pole, and 434 feet in the latitude of Edinburgh.[28] An intermittent submergence and emergence of the low polar lands might be due to the alternate shifting of the centre of gravity.

To what extent this cause has actually come into operation in past time cannot at present be determined. It has been suggested that the "raised beaches," shore-lines (*strand-linien*), or old sea-terraces, so numerous at various heights in the northwest of Europe, might be due to the transference of the oceanic waters, and not to any subterranean movement, as generally believed. Had they been due to such a general cause, they ought to have shown evidence of a gradual and uniform decline in elevation from north to south, with only such local variations as might be accounted for by the influence of masses of high land or other local cause. No such feature, however, has been satisfactorily established.[29] On the contrary, the levels of the terraces vary within comparatively short distances. Though numerous on both sides of Scotland, they disappear further north among the Orkney and Shetland islands, although these localities were admirably adapted for their formation and preservation.[30] The conclusion may be drawn that the "raised beaches" cannot be adduced as evidence of changes of the earth's centre of gravity, but are due to local and irregularly acting causes. (See Book III. Part I. Section iii. § 1, where this subject is more fully discussed.)

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[28] Croll, Geol. Mag. new series, i. (1874), p. 347; "Climate and Time," chaps. xxiii. and xxiv. and postea, p. 286. Consult also Fisher, Phil. Mag. xxxiv. (October, 1892), p. 337.

[29] The student ought, however, to consult Prof. Suess' Antlitz der Erde for the arguments in favor of an opposite opinion.

[30] Nature, xvi. (1877), p. 415.