EDITORIAL

The 100th anniversary of the discovery, by J. Y. Buchanan, of the Atlantic equatorial under current (9-11 March 1886)

One hundred years ago, on 9 March 1886, the cable layer "Buccaneer", homeward bound from a sounding expedition in the Gulf of Guinea, reached the Equator north of Ascension Island. Here, three attempts to take soundings between the parallels of longitude 13°W and 16°W ran into serious difficulties, caused by the refusal of the sounding cable, although it was heavily weighted, to "sink". With the vessel finally hove to on the cable, a Scottish physicist and chemist named John Young Buchanan dropped overboard a weighted cross piece, which was suspended at a depth of some 50 m by a freely drifting float; his subsequent observation that while the surface current was in a westerly direction the float moved away towards the east constituted the first indication of the existence of what came to be known as the equatorial undercurrent.

Buchanan published this finding in 1888. Other observations might have provided confirmation, but curiously failed to so. Matthaus (1969) tells the story in a remarkably well-documented article, citing, for example, the occasion during the 1889 Plankton Expedition when nets lowered from the oceanographic vessel "National" at the Equator behaved like sea anchors. Krummel (1911) had already called attention to this observation, but had questioned Buchanan's conclusions and contested the existence of the phenomenon he described, which quite literally overlooked until observations in 1952 in the Pacific and in 1959 in the Atlantic stimulated a revival of interest in Buchanan's detailed studies (Montgomery, 1962; Matthaus, 1969; Hisard, 1983).

The name of Buchanan, together with that of the "Buccaneer", is engraved today on the façade of the Oceanographic Museum at Monaco. This, however, is not because of the discovery of the equatorial undercurrent, but rather because of Buchanan's many earlier discoveries during cruises by the "Challenger" and the "Buccaneer": these included the dredging and analysis of deepwater polymetallic nodules and the demonstration that the fine protoplasmic "skin" overlying the ooze and mud of the abyssal depths, the so-called Bathybius haeckelii—considered at the time to be the most primitive form of life (Rice, 1983)—was in fact mineral in nature. This demonstration, presented somewhat peremptorily and ironically in a letter dispatched from Japan, in May 1875, was a considerable blow to the theses of the Darwinists, and contributed to the estrangement that occurred between Buchanan and his English oceanographer colleagues. Excluded from the close-knit circle of scientists entrusted with the analysis of the rich harvest of observations from the "Challenger"s latest cruise, he embarked on a series of cable layers vessels with responsibility for measuring the density of the water, the nature of the sea-bottom and the velocity of the currents. But the disappointment must have been short-lived. Not only did he take part in the great adventure of the laying of the first submarine telegraph cables; as we have seen, he discovered in the process one of the most remarkable features of ocean circulation.

REFERENCES


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