b) Highly end-to-end aggregated virus is disaggregated primarily into basic virus units 280 mμ long with a subsequent increase in the infectivity of the ultrasonically exposed virus.

c) At somewhat higher energy levels, statistically significant measurements show a tendency for the basic infective unit, 280 mμ long, to fracture, first at a constant distance from the end of the virus rod, with subsequent random fragmentation as the power is increased. This indicates a structural weakness at one definite point in the virus rod.

It is felt that, with further study and refinements of techniques, there is a definite possibility of preparing viral and bacterial vaccines by exposure to ultrasound which may be superior in the treatment of disease to those produced by the usual procedures, since the method of inactivation is physical and therefore probably less likely to alter antigenic properties than in the case of chemical inactivation. Ultrasonic inactivation of microbiological materials may also furnish a means of "uncovering" desirable antigens.

By the use of comparatively low-energy ultrasonic treatment, "aged" vaccines may be reactivated and their useful period possibly extended.

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Report on Fossil Vertebrates from the Upper Magdalena Valley, Colombia

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The field-work program for collection of fossil vertebrates in the Upper Magdalena Valley (Department of Huila, Colombia) during the summer of 1950 was sponsored jointly by the Associates in Tropical Bio-Geography at the University of California and by the Servicio Geológico Nacional de Colombia. The writer was paleontologist for the party. Diego Henao Londoño, geologist for the Servicio, managed the field group. Oliver Pearson, of the Museum of Vertebrate Zoology at the University of California, joined us in Huila to facilitate his work on the zoological studies in the upper Magdalena. Stanley G. Smith, of the Botany Department, was also attached to our field party for a month and was able to carry on the program of plant studies.

This was the second year in which one or more representatives from the Museum of Paleontology had participated in the jointly sponsored program. In the summer of 1949, R. A. Stirton and Robert W. Fields joined with Sr. Henao for the initiating of detailed stratigraphic studies; but prior to that time, in 1944 and 1945, Stirton and Royo y Gomez had collected a large assemblage of fossil vertebrates from the region. The most important paleontological discoveries made by the 1950 field party were: a complete cranium of a toxodont, skeletal parts of a leontiniid,

TABLE 1

THE LA VENTA FAUNA—LATE MIOCENE

- Class, Dipnoi
  - Order, Lepidosireniformes
    - Family, Lepidosirenidae
- Class, Teleostomi
  - Order, Cypriniformes
    - Suborder, Siluri (catfish)
      - Unidentified teleost
- Class, Amphibia
  - Order, Anura
    - Family, Leptodactylidae
- Class, Reptilia
  - Order, Chelonia
    - Suborder, Pleurodira
      - Family, Pelomedusidae
    - ?Suborder, probably two genera
  - Order, Sauria
    - Family, ?Iguanidae
    - Family, ?Teiidae
  - Order, Serpentes
    - Family, ?Boidae
  - Order, Sebecosuchia
    - Family, Sebecidae (*Sebecus*)
  - Order, Eosuchia
    - Family, Alligatoridae
    - Family, Crocodylidae
    - Family, Stomatosuchidae
    - Family, ?Gavialidae
- Class, Aves
  - Order, unidentified
- Class, Mammalia
  - Order, Marsupialia
    - Family, Didelphidae
    - Family, Borhyaenidae (cf. *Borhyaena, Lycopsis,* and *Cladosictis*)
  - Order, Chiroptera
    - Family, Phyllostomatidae (n. gen. and n. sp. Savage [*8*])
  - Order, Primates
    - Family, Cebidae
      - Subfamily, Pitheciinae (*Cebupithecia sarmientoi* Stirton and Savage [*6*])
      - Subfamily, Alouattinae (*Homunculus tatacoensis* Stirton [*9*]; *Homunculus* sp. Stirton [*9*])
      - Subfamily, Cebinae (*Neosaimira fieldsi* Stirton [*9*])
  - Order, Edentata
    - Family, Megalonychidae
    - Family, Megatheriidae
    - Family, Mylodontidae (at least three genera)
    - Family, Myrmecophagidae
    - Family, Dasypodidae (at least two genera)
    - Family, Glyptodontidae (at least two genera)
  - Order, Rodentia
    - At least two families and four genera
  - Order, Condylarthra
    - Family, ?Didolodontidae
  - Order, Litopterna
    - Family, Macraucheniidae (two genera)
    - Family, Proterotheriidae (two genera)
  - Order, Notungulata
    - Family, Leontiniidae
    - Family, Toxodontidae
    - Family, Interatheriidae (n. gen. and n. sp. Stirton and Savage [*7*])
    - Family, ?Hegetotheriidae
  - Order, Astrapotheria
    - Family, Astrapotheriidae (two genera)
  - Order, Sirenia
    - Family, Trichechidae (*Potamosiren magdalenensis* Reinhart [*10*])

mandible of a large gavial-like crocodile, cranium and skeletal parts of a large mylodont ground sloth, cranium of a leontiniid, ventrally complete cranium of an astrapothere, and a complete cranium and mandible of a juvenile interathere.

Earlier work in the area. The nonmarine Miocene beds, Honda formation, in the north-central district of Huila have yielded the most complete fossil vertebrate assemblage yet known in northern South America. Oil geologists had known of bones in these deposits and had made reports of these occurrences to their companies by 1938. Royo y Gomez (*1*) and Stirton (*2*) have discussed the reports of these geologists. The first published report on a fossil vertebrate from Huila seems to have been Cabrera's (*3*) paper on a new species of astrapothere from the Tertiary beds. Mook (*4*) described a new species of crocodilian from an unspecified locality not far west of Neiva, capital of Huila. Brother Ariste (Mauricio Rollot) collected the crocodilian in 1920; he also collected the astrapothere named by Cabrera. The crocodile was thought to be possibly Cretaceous in age; however, Royo y Gomez (*5*) points out that the specimen probably came from the Honda formation (Tertiary). Royo y Gomez (*5*) reported on crocodilian, chelonian, rodent, and notungulate specimens from sandstones of the "Honda superior," which were found north of the village of Villavieja along the trail to San Alfonso. Royo y Gomez (*1*) has also published a preliminary survey of the Villavieja Miocene badlands, including an introductory list of fossil vertebrates and a generalized section of the Honda sediments. Personnel from the University of California now have additional papers in press on the fossil vertebrates of this area; these papers are indicated in Table 1.

Honda formation and La Venta fauna. The fossiliferous beds northeast of Villavieja have been identified as the Honda formation because of lithologic similarity and corresponding stratigraphic, structural, and physiographic position to the Honda in its type locality. The beds here were apparently laid down as flood-plain deposits in a system of streams and include red-colored mudstone members and gray to brown sandstones, mudstones, and conglomerates. In this area more fossils seem to have accumulated in the gray mudstones than in the other types of sediments, although one ferruginous sandstone was notably fossiliferous.

Fossil vertebrates of late Oligocene age have been collected from the Honda formation approximately 50 miles north of the Villavieja district. It becomes apparent, then, that components of the Honda formation in different geographic provinces were not laid down at the same time. In order to distinguish the Honda lithogenetic unit from any concept of geologic time based on the fossil vertebrates, Stirton and Savage (*6,7*) employ the name "La Venta fauna" for the special late Miocene vertebrate assemblage from the Honda beds at Villavieja. The list given in Table 1 will indicate our present knowledge of the systematics of the assemblage and will also indicate status of our research program on the fauna. Wann Langston, Jr., has kindly furnished preliminary identifications of the reptiles, amphibians, and fish.

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Effects of Various Analgesics on Inflammatory Edema Resulting from Silver Nitrate Injection

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It was noted during analgesia experiments on silver nitrate–irritated rat joint preparations (*1*) that the ankles of aspirin-treated rats appeared considerably less swollen than ankles of the controls. This action of aspirin has been made the subject of the present investigation. Similar studies have been made on other compounds for the sake of comparison.

The animals used were male CF or RF albino rats weighing approximately 350 g and maintained on Rockland rat diet. Irritation was produced by injecting 0.2 ml 1% $AgNO_3$ into the ankle joint. The rats were anesthetized with ether to avoid struggling. To inject the left ankle, the rat was placed on its right side and the needle inserted into the posterior aspect of the hind leg approximately 1 cm above the heel and directed down into the joint. Care was taken not to puncture the visible superficial blood vessels. Because of the large volume of solution, the fluid spread through the heel and paw. A ¼-cc tuberculin syringe with a 23-gauge needle was found satisfactory. Silver precipitates of tissue fluids tended to accumulate in the syringe and cause the plunger to stick, but this difficulty was avoided by rinsing out the syringe with distilled water between injections and dissolving out the precipitate with nitric acid when necessary.

Somewhat similar animal preparations have been employed by Winter (*2*) and Selye (*3*) to observe the effect of pretreatment with cortisone on the development of inflammatory edema. To produce the swelling, Winter injected 0.1 ml 0.5% $AgNO_3$ and Selye 0.1 ml of various strengths formaldehyde beneath the plantar aponeurosis of the hind paw of the rat.

Shortly after injection the tissues of the foot and ankle became red and swollen and developed all the signs of acute inflammation. The joint became very sensitive to movement and within 24–48 hr a typical