed as to the location of the find—about five feet below the surface of the soil. There was no evidence along the wall of any disturbance or mixture of the different beds from bottom to top. Dr. Hill and I made close examination on this point. Mr. Lagow pointed out that there was no evidence of a grave having been dug, when it was suggested by a bystander that the man had been recently buried. The layers above the bones were well-marked stiff clays, and would apparently have shown any change or mixture with the beds below, such as would have been the case in digging a grave.

An examination of the sand and dirt found on the bones confirmed the statements of the pit men as to the exact position of the find. Mr. W. E. Wrather and Professor J. D. Boon, geologists, also visited the pit on the following day, likewise agreeing that there was no evidence of disturbance in the layers above the position of the human bones.

Only the one skeleton was found in the pit. No human implements or artifacts have been recovered. Dr. George Grant MacCurdy made the following report on the specimens:

> The human bones from Dallas comprise segments of right and left femur, right and left tibia and right fibula; also the left horizontal ramus of the lower jaw and several fragments of the calotte. All presumably belong to one individual, a large adult male of the modern type. This is about all one could say without having in hand more of the skeleton.

A chemical analysis of the fossilized bones from the human skull and from the camel skull made by Miss May Whidsit, of Southern Methodist University, gives the following results:

Human:

P_2O_5 .....30%

CaO 57.8%, 32.3%

Camel:

P_2O_5 .....31.5%

CaO .....55.4 %, 31.04%

The degree of fossilization of the human skull and that of the camel are approximately the

same. Had these human bones been of any other species, no question of association would be raised. All would agree that they were contemporaneous.

In the Lagow Sand Pit it is necessary to lay aside the association of "modern man" with Pleistocene fossils as due to burial by landslide, by recent stream action, by uprooting trees, or by any agency except a human agency. If the remains were buried by human agency, two things appear remarkable: First, that there was no visible evidence of the grave having been dug, although the skeleton was found in a sand layer beneath two beds of clay; second, that while the deposits of fossils in certain areas of the pit were much richer than others, and occupy limited areas in the pit, the location of the supposed grave was, *mirabile dictu,* placed exactly in such a limited fossiliferous area as would have occurred if laid down contemporaneously with the other fossils.

An account of this occurrence was withheld from print in the hope that further material would be found. At least a dozen occurrences in North America report human remains or artifacts associated with Pleistocene fossils or Pleistocene deposits. A review of these cases shows that in applying the theory of the multiple hypothesis, the most elaborate and involved explanation is always chosen rather than the simple direct fact of visible association and contemporaneity. Should a visible association be of less importance than a preconceived notion as to the type of man which ought to be uncovered with Pleistocene fossils?

ELLIS W. SHULER
SOUTHERN METHODIST UNIVERSITY,
DALLAS, TEXAS

THE EFFECT OF SODIUM HYPOCHLORITE UPON THE SPORES OF AMERICAN FOUL BROOD (BACILLUS LARVAE)

DURING the past year we have conducted a number of experiments with various preparations of sodium hypochlorite to determine whether or not this chemical has any value in destroying the spores of *Bacillus larvæ.*

Three lines of experiments were used:

(1) To determine if diluted solutions in sugar syrup fed to the bees would have any effect on control of the disease in a working colony.

(2) To determine if combs containing dead larvæ or dry extracting combs from diseased colonies might be treated and used again without carrying the infection.

(3) To determine if infected honey might be treated so that it could be fed back to the bees without danger of carrying the infection.

(4) To determine if sodium hypochlorite might be used as a disinfectant for hives, hive parts, extractors and other equipment.

The results of these experiments show that sodium hypochlorite has a solvent action on dead bees, pollen, cocoons and other debris in the combs but that it does not injure the wax, and while certain concentrated solutions will dissolve a dead bee in a short time, diluted they are not at all harmful to the bees when added to their food.

Larvæ dead from foul brood and living in the cells as scales were completely dissolved out in twenty-four hours. Four of these combs placed in colonies of bees in June remained free of disease throughout the summer, although the bees continued to rear brood in them.

Sugar syrup to which a water solution of spores had been added failed to carry the disease when treated with a 1 to 25 dilution of a 3 per cent. solution of sodium hypochlorite.

In an experiment where three colonies of bees were fed a diluted solution of diseased honey treated with sodium hypochlorite, two of the colonies had not showed any signs of disease six weeks after feeding; the third colony developed the disease but there is evidence to show that the disease may have come from an outside source.

For disinfecting hive bodies and equipment a special solution was found to be a hundred per cent. efficient.

Experiments in feeding to counteract the disease in colonies already infected were unsuccessful.

The particular value of a special hypochlorite finally decided upon is that it destroys the spores wherever it comes in contact with them but is not poisonous and may be fed in syrup or honey to the bees without apparent injury to them.

H. F. WILSON
W. A. HADFIELD
MADISON, WISCONSIN