percent of the total weight. Thus, carbon is a minor constituent of the total particulate load found in the Los Angeles and Detroit atmospheres.

Beryllium-7, with a half-life of 53 days, has recently been found to be produced by cosmic rays in the atmosphere (*6*). We have analyzed the present samples for beryllium-7 content. There is as yet an insufficient number of comparison samples to make the results highly meaningful. They are, however, presented in Table 2. It is possible that, when sufficient results have been obtained, a useful measure of the rate of subsidence of the atmosphere in the Los Angeles area can be obtained using this isotope.

The sensitive counting techniques used in this study may be applied to tracer experiments as well as to natural activities. Simple calculation shows that it would be quite practical to introduce sufficient tracer, either carbon-14 or some other isotope, into any suspected source of contamination in an area the size of the Los Angeles basin, in order to determine the percentage of contamination arising from this particular source. For example, the entire gasoline supply could be tagged at an adequate level for a period of 30 days, in order to determine the contribution of automobile exhausts to the atmospheric carbon. Since the level of radioactivity in the consumer product can be well below that of the human body, no safety hazard to the public is involved.

The tests conducted proved the effectiveness of the technique used and reveal that this procedure is a useful tool in determining whether or not the atmospheric carbon is newly formed, as from rubbish burning, or is aged, as from petroleum, gas, and coal sources.

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I. M. Cline, Expert on Hurricanes

Isaac Monroe Cline, who achieved an international reputation as a weatherman, died in New Orleans, Louisiana, on 3 August 1955 at the age of 94. The career of Cline, who rose from plow boy to principal meteorologist of the U.S. Weather Bureau, with medicine and art on the side, distinguished him as one of New Orleans' truly remarkable men. His professional career in meteorology embraced 53 years of service with the Weather Bureau during which time the weather service developed from a unit in the Signal Corps of the Army to a separate bureau in the Department of Agriculture.

Cline was born in Monroe county, Tennessee, on 13 October 1861. He received his B.A. degree from Hiwassee college in 1882 and was awarded a medical degree from the University of Arkansas in 1885, while he was working as an observer for the weather service in Little Rock, Arkansas. He served as observer at Fort Concho and Abilene, Texas. In 1889 he was appointed as section director at Galveston, and in 1891 the weather service was transferred to the Department of Agriculture. During this period he carried out research and made significant contributions in the field of medical climatology and a study of the hot summer winds on the Great Plains. He received his Ph.D. degree from Texas Christian University while he was at Galveston.

The Galveston hurricane of 8 September 1900 established Cline as an expert on tropical hurricanes. Notwithstanding the fact that 6000 residents of Galveston had been hurled to death in a few hours by the winds and tides, the warnings that were sent out by Cline are said to have saved tens of thousands of lives along the coast. Despite his heroic attempts at rescue, Cline suffered personal tragedy in the loss of his wife, Cora May Ballew, during this disaster. As a result of his experiences during this hurricane Cline resolved to devote his life to research and study of this natural phenomenon.

In 1901 he was transferred as official-in-charge of the southern forecast district in New Orleans, Louisiana. It was during his 34 years at New Orleans that Cline rose to international fame in the field of hurricane and flood forecasting. His superb forecasts of the Mississippi River floods of 1903 and 1927, as well as the tropical hurricanes at New Orleans, 29 September 1915 and the Texas Gulf Coast, 21–22 June 1921, are accorded a high place in the annals of Weather Bureau history. His intimate knowledge and study of tropical hurricanes resulted in the publication of his book *Tropical Cyclones* in 1926.

During his years in New Orleans, Cline found time to pursue his hobby of art collecting. As a result, some of the finest portraits painted by American artists were rescued from oblivion, preserved from destruction, and now hang in the National Gallery of Art in Washington. He became an expert in the restoration of masterpieces of portraiture.

In 1934 Cline retired from active service with the Weather Bureau. Tulane University awarded him an honorary D.Sc. degree for his achievements in the science of meteorology and his contribution to the cause of humanity by the saving of life and property during floods and tropical hurricanes.

After retirement he operated an antique shop in New Orleans and became affectionately known as the "dean" of the famous French Quarter, the habitat of writers and artists and the cultural center of the city's activities. Ten years later he published *Storms, Floods and Sunshine,* an entertaining autobiography, which has undergone several revisions.

The keynote of his life was the proper utilization of time, particularly the efficient use of recreation time. His life was an excellent example of it.

He was a member of numerous scientific societies and congresses. He served as president of the American Meteorological society in 1934–35 and the New Orleans Academy of Sciences in 1935–36. In the words of former President Herbert C. Hoover, his work "has been more than the mere routine interpretation of technical data. It required judgment and discretion, which amounted to genius. He has been an honor to the Weather Bureau."

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