require the cooperation of college science departments, departments of education, and the state agencies that certify the teachers. I believe that our state departments of education and our colleges of education will be more than pleased to have the cooperative assistance of the scientists of our colleges and universities, in their attempt to improve elementary and secondary instruction in science. We scientists should find out just how we can assist in bringing about this desirable result, each in his own locality. Let us exercise a spirit of research and base our actions on the facts which the public school teachers and administrators will be only too glad to supply. Improvement cannot go far until teachers with appropriate training are available.

If science is to receive adequate attention in our educational structure, it must receive the general support of the voters, including especially our state and local lawmakers and officials. Adequate support is not likely to be obtained until citizens have much more information about science than they have at present. This, in turn, is not likely to be achieved until science is taught by reasonably competent teachers throughout our elementary schools and high schools. Is it not a most important proper function of college scientists to supply appropriate courses in science for prospective public school teachers? Why not attack the problem immediately in your own college?

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Age of Folsom Man

IN 1950, a Texas Memorial Museum party made excavations in valley fill near Lubbock, Texas, where five superimposed, fossiliferous, late Quaternary strata are present. From the next to oldest of these strata, a diatomite horizon, charred bison bones were obtained and submitted to the Institute for Nuclear Studies, University of Chicago. The radiocarbon test on the charred bones gave an age determination of 9,883 ± 350 years (Libby, letter of Dec. 8, 1950). Excavations at the locality were continued during the summer of 1951, when additional occurrences of burned bones were observed in the diatomite horizon, and in this deposit also were found four Folsom projectile points, one small scraper, and numerous flint chips. Of the projectile points, two were complete and two broken. Each of the four points showed distinctive Folsom fluting. The upper and lower boundaries of the diatomite horizon are definitely marked, and there is no question but that the Folsom artifacts and the charred bones are in the same horizon in the section and are of the same age, proving that Folsom man hunted the bison at this place about 10,000 years ago.

From a gray sand stratum next underlying the diatomite, one artifact was found, a combined scraper and graver, or a scraper subsequently reworked as a graver. This older artifact may represent a culture older than Folsom, which has been found at a similar position in the section in the Clovis-Portales area in New Mexico. The excavations at the Lubbock and Portales localities were carried on under direction of Glen L. Evans. The conditions in New Mexico were briefly reported by the writer at the 1950 meeting of the Geological Society of America (*Bull. Geol. Soc. Am.*, **61**, 1501 [1950]).

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Selective Application of Selective Herbicides in the Study of Vegetation Development

THE successional stages in the development of vegetation have been one of the chief—and most fruitful—fields of inquiry for American plant ecologists. Changes of vegetation with time, as on abandoned agricultural lands and sites subject to natural catastrophes, and the spatial belting of plant communities in bogs and swamps, have provided basic data for the formulation of hypotheses and theories that are now firmly—perhaps too firmly—entrenched in our thinking.

The study of this aspect of vegetation development has been furthered primarily by the use of permanent charted quadrats that are periodically checked, and by the assumption, sometimes but not always valid, that communities of different growth forms—as grasses, shrubs, and trees—are necessarily related to one another in a temporal sequence, especially when they occur in parallel belts, as along seacoasts and riverbanks.

The study of vegetation development on abandoned agricultural lands at Aton Forest, Litchfield Co., Conn., dates from observations and photographic records of 1927. It early became evident that "plant succession," although apparently normal for the Northeast, was not progressing in the conventional manner. For a period of six years, 1946–51, the selective application of selective herbicides, applied intensively to a total of 40 acres, has been yielding results of considerable interest. In view of the fact that, so far as the author is aware, others are not using herbicides for this purpose, this note is presented to stimulate basic research elsewhere.

The most critical phenomenon in any succession of plant communities is that of "invasion," involving migration of the propagule, germination, and successful establishment of the young plant. Too often the stage of invasion of a species has been assumed by its physiognomy. Thus, trees are assumed to have invaded shrubs when both are found together; and shrubs to have invaded grass when together. An alternative working hypothesis is that species of diverse growth form may have invaded a particular site at the *same* time, and that the present mixed communities may be the result of differential height growth, and of fortuities in the distribution of individuals. Evidence pro or con can be obtained by carefully removing all the individuals of selected species,