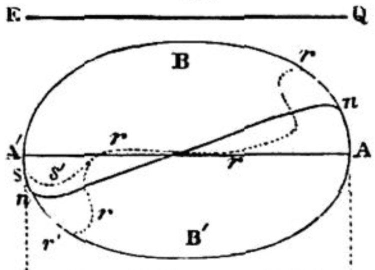
narrow the areas on the east side. The cold or polar latitudes, as has been explained, send a returning current along the continental borders equatorward, which may be stronger on the eastern or western border, according to geographical conditions, and thus these cold waters may modify the temperature and position of the currents in the warmer latitudes. Thirdly, owing to the effect of the more rapid flow of the current along the borders of the continents, the currents often carry the isothermals poleward, making poleward bends or loops in their courses; and these may be greatly increased in prominence or definition by the polar current along the continental borders.

In Fig. 27, the elliptical line (A′B′AB) represents the course of the current in an ocean south of the equator (EQ). If now the movement in the circuit were equable, an isothermal line, as that of 68°, would extend obliquely across, as *nn*: it would be thrown south on the west side of the ocean by the warmth of the torrid zone, and north on the east side by the cooling influence derived from its flow in the cold-temperate zone. But if the current, instead of being equable throughout the area, were mainly apparent near the continents (as is actually the fact), the isothermal line should take a long bend near the coasts, as in the line A′*r′rrrr*A, or a shorter bend A′*ss′*, according to the nature of the current. This form of the isothermal line of 68° on the chart indicates the existence of the circuit movement in the ocean, and also some of its characteristics.

27.



Oceanic Currents, D. '58.

For example, the westward tropical flow in the north Atlantic carries its warm waters over the Bermudas, bending northward the isotherm of 68° (see map, page 47), and also that of 62°; and in the south Atlantic, bending the isotherms of 74° and 68° far away from the equator, the latter to latitude 30°; while on the west side of Europe and Africa, as no tropical flow reaches the borders, and only the high-latitude current, the isotherm of 68° is carried in the north Atlantic to 15° N., and in the south Atlantic up to 6° S. Consequently the interval between the isotherms of 68° in the eastern part of the Atlantic Ocean is only 21° in width, while it is 64° in the western.

The isotherms on the following chart (page 47) mark the points which have equal mean temperature for the coldest winter month, and the temperatures are those of a surface layer of the ocean 90 to 180 feet deep. For the northern hemisphere the month of greatest mean cold is January or February, and for the southern, July or August. The chart, while isothermal, differs widely, therefore, from other isothermal charts, and has been named *Isocrymal*, from the Greek for *equal* and *cold* (ἴσος, κρυμός). The line of 68° F., for example, passes through points in which the mean temperature of the surface water in the coldest month of the year is 68° F.; so with the lines of 62°, 56°, etc. All of the chart between the lines of 68°, north and south of the equator, is called the *Torrid Zone* of the ocean's waters; the region between 68° and 35°, the *Temperate Zone;* and that beyond 35°, the *Frigid Zone.* The line of 68° is that limiting the coral-reef seas of the globe,

http://www.geology.19thcenturyscience.org/books/1896-Dana-ManGeol/README.htm