

CLOUD AND PRECIPITATION FORMATION
BY REFINERY EMISSIONS

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On numerous occasions over the past four years precipitating clouds originating from refinery emissions have been observed in the vicinity of California State College, Dominguez Hills. In two of these instances, Mr. Clifford D. Brown, Campus Photographer of the college, has succeeded in producing photographic case studies of clouds originating at the refinery source and their down-cloud precipitation.

The distance between the refinery and rain-out has ranged from at-site to more than twenty miles. The two-shot panorama shown in Figure 1 was taken on September 29, 1976, at 11:30 a.m. Rain was falling about six miles from the refinery source from the cloud originating at that source. The other panorama (Figure 2-A, and Figure 2-B) is a multi-shot composite taken September 15, 1976, at 9:00 a.m. Rain is falling in the foothills of the Santa Monica Mountains, about fifteen miles from the refinery cloud source.

The rapidity of rainfall response and the dark gray color of a major percentage of the refinery clouds is assumed to be due to large drop seeding with the refinery plume acting as the developer of the large water drops in the clouds and the rain. This theory is supported by observations of drizzle and larger size drops falling from the plumes in cases where no related cloud was observed.

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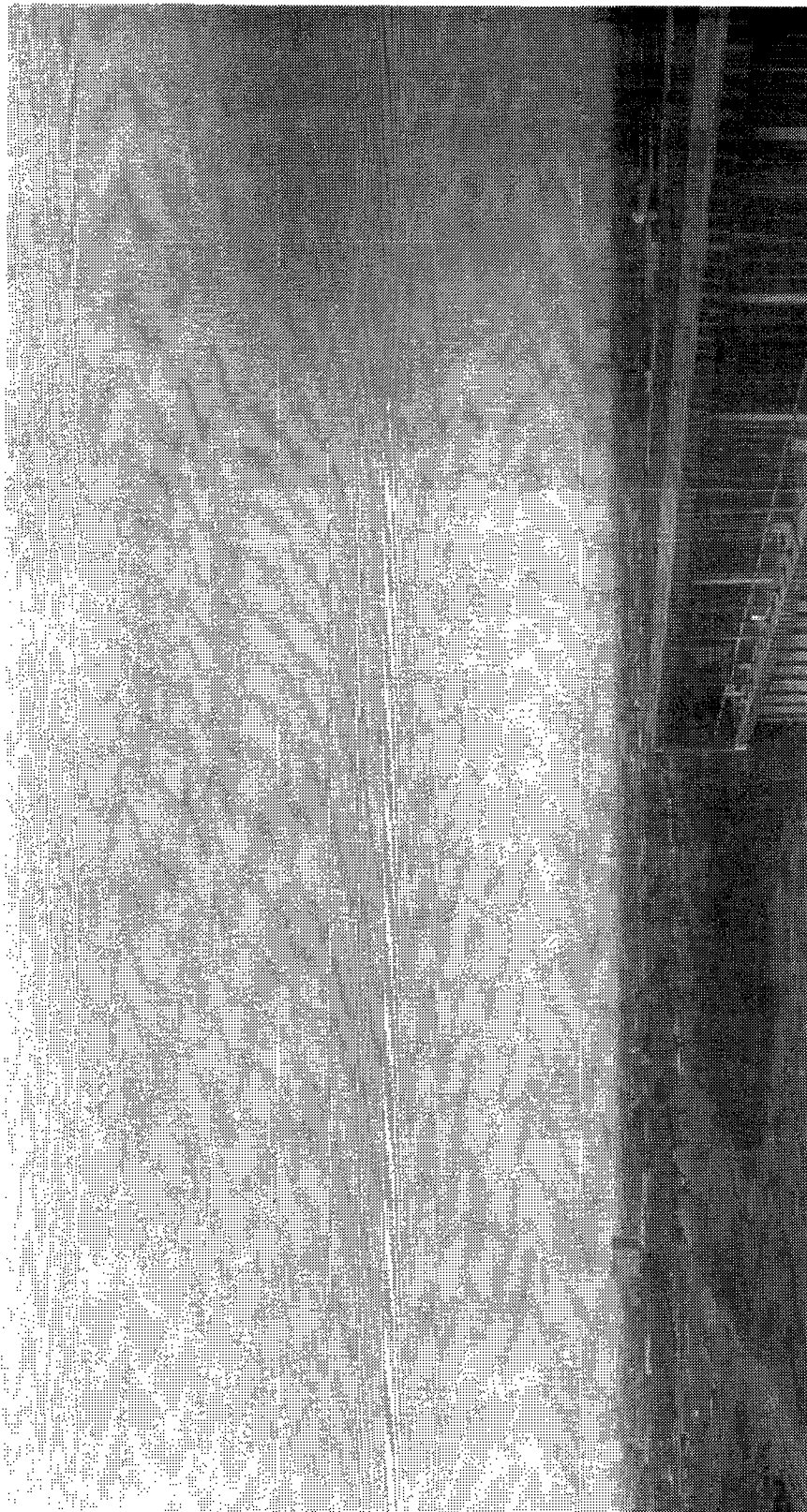


Figure 1

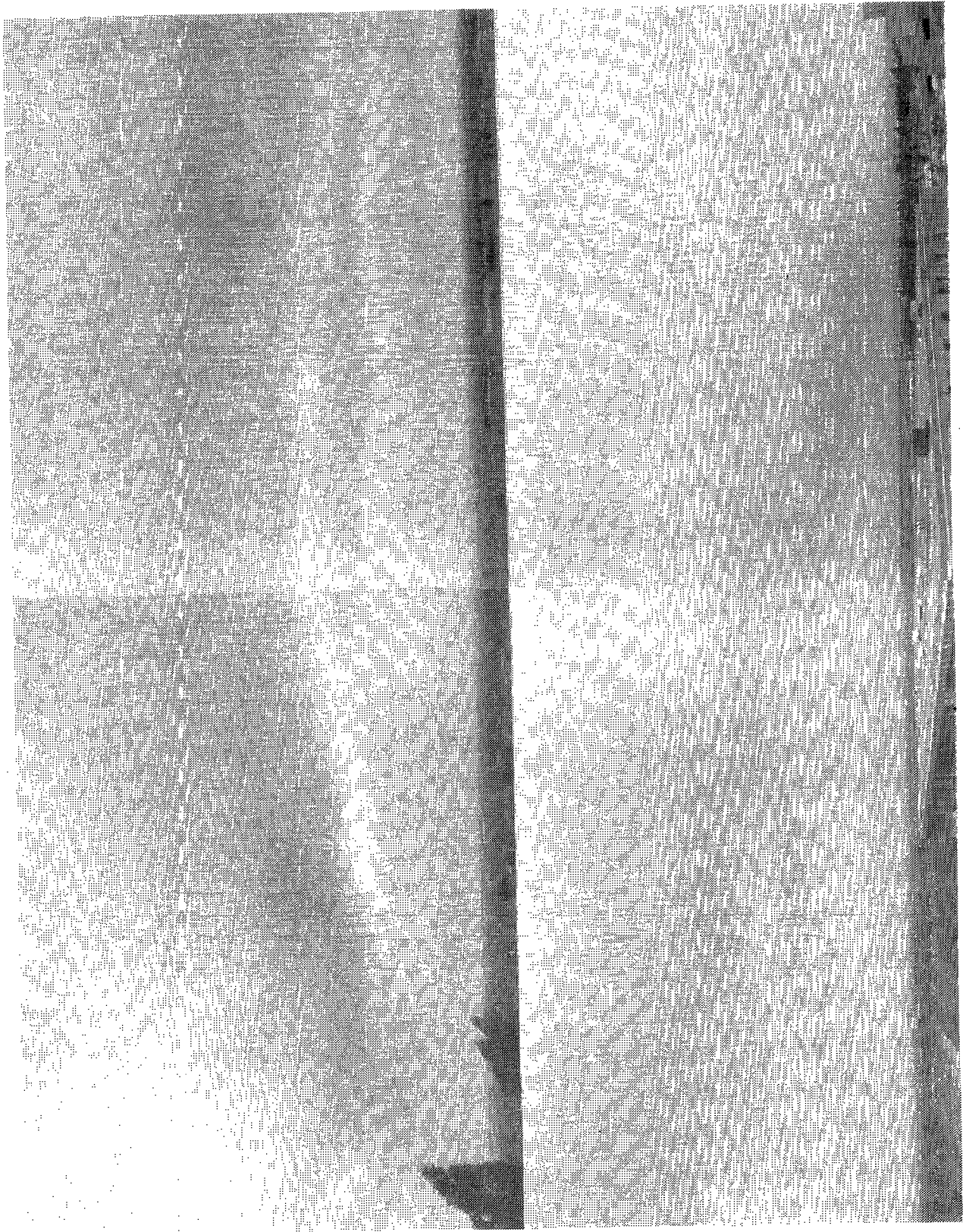


Figure 2