genes in other respects; both are incapable of reproduction outside of living cells, they produce similar effects, as, for instance, variegation or mottling, in plants, and they are, under natural conditions, capable of mutating to new forms which retain the ability to reproduce themselves. The virus differs from genes in being able to move from cell to cell and in being capable of inoculation into the cells of healthy plants. The fact that tobacco-mosaic virus is inactivated by radiant energy of the x-ray and ultra-violet[4] bands in a manner similar to that of genes suggests an alteration in the virus particles comparable to that which takes place in genes.

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VERTEBRATE REMAINS FROM CENOZOIC ROCKS

VERTEBRATE remains from the sediments filling the Rio Grande Basin of northern and central New Mexico are fairly common, yet they are not so common as to deserve no notice when new bones appear. Moreover, fossils from these sediments always lend assistance in the interpretation of the complicated history of this great trough. Although good exposures of valley fill are plentiful in Socorro County, fossil remains from the fill are very scarce.

In April, 1935, the writer unearthed the complete lower jaw of a four-tusked mastodon from the fill about six and one half miles northeast of Socorro, along the south bluff of Arroyo de la Parida. The material in this exposure is unconsolidated sand and gravel, light in color, poorly sorted and highly cross-bedded. The pebbles are much waterworn and are made up of a wide variety of igneous and metamorphic rocks, with a few fragments of sedimentary rocks. Unquestionably, the material was laid down by a river flowing in the basin near Socorro.

Photographs of the jaw and a plaster cast of the teeth were sent to Dr. C. L. Gazin, of the United States National Museum, for study. Dr. Gazin has kindly reported that the jaw apparently belongs to the genus *Rhynchotherium* and that its age is certainly upper Tertiary, probably upper Pliocene.

In February, 1936, Mr. Martin Dykers, a senior in the New Mexico School of Mines, discovered a horse tooth in the same exposure. The tooth was reported by Dr. Gazin to be a lower left molar and is tentatively referred to the genus *Plesippus*. The age, Dr. Gazin states, is apparently upper Pliocene.

Thus, some of the basin deposits near Socorro, generally referred to the Santa Fe formation, are rather definitely proved to be upper Pliocene in age.

About 14 miles south of the above locality, the writer obtained another small collection of bones from the base of a bed of pumicite. This bed is located about three and one half miles northeast of San Antonio, Socorro County, along the east bluff of the Rio Grande. It is underlain by some thirty feet of light-colored gravel and sand and buff silt, typical of the Santa Fe formation as developed east of the Rio Grande near Socorro.

The bones from the pumicite were kindly determined by Dr. A. Wetmore of the United States National Museum to be parts of the humerus, ulna and radius of the turkey, *Meleagris gallopavo,* not distinguishable from those of the modern turkey. According to Dr. Wetmore, this species of turkey has not been reported anywhere from Pliocene deposits, and from Pleistocene deposits only in Pennsylvania, Tennessee, Arkansas and Florida.

Professor Kirk Bryan, after a recent visit to this exposure, expressed an opinion, based on stratigraphic and structural evidence, that the pumicite might be a part of the upper Pliocene deposits. The fossil evidence, however, favors the Pleistocene for its age, although there is no reason why this species of turkey should not occur in Pliocene deposits. The relation of the pumicite to the underlying and overlying sediments and, consequently, the age of the bones can be determined only after more careful field work in the vicinity. In any event the bones are as old as early Pleistocene and hence are a contribution to the paleontology of the Southwest.

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CONTAMINATION AND COMPACTION IN CORE SAMPLING

FOR a number of years marine sediments have been sampled by means of coring instruments of various types. The cores obtained have been sectioned; mechanical and chemical analyses have been made; and in some cases, micro-fossil studies have been undertaken. This detailed work has been accomplished with little regard for the contamination of the materials which may have taken place as the core sample was obtained. Also, the vertical extent of the material being dealt with before coring was not considered. Therefore, an investigation of this method of sampling seemed desirable.

An opportunity to carry out such a study was obtained during the summer of 1936 spent at the Woods Hole Oceanographic Institution with the helpful guidance of Mr. H. C. Stetson. The magnitude of the contamination taking place was determined by a num-

[4] W. C. Price and John W. Gowen, in press.