

The numbers may perhaps indicate a slight effect, but nothing like what I expected. My conductivity tests of the sea-water brought back by Mr. King from Hudson's Strait in 1910 gave a value of 0.0480 at 25° C. Correcting for temperature this observation serves to connect the sea-water entering the Strait of Belle Isle with that in Hudson's Strait. Eastward from Belle Isle Strait the conductivity rises rapidly for 180 miles, after which it becomes uniform up to 450 miles. The greatest arctic current sweeps down close to the Labrador shore, and in through the Strait of Belle Isle, where the resultant flow is westward. The following measurements of the conductivity through the ice track by the Belle Isle route were obtained last October on the *Empress of Britain*. The values were all measured at a uniform temperature of 25° C.

Abeam of Belle Isle ... ..	0.04865
Forty miles east of Belle Isle ... ..	0.04986
Eighty miles east of Belle Isle ... ..	0.05047
One hundred and sixty miles ... ..	0.05150
Two hundred miles ... ..	0.05235
Two hundred and sixty miles ... ..	0.05257
Four hundred miles ... ..	0.05211
Four hundred and fifty ... ..	0.05257

It is evident that the great arctic current is of a lower order of salinity, and that its course may be traced along our eastern coast.

In the early spring when the water is cold the Newfoundland fishermen will find the cod in the vicinity of the icebergs, and will always obtain their catch there. Perhaps this is an indication of the warming influence of the bergs, for the cod will not live in very cold water.

Next summer I shall continue my observations more particularly with reference to the influence of land on the temperature of the sea. I hope before long to be able to publish here some typical microthermograms showing this effect.

H. T. BARNES.

McGill University, January 27.

#### Atmospheric Potential.

UNDER the above heading Mr. Evan McLennan refers in NATURE, February 13, p. 647, to supposed puzzles in atmospheric electricity. That certain difficulties exist no one can deny, but Mr. McLennan's difficulties might, I think, be removed by consultation of existing text-books. The vertical current which he thinks should exist in the atmosphere does exist, and methods of measuring it with more or less accuracy have been in operation for some years. Mr. C. T. R. Wilson devised an apparatus for its direct measurement, and his experiments, made in good weather near ground level, gave a mean value of about  $2 \times 10^{-16}$  amperes per sq. cm. A mean value of the same order, but slightly larger, has been deduced at Potsdam from continuous observations of the electric conductivity of the atmosphere and the potential gradient. To get an electrical current through a vertical conductor it is necessary to bring its upper end to the potential of the surrounding atmosphere. "St. Elmo's fire" is a well-known natural phenomenon. Currents can be obtained through a wire attached to a kite, but the experiment at times may be dangerous. Mr. McLennan seems to suppose that the potential in the free atmosphere increases uniformly with the height. Observations, however, have shown that the normal rate of increase of potential per unit of height diminishes as the height increases and becomes small at the height of a few kilometres. A mountain, it should be remembered, is part of the earth, and shares its potential; if steep it has a large

effect on the shape of the equipotential surfaces in adjacent space. Dr. Simpson, in the letter referred to by Mr. McLennan, mentions the real poser, viz. why in spite of the vertical current the earth retains its negative charge in fine weather.

C. CHREE.

#### The Ascent of the Italian Balloon "Albatross," August 12, 1909.

IN NATURE of August 19, 1909, a note appeared stating that in an ascent from Turin the Italian balloon *Albatross*, manned by Lieut. Mina and Signor Piacenza, had reached a height of 38,715 ft., which is greater by about 3000 ft. than any authenticated record for a manned balloon ascent. A communication has recently been received from Prof. Palazzo, director of the Italian Meteorological Office, in which he states that the aeronauts Mina and Piacenza were not provided with the necessary instruments for measuring the height which they reached, and that M. Mina, in the *Rivista Tecnica d'Aeronautica* of 1910, modified his earlier estimate and sought to prove that the balloon had reached a height of 9240 m. (30,300 ft.). Owing to the absence of a proper record of pressure and temperature, however, even that value is uncertain.

W. N. SHAW.

Meteorological Office, South Kensington,  
London, S.W., February 12.

#### Induced Cell-reproduction in the Protozoa.

THE discovery of the fact that the products of cell death can cause cell-division in lymphocytes and other cells of the human body has given rise to a strong suspicion that these substances may be necessary for any form of cell-reproduction to occur. It has been already demonstrated by Fantham and Ross that *Amoeba coli* can be caused to divide through many generations by means of auxetics, and Drs. Ross and Cropper have shown that induced cell-reproduction will occur in the ova of *Ascaris megalocephala* if the eggs are mixed with a solution containing auxetics and incubated. It is important, therefore, for confirmation to come from other sources. Some time ago I was fortunate enough to discover a new variety of *Polytoma*, differing considerably from *P. uvella* in many respects, but chiefly in the fact that the new variety formed spores in the late autumn, which did not develop until the following spring. A full account of the new organism is in course of preparation for publication.

These winter resting spores seemed to me to be extremely suitable objects for testing the action of auxetics. Some preliminary experiments were accordingly made to see whether increase of temperature would cause development. Spores were placed under suitable conditions in the incubator, and kept at a temperature of 25° C. for periods varying from one to three weeks. On careful examination it was found, however, that no change had taken place.

A solution was then prepared containing 2 c.c. of a 4 per cent. solution of theobromine, 0.4 c.c. of a 5 per cent. solution of sodium bicarbonate, and 0.5 c.c. of a 1 per cent. solution of atropine sulphate, and the mixture diluted to 10 c.c. with water. Water containing large quantities of the spores was then mixed with an equal volume of this solution, and the mixture was incubated at 25° C. On examination at the end of forty-eight hours about 5 per cent. of the spores were found to show indications of division, while controls containing no auxetics showed no change. I then worked with a concentrated extract of sheep's suprarenal gland, augmented by the addition of 0.5 c.c. of a 1 per cent. solution of cadaverine