The fossil marine genus *Isodiscus* Rattray presently comprises three species, *I. debyi* (E.Grove & G. Sturt) Rattray, *I. mirificus* Rattray and *I. coronalis* Brun; all are rare. One new species *I. watanabei* is described here. The genus is confined to the middle to late Eocene and its morphological features present difficulties in assigning it to a family or order. A new family Isodiscaceae is proposed and relationships discussed.

Key index words: diatom, Isodiscaceae fam. nov., Isodiscus, Isodiscus watanabei sp. nov., porelli, sipho marginalis