

But there still remains to be found the actual mechanism of thunder-storms, concerning which various more or less theoretical opinions have been published. The matter will probably remain in doubt until settled by the same kind of investigation that demonstrated the inward spiral path of cyclonic winds. Synoptic charts for a stormy afternoon, with hourly or even half-hourly intervals, and stations only a mile or two apart, would probably settle the question beyond dispute; and the first local weather service that succeeds in preparing a set of such charts will gain a prize worth working for.

### LETTERS TO THE EDITOR.

*\*\* Correspondents are requested to be as brief as possible. The writer's name is in all cases required as proof of good faith.*

#### The incandescent light on steamers.

THE instance cited in No. 104 of *Science*, of early electric lighting of steamboats by the incandescent system, though earlier than that given by Professor Trowbridge, is not the earliest.

I crossed the Atlantic in May, 1882, in the steamer City of Richmond, of the Inman line, which was beautifully lighted by the incandescent system. It is my impression that the lamps were of an English make, the form of the carbon filament being somewhat different from that then used by Edison and other Americans.

C. H. AMES.

#### Chopping-stones.

It is not improbable that the implement figured in a recent article by Miss Babbitt (iv. 529, fig. 3) could have been used as a fuel-breaker, when fastened in a wooden and hide handle; but a more evident use for such notched pebbles, namely, as net-weights, is seen in an industry of the present day among the gill-net fishers, both Indian and white, of the Great Lakes. Net-weights of this character are produced in large quantities at all points on the lakes where gill-netting is in vogue, forming frequently a part of the ballast in the bottoms of the 'Mackinaw' fishing-boats, and lying conspicuously scattered over the sand and beach in the neighborhood of fishing-stations. A less primitive appliance for sinking the nets is coming into use; so that the notched discoidal pebbles, attached to the net with short pieces of twine, are now regarded as old-fashioned by the more thrifty fishermen. The unnotched pebble net-weights, bound with bark, of the Red-Lakers, are interesting as a still more primitive form; but more extended observation in gill-net appliances would have shown Miss Babbitt that the notched form is of far more usual occurrence than she leads us to suppose, and that it possesses tons of examples on the shores of the Great Lakes.

I have found such implements associated with the remains of recent Indians (chert chippings, broken pottery, etc.) in the sand-dunes at Evanston. The modern net-weights are distinguishable from those of the chert deposits in only one particular, that while the surfaces of the former are smooth, and their

notches rough and angular, those of the latter show on their surfaces the effects of disintegration from long exposure on the sand to atmospheric agencies, their notches, too, having assumed the same crumbling character as the rest of the pebble. A large number of them (over twelve) which came to my notice at one place indicates their use as net-weights rather than as 'chopping-stones.'

W. A. PHILLIPS.

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#### The use of slips in scientific correspondence.

I have been interested in Mr. Mann's and other articles on filing scientific notes.

Any one wishing to file such notes will find that a very convenient method of doing so is by the use of the Shannon file, which may be found at any large stationery store. The punch for punching the holes through the paper is the most convenient I have seen, as the holes are always the same distance apart, and at the same distance from the edge.

S. P. SHARPLES.

#### The decadence of science about Boston.

In a late issue (No. 104), *Science* comments upon the decadence of science about Boston. Is it not an explanation of this decadence that more and more in late years the mental atmosphere of Boston has become one of intellectual finish, rather than of intellectual earnestness? Of course, each of these traits has its excellences, as each may be exaggerated; but the latter of the two certainly is far more favorable to the active growth of science in a community. Moreover, the effect of an intellectual atmosphere becomes most evident when it has begun to influence the lives of young men grown up in its midst, and who take their cue in life from it. Is not this effect to be noticed in the present case?

X. C.

#### Koch's 'comma bacillus.'

In the reproduction of the drawing of the 'comma bacillus,' made to illustrate my paper in *Science* for Feb. 6, some defects are noticeable, to which it seems necessary to call attention, inasmuch as the design was to represent as accurately as possible the morphology of this much-talked-of micro-organism. The ends of some of the commas in the figure seem to be cut off square, whereas in the slide and in the drawing they are all rounded. Since writing the paper referred to, I have been favored by Dr. Koch with a slide of the 'comma bacillus,' in which the long spiral forms are far more numerous than in the slide sent to the Army medical museum, from which the drawing was made. Several of these spiral filaments are often seen in a single field, and many of them are longer than that seen in the centre of fig. 1.

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Feb. 11.

#### Carnivorous habits of the muskrat.

My observations of these animals were conducted principally along the banks of the Alleghany River in the vicinity of Warren, Penn., where these enemies of fresh-water bivalves are very numerous.

1°. The muskrat opens the shell by first severing the posterior adductor muscle. This can readily be accomplished, as the animal seldom immediately empties the branchial chamber after capture, but remains with the valves slightly gaping, with the siphons open, until it receives quite severe handling, upon which the water in the branchial chamber is violently ejected. The valves will also partially open if the