

relationship to acetic acid may be indicated by the expression,



Ketene is prepared by bringing liquid acetone, ethyl acetate, or, preferably, acetic anhydride into contact with a glowing platinum spiral; instead of the spiral an arc burning between carbon or metallic poles may be employed. The gaseous products of the reaction are passed through a condenser and then cooled to -100° in liquid air. Ketene is a colorless gas at the ordinary temperature, but it may be liquefied and frozen, and it has a peculiar penetrating odor. Its molecular weight agrees with the simple formula given above, but the substance undergoes polymerization rather readily, as would be expected. Ketene does not react with *dry* oxygen, but it quickly combines with water forming acetic acid; with alcohols it gives the corresponding acetates. Moreover, it is an admirable acetylating agent. With aniline, for example, it yields pure acetanilide directly, and similar compounds are obtained with other primary amines. These reactions demonstrate the correctness of the formula for ketene given above. The further investigation of this interesting substance should yield results of decided value.

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THE BALLONS-SONDES AT ST. LOUIS

A FINAL series of ascensions of *ballons-sondes*, or registration balloons, at St. Louis was completed in November, 1907, by Mr. S. P. Fergusson, of the Blue Hill Observatory, under the direction of the writer. These experiments to obtain the meteorological conditions at great heights in America were begun in 1904, with the cooperation of the authorities of the Louisiana Purchase Exposition, as related in *SCIENCE*, Vol. XXI., pages 76-77, and were continued during subsequent years with the assistance of grants from the Hodgkins Fund of the Smithsonian Institution. Seventy-six balloons have been despatched and all but six have been recovered with the attached instruments, while there is the possi-

bility of the number lost being further reduced by the finding of three of those sent up last autumn. The preliminary results of the earlier ascensions are given by the writer in the *Proceedings of the American Academy of Arts and Sciences*, Vol. XLI., No. 14, and are discussed by Mr. H. H. Clayton in *Beiträge zur Physik der freien Atmosphäre*, Band 2, Heft 2. The object of the recent ascensions, twenty-one in number, was to supply data for the high atmosphere during the autumn, a season when there were few observations, and also to compare with those obtained simultaneously in Europe on the international term-days in October and November. The work at St. Louis at the time of the international balloon race was facilitated by the cooperation of the Aero Club of St. Louis. An examination of the record sheets recently returned indicates generally the presence, at an altitude exceeding eight miles, of the isothermal, or relatively warm stratum, which was found somewhat lower in summer. For example, on October 8 the minimum temperature of -90° Fahrenheit was found at a height of 47,600 feet, whereas at the extreme altitude reached, namely 54,100 feet, the temperature had risen to -72° . Similarly, on October 10, the lowest temperature of -80° occurred at 39,700 feet while -69° was recorded at 49,200 feet, the limit of this ascension, showing that the temperature-inversion had come down about 8,000 feet in two days. The prevailing drift of the balloons last autumn was from the northwest, whereas in previous years they traveled more from the west.

Professor Moore, chief of the United States Weather Bureau, announces that, in view of the success achieved by the Blue Hill experiments, he will send up *ballons-sondes* simultaneously from various stations.

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January 9, 1908

CARL VON VOIT

FROM Munich announcement is made of the death of Carl von Voit in the seventy-seventh year of his age. Voit was born at a time when his native land was poor and when there