

b24 Palynology < highpower optical and scanning electron microscopes >

The wind bloweth where it listeth. —John 3:1.¹

Migration is the natural result of climatic change. To do so, animals can walk, crawl, fly, swim and hitchhike. Plants, by virtue of the wind, water currents (**Footnote b24.1**) and vagrant animals, can be reseeded elsewhere and so change in their distribution.²

Changing climates, which plant species redistributions record, are known in greatest detail from pollen grains or spores that have fallen into ponds. There, in the accumulating lacustrine sediments, pollens and spores (although wind borne and so possibly from far away) tend to be incorporated in proportion to the shedding abundances and *local* numbers of the plants that produce them. However, whereas pollen grains are generally large enough to be washed out of the air by all but the lightest showers of large thunderstorm drops; smaller-sized spores experience lesser removal rates.³

The study of fossil pollens and spores in sediments is called *palynology* (from Greek *paluno*, to strew or sprinkle; cf. *palé*, fine meal; cognate with Latin *pollen*, flour, dust) coined in 1944 by P. B. Sears⁴ at the urging of Ernst Valdemar Antevs (1888-1974) who had asked, “Is pollen analysis the proper name for the study of pollen and its applications?” which better can be called “pollen science.”⁵ This specialized branch of paleontology requires the use of highpower optical microscopes, and is facilitated by the increasing availability of scanning electron microscopes.

Palynological studies have shown that seed plants in North America have been introduced in historical times by humans from other lands, and, before then, “indigenous” ones were reseeded in from havens further south that, being closer to the equator, remained relatively warm during the Ice Age (**Figure b24.1**). □

Footnote b24.1 ‘Nonsailors should note that wind directions are described, following common maritime convention, by the direction they are coming from. A westerly or west wind blows from the west, and northeast trade winds from the northeast. It is surprising how many people are unaware of this common usage! Ocean currents, however, are described by the direction they are flowing toward. Thus, a westerly wind and a westerly current flow in opposite directions.’ —Brian Fagan.⁶

Be informed also that the wind is *not* caused by the ‘constant breath of seaweed’ as Martin Lister posited in the *Philosophical Transactions*, 1684. —a factoid in Scott Huler’s *Defining the Wind*, 2004, p. 62.⁷

Figure b24.1⁸

In mid-latitude North America, a northward migration of plant life records warming, interpreted as recording an increase of insolation that also led to the retreat of the continental glacier (gray shading) at the end of the last Ice Age and the reintroduction of a temperate forest (black) from the Carribean and Central America where it had survived.

