Botanists have been seeking out, describing and naming new plant species for hundreds of years. In the 16th century, plant hunter John Tradescant started a trend for collecting and classifying exotic species that reached frenzied levels in the 18th and 19th centuries. Records show, for example, that Matthew Flinders' 1801 expedition to Australia yielded 1,700 new species among the 4,000 specimens collected. Meanwhile Kew gained 40 new Rhododendron species from the '80 porter loads' of specimens it received from Joseph Hooker's collecting forays in the Himalayas in 1848.

Given that latter-day botanists have the advantages of air travel, digital maps and better access to scientific data, you might think we would have found all the world's plants by now. The surprising truth is that experts are still discovering new species at the same rate as a century ago, adding 2,000 new names to the world's known flora every year. Even this rate is not fast enough, however. With ecosystems being rapidly destroyed by logging and urban advances, and with climate change now playing havoc with habitats, the race is on to find, name and preserve plants, many of which may be useful as foods, fuels or medicines, before they're lost to us forever.

Kew has long been at the forefront of plant collecting, and its botanists are key contributors of new species. In 2009, its 250th year, Kew discovered more than 250 new species, including 24 new palms, three huge forest trees in Cameroon and new species of coffee, orchid, yam and indigo. Much of its success can be attributed to the knowledge and experience of its taxonomists, and the unrivalled Herbarium of seven million specimens that underpins their work. ‘Take Madagascar’s palms,’ says Bill Baker, head of palm research at Kew. ‘We carried out a huge project there a few years back and produced the book The Palms of Madagascar, which doubled the known palm flora. That work helped us find the new species we described in 2009.’

Innovative use of technology is also contributing to new discoveries. Mijoro Rakotoarivoko, a botanist based in Kew’s Madagascar Conservation Centre, has developed a means of predicting where new species will be found using geographic information systems (GIS). This technology allows different layers of scientific data to be plotted on digital maps and then analysed. (see also p22). Mijoro plotted 2,000 sightings of Madagascar’s 188 known palm species,