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.*

Sense of direction.

I HAVE been much interested in the different methods of preserving the relative situation of places, as given in late numbers of *Science*, and will venture to add my own experience.

I refer all objects to two rectangular co-ordinate axes which agree with the cardinal points. In all places where I feel at home, these lines are consciously present, and all roads running north and south, or east and west, coincide with, or seem to be parallel to, these axes. All places which I have visited, from Massachusetts to Nebraska, are, with few exceptions, connected together in one system.

The principal origin of this system is in the northwest corner of a schoolhouse in Hamilton county, O. There, when a boy, I sat under the direction of a teacher to study geography. With face toward the north, I looked through a window along the meridian. I could at pleasure see east or west, or, if need be, south, through opposite windows. A thorough course in geography fixed in my mind the axes of my system, which have been present with me ever since, a secondary origin going with me everywhere. All places with which I am familiar form parts of this system, and any new place visited is immediately referred to its proper location.

Now for the exceptions. There was another schoolhouse, where I attended sometimes, at which I was turned a quarter round. East was north, south was east, etc. I account for the anomaly in this way: in going to the schoolhouse where my system was fixed, I went east, along a road from which I turned to the left into the south or front door of the schoolhouse; but, in going to the second school mentioned, I went through fields into a road along which I passed toward the south some distance, and then turned toward the left into the west or front door of the schoolhouse. I lost the direction of my axes of reference in crossing the fields; so that the west side of the new schoolhouse seemed to coincide with the south of the old, and thus unconsciously my axes were turned a quarter round. No plan I could adopt had the least effect in changing the apparent position of the cardinal points. Many a laugh was raised at my expense because of my promptness in pointing in wrong directions; and to this day, after nearly half a century, if I wish to think of directions from that schoolhouse, I am obliged to change my first decisions through an angle of ninety degrees.

Washington City is another place which is entirely out of my system. I entered the city after nightfall. Somewhere between Baltimore and Washington, I lost my co-ordinate axes, so that, when I came to consider directions, Pennsylvania Avenue was turned half round, east was west, west, east; and I had not and have not the least sense of north or south. No study of maps, and no thinking over the subject, has the least effect in arranging things properly.

Boston is another place which is not in my regular system. In that city and vicinity, Washington Street takes the place of my usual east and west axis, and the street that leads to Mount Auburn is the other axis; but these are not in my mind coincident with my principal axes.

Mistakes made at different times have been quite a study to me. Once, in a city which is regularly laid out, going along the west side of a street toward the south, I crossed the street, and turned toward the north upon the opposite side, and went into an office at my right hand. Coming out, and wishing to continue my course toward the south, I really went north, and spent several minutes before I could convince myself of my error. Possibly the mistake arose in the following manner. I lost my axes in passing from the street-crossing to the sidewalk, and turned north when I supposed I turned south; going into the office toward the right, I seemed to go west; coming from the office, I seemed to be going east; and turning to the right, I was to my mind going south.

It is my custom to travel with a map before me; and, on visiting a city for the first time, I secure a plan and study the direction of the principal streets, obtaining correct knowledge of the points of compass. I then carefully classify my acquisitions, and commonly have no difficulty in finding my way without a guide.

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Barn-owls in southern Ohio.

Until recently barn-owls have been of rare or accidental occurrence in this part of the Ohio valley. In the records of the birds in the vicinity of Cincinnati, there were only three specimens noted; and in the record of the birds of Franklin county (Indiana), there has been a vacancy under the head of this species. On Oct. 25, 1883, I was pleased to have a friend bring me a fine male of this species, killed within a half-mile of this town. Soon after this a number of specimens were taken near Cincinnati, at Glendale, where they had taken up their quarters in the town-hall; and others were killed near Jones Station, O. In all, this makes fourteen specimens that I know to have been taken within fifty miles of Cincinnati.

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Phosphates in North Carolina.

The successful exploration last spring, under the direction of our board of agriculture, of the large beds of phosphatic nodules embedded in marl in New Hanover and Pender counties, started the search for phosphates in North Carolina again. Stray coprolites had frequently been found; but these nodules, forming beds four to five feet thick, and extending through the country for twenty miles or more, suggested an origin different from that of the true coprolite.

Phosphatic rock has recently been discovered in the up-country, which corresponds exactly to the water-worn nodules entering into the calcareous conglomerate of the lower Cape Fear.

In the latter region, about Wilmington, and twenty miles above, we find the nodules embedded in, and forming the lowest layer of, a ground and hardened eocene marl. The nodules show the same fossils, but differ from the marl in the large amount of sand they contain. They vary in composition from fifteen to fifty-two per cent of phosphate of lime, neighboring fragments having often very varied composition, of all shapes, but mostly kidney and egg shaped; perforated; color, gray to greenish black; specific gravity, 2.6 to 2.7. Freshly broken or rubbed, they give the odor of burnt powder characteristic of such phosphates.

Higher up the country, in Sampson, Duplin, and Jones counties, we find the eocene marl above, and the phosphatic rock below, in distinctly separate layers. Here the formation is such as to leave little doubt that the rock is phosphatized marl (according to Holmes's theory), and not true coprolites. It is found in large indented slabs, six to eighteen inches thick, and weighing sometimes several tons, or in