37. *GYMNOSPORANGIUM LIBOCEDRI* (P. Henn.) Kern. Bull. Torrey Club 35:509. 1908.

Aecidium blasdaleanum Diet. & Holw. Erythea 3:77. 1895.
Phragmidium libocedri P. Henn. Hedwigia 37:271. 1898.
Gymnosporangium aurantiacum Sydow. Ann. Mycol. 2:28. 1904. Not *G. aurantiacum* Chev. 1826.
Gymnosporangium blasdaleanum Kern. Bull. N.Y. Bot. Gard. 7:437. 1911.

TYPE on *Libocedrus decurrens* (now *Calocedrus*) Potter Valley, Mendocino County, California.

Aecia hypophyllous and fructicolous, aecidioid; peridium cupulate, margin lacerate, spreading or recurved, peridial cells rhomboid, 18–23

μ long, inner and side walls verrucose; aeciospores globoid, 12–20 × 14–23 μ, wall yellowish, 1–1.5 μ.

Telia foliicolous, usually without distortions of the stems but sometimes producing witches' brooms, scattered, roundish-oval, about 0.8–1.5 mm across, pulvinate, reddish-brown; teliospores 2–5-celled, linear-oblong, 35–87 μ long, slightly constricted at septa, wall golden- or cinnamon-brown, about 1 μ; pores 2, septate except apical in uppermost cell; pedicels cylindric, often large, 7–25 μ in diameter.

I on *Amelanchier, Chaenomeles, Crataegus, Cydonia, Malus, Pyrus,* and *Sorbus.*
III on *Calocedrus* (includes *Libocedrus* and *Heyderia*).

Distribution: North America (northwestern United States).

Cultures establishing *Crataegus* as an aecial host were reported by Arthur in 1909 (Mycologia 1:252) and again in 1911 (Mycologia 4:57) with infection on *Amelanchier.* Jackson in 1914 (Phytopathology 4:266) reported successful cultures on *Pyrus, Cydonia,* and *Malus.* Jackson (loc. cit.), basing his conclusions on cultural experiments and studies of morphological characters, expressed belief that the following hosts should be recorded for this species: *Cydonia, Malus, Pyrus,* and *Sorbus.*

Jackson also reported (loc. cit.) that the telial stage of *libocedrus* caused hypertrophies in the form of "witches' brooms," sometimes abundantly and as large as two feet in diameter. Jackson raised the question whether the mycelium was not perennial in the "brooms." Peterson in 1967 (Madroño 19:86) says, "The common, conspicuous witches' brooms caused by this fungus represent only a minute percentage of infections, most of which do not become systemic." As to distribution, Peterson records (loc. cit.), "This species is surely the most abundant *Gymnosporangium* in northern California, at least in recent years. It is surprising that it is quite uncommon south of Yosemite National Park, and I could find none of it in Baja California."