tion of reading the account of work which it is impossible for the student to repeat for himself, the methods adopted are quickly understood and easily remembered, because the general methods of analysis and synthesis have, in an easy form, not only been used, but discovered by the student himself.

This method of course breaks down where an elaborate examination syllabus is imposed upon the beginner from the outset, and even where this is not the case, every teacher must adapt the method to his own conditions, only and always keeping the fundamental principle in view.

For the beginner in Chemistry whether he is later to specialise in this subject or not, experience has convinced me that the teaching of facts must give way to the teaching of method if a sound basis is to be laid in chemical science, whilst the subject opens the whole question of the value of Chemistry teaching from the educational point of view.   GRACE HEATH.

The Temperature of the Human Body.

THERE is a problem partly physiological and partly physical which I shall be grateful if any reader of NATURE can throw light upon.

1. *The physiological.*—I am assured by medical opinion in which I have confidence that the temperature of the human body is invariable from pole to equator of the earth. The question I want to ask, assuming this to be true, is this : What is the action in the body which exactly and everywhere counterbalances the radiation and conduction of heat in the one case from the body and in the other to the body? I thought at first that perspiration might have something to do with it, but my medical authority assures me that at the equator a man who perspires freely has exactly the same temperature as one that perspires little, although the former will be in good and the latter in bad health.

2. *The physical.*—Treating the animal as a heat engine, one is apt to think of the source of heat as the animal heat engendered by the combustion going on in his frame, and the refrigerator as the surrounding air at lower temperature—in the experience of most of us. The animal then does work at the expense of this heat during its transfer from source to refrigerator, as in an ordinary engine. On the other hand, the animal in equatorial regions must, if the physiological statement above be a fact, be often the coldest of surrounding bodies. Does he also do work at the expense of the heat of combustion in his body, and if so is this vital action an exception to the second law of thermodynamics? If not, does he do work at the expense of the heat which is conducted into his body from hotter surrounding bodies, which heat, when he is doing no external work, still does not raise the temperature of his body?

Rugby.   L. CUMMING.

Comet II. 1892 (Denning, March 18).

THIS comet is still a tolerably easy object in my 10-inch reflector and will doubtless continue to be visible during the greater part of the ensuing winter. It is now approaching the earth, and its brightness is increasing slightly. During the next two months it will traverse Orion.

I observed the comet on September 30, when it was in the same field as the 6th mag. star Piazzi VI. 144 (Lalande, 12546). By differential observations with that star I found the place of the comet to be

	G.M.T.	α.	δ.
	h. m.	h. m. s.	° ′
1892, Sept. 30 ...	12 50 ...	6 25 51 ...	+14 11.

The theoretical brightness, as given in Schorr's ephemeris, was 0·62, but to my eye the comet seemed quite as plain as in March last. The nucleus was, perhaps, not so distinct, but the surrounding nebulosity appeared to be more extended than on previous occasions.

The comet will be close to ζ Orionis (the southernmost star in the belt) about November 14, and passes very near β Orionis (Rigel) on November 30.   W. F. DENNING.

Bristol, October 2.

Cirro-stratus.

A RATHER perfect example of one variety of this cloud was seen here in the afternoon of September 27. A rapid fall of the barometer until 5 A.M., accompanied by a high wind, had been followed by a steady rise, the wind moderating some hours later. At 2 p.m., with a westerly light air, the sheet of cirro-stratus which overspread the sky appeared in the form of a series of very perfect undulations, stretching nearly north and south. These were about fourteen in number, crowded together towards the east. The lower surface of the sheet was sharply defined, and could be followed with ease in its successive rise and fall. The cloud-filaments could be also traced, preserving their perpendicularity to the wave-fronts and conforming to the undulations of the lower surface with a closeness which I had not before observed, although sheets of cirro-stratus are common here. The whole system was drifting slowly to the east.

J. PORTER.

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A New Habitat for Cladonema.

WILL you kindly allow me through your columns to note a habitat for this genus not given in Allman or Hincks. Several weeks ago I received some sponge from Mr. Sinel, of Jersey, and on examining it with a hand-lens detected four polypites of Cladonema, one, at least, of which is still alive.

HENRY SCHERREN.

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TO DRAW A MERCATOR CHART ON ONE SHEET REPRESENTING THE WHOLE OF ANY COMPLEXLY CONTINUOUS CLOSED SURFACE.

IF a solid is not pierced by any perforation, its surface is called simply continuous, however complicated its shape may be. If a solid has one or more perforations, or tunnels,[1] its whole bounding surface is called "complexly continuous"; duplexly when these is only one perforation ; $(n + 1)$-plexly when there are n perforations. The whole surface of a group of n anchor-rings (or "toroids") cemented together in any relative positions is a convenient and easily understood type of an $(n + 1)$-plexly continuous closed surface.

Let the diagram represent a quadruplexly continuous closed surface made of very thin sheet metal, uniform as to thickness and homogeneous as to quality throughout. To prepare for making a Mercator chart of it, cut it open between perforations C and B, B and A, A and outer space, in the manner indicated at $\frac{2}{3}$, $\frac{1}{4}$, and $\pm$. Apply infinitely conductive borders to the two lips separated by the cut at $\pm$, and apply the electrodes of a voltaic
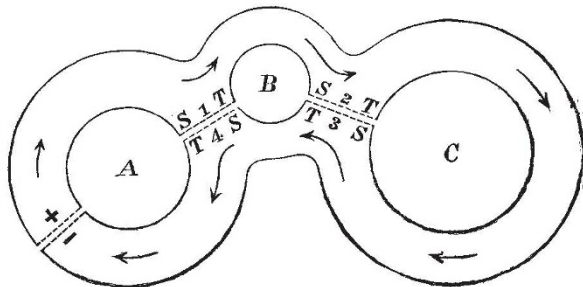
battery to these borders. By aid of movable electrodes of a voltmeter trace, on the metallic surface, and a very large number ($n - 1$, of equidifferent equipotential closed curves between the + and − borders. Divide any one of these equipotentials[2] into parts each equal to the

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1 A "hole" may mean a deep hollow, *not* through with two open ends. The word "tunnel" is inappropriate for the aperture of an anchor ring. Neither "hole" nor "tunnel" being unexceptionally available, I am compelled to use the longer word "perforation."

2 Two sentences of my previous article ("Generalisation of Mercator's Projection") in § 3, and in last paragraph but one, are manifestly wrong, and must be corrected to agree with the rule given for dividing into infinitesimal squares, in the present text.