result. The illusion is quite complete; I seem to be looking at an actual pattern. The use of a material point of regard, as the tip of the finger, was not, as Professor LeConte seems to have understood me, to aid in properly fixing the axes of the eyes, but simply to make sure on which side of the actual pattern the horopter lay — the all-important fact in the experiment. I may add, that in my case the coalescence of the images is easier with a more distant than with a nearer point of regard — contrary to Professor LeConte's experience. It seems to me that it would be valuable to secure some additional evidence as to the way in which the phenomenon strikes a person who has had no previous knowledge of its existence, say by using a stereoscope without lenses, fixing the distance of a point in monocular vision and then suddenly introducing a pattern, the observer being simply asked to estimate its distance. In closing, let me say that I lay no stress on my remarks in explanation of my own case. It really is more or less of a mystery, but it surely need not remain so. The abnormal eyes of Dalton did great things for the theory of color vision, and indeed it is from the abnormal more than from the normal cases that fruitful trains of thought are apt to take their rise. I esteem myself fortunate to have interested Professor LeConte, and I hope that this is by no means the last thought that he will give to the matter.

ARTHUR E. BOSTWICK.

Montclair, N.J., June 19.

A Night-Singing Cat-Bird.

PERHAPS it is not a rare occurrence, but I never heard of such a thing before, and I give the incident for what it is worth. A few evenings since I heard a cat-bird sing for nearly an hour just before midnight. The weather was mild, with not enough moonlight to cast a shadow. The bird's song was somewhat intermittent and scarcely so rapturous as his usual sunset or sunrise singing. In the intervals there occasionally came one or two of the mewing utterances characteristic of the bird.

A. STEVENSON.

Arthur, Ontario.

Is it a Paleolith?

A STONE axe has just been found in a field about eight miles northeast of this place, which very nearly proves (if not quite so) that man existed during, or prior to, the glacial period in North America. It was found by A. A. Newlin, on the summit-level in this (Parke) county, Indiana, on the south side of Sugar Creek. It is $6\frac{7}{10}$ inches long, $2\frac{3}{4}$ inches wide on the blade, $4\frac{3}{10}$ inches wide at the groove (or eye of our steel axes), $3\frac{1}{2}$ inches wide at the "back," or "poll," and is $1\frac{6}{10}$ inches thick, and, I am confident, was, when first made, nearly two inches thick.

One side is ground flat, and by glacial action, without any doubt. By that grind the groove was planed almost out on that side, and has been re-cut or filed out by some Indian long ages after the Indian who first fashioned the axe. The striations run from edge to poll, and the axe was moving edge forward, as the striations indicate, for they are deeper cut toward the edge, and weaker, become shallower and less distinct, toward the poll.

The opposite, or convex, side of the axe has been striated just enough to produce a distinct plane, which inclines to (or from) the flat side about eleven degrees.

The poll, the ends (as timber men call that part of the axe nearest to and farthest from the hand when using), the present convex side, and the grooves around the ends show the deepest and oldest weather-pits. Then the glaciated, flat side shows the next oldest weathering. Next, the newly-deepened groove on the flat side, and, also, a little deepening of the groove on the convex side, where the grinding had made the groove somewhat shallow, show the next oldest weathering; and, last, the smooth, whetted edge shows very little weather wear.

This axe was found about one hundred miles north of the southern boundary of the glacial drift on the Wabash River. I have found eleven places in the county where the rock, in place, is strongly and clearly glaciated, and three places have been found by other parties. The erratic bowlders which are striated on one to five sides are countless (to say nothing of those not marked), and I have examined them and studied them a great deal, and think I am not a bad judge of their comparative exposures and decompositions. As a result of my experience and judgment, I am strongly inclined to believe that this axe was made before, or during the glacier. That it was lost, or in some way fell into the sweep of the glacier and was ground flat on one side and striated a little on the other. That, after the glacier had receded, it was found, repaired, sharpened, and used till the steel tomahawk took its place, when it was cast aside. I feel confident that experienced archæologists will so decide.

JNO. T. CAMPBELL.

Rockville, Indiana.

Cloud Formation.

I wish to call the attention of meteorologists to a rather peculiar phenomenon witnessed by me several times last winter.

The slough between King's River and the San Joaquin, overflows in seasons of high water, causing dense growths of tule (*Scirpus lacustris*, or round tule, and *Typha latifolia*, or flat tule), often ten feet high. The buccaroes of the large stock ranches burn the dead matter in winter, to clear the land that the stock may get the young feed.

On Jan. 28, at 3.30 p. m., I noticed one of these fires. The wind was northwest, slight, and quite warm; the weather had been showery for a few days previous, but, saving a few clouds of the cirrus type, the sky was clear. The fire was not extensive, but made a dense smoke which rose in a nearly perpendicular column, nearly 2,000 feet, when it met a counter current of air from over the Coast Range, as evidenced by its drifting abruptly away to the northeast.

All this is a natural result of the topography of the country; but what arrested my attention was a cloud of the cumulo-stratus type, resting on the top of the column at the point of flexure, like a cap. It did not appear to drift away, nor did it grow larger or diminish, save that from its base it gave off a cloud of the nimbus type, that mixed with the smoke and gradually increased and extended, till, at about 10 o'clock p. m., it extended across the northern horizon, like a dense rain cloud. Meanwhile, other clouds began forming at sunset, and it rained before morning.

On Jan. 29, it cleared away, another fire was started, the smoke rose in a column to the same altitude, struck the current, and drifted away, no cloud forming. The same thing happened on the 31st. On Feb. 1, the apparent conditions were the same, save a few clouds came in from the coast, but were soon dissipated. In the afternoon I saw the fire start, and watched it. The smoke rose as before, and struck the upper current of air. Immediately a cloud formed. In less than half a minute it had reached its usual size, as large as the column, which it seemed to cap. It was a dusty day, so the column was often broken. I saw it blown from under the cloud, and a new one form three times in about five minutes.

I now noticed that, whereas the smoke drifted down the wind, with its upper surface a horizontal plane, the liberated clouds ascended into the wind in the manner of a kite. Once outside the influence of the smoke, they were dissipated like the rest of the clouds. General showers prevailed throughout the valley for the next three days.

Reasoning from my limited knowledge of physics, I might think the cloud was caused by a column of heated and vapor-laden air rising with the smoke, and being cooled by coming in contact with the upper current, causing its vapor molecules to agglomerate into cloud particles; but, for various reasons, I think this inadequate. I have since seen the fires several times, with a southerly wind, which generally brings our rain, but no cloud formed.

I have seen a theory advanced that vapor molecules need some solid nucleus to start the process of agglomeration. Can any one tell if this be so, and, if it is so, the rank that carbon takes as a condenser?

I would also like to know why no cloud formed save in a "chronic" state of the weather; and finally, why did the liber-