

face dotted with hillocks, like rifle-pits, caused by the up-turned roots of large trees, of which no other vestige remains. In the eastern part of Bradford county were extensive ancient windfalls, still recollected by the older inhabitants, where now is a fine, well-cultivated farming-country; and in the southwestern part of the same county a tornado of a later date left a long, straight path through the pine timber, which was known as the 'Devil's Lane.' I have seen the track of an extensive tornado in the forest of one of the Alleghany Mountain counties of this state. I have reports of others in West Virginia and in Indiana, and of very numerous ones in the vast forests of Lower Canada, in New Brunswick, and Nova Scotia. Every hunter and lumberman who has travelled through the forests is familiar with these evidences of more or less ancient tornadoes, and of a few in later times. From their occurring in uninhabited regions, and from their not being attended with loss of life or improvements, no accounts of them are to be found, and the traditions of them are soon forgotten. In the further study of this interesting subject, these fossilized tornadoes, so to speak, should not be overlooked. The tornadoes of Kansas, Missouri, Illinois, Minnesota, and Georgia, are probably only repetitions of what has at long intervals occurred fortuitously in all parts of our country.

JAMES MACFARLANE.

Towanda, Penn., March 11.

[Windfalls are the subject of Tornado circular No. 12, which may be obtained on application to the chief signal-officer, U. S. Army, Washington. Information concerning the location, direction, length and width, and, if possible, also the date, of these old tornado-tracks, is much desired.]

Remains of a prehistoric tree.

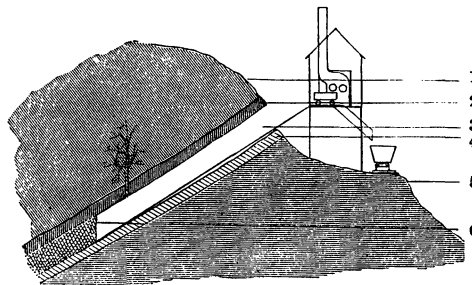
While making some assays for the Oregon iron and steel company, during the past summer, I was often in the mines of the company at Oswego, eight miles south from Portland, Ore.

Being on one occasion about five hundred feet down the main gangway, my attention was called to a curious 'hole in the roof.' On examination, I found it to be a perpendicular cylindrical cavity in the roof-rock, in diameter about ten inches. Upon feeling the walls of the cavity, I found the surface somewhat rough, like the bark of a tree. Introducing a lamp, I could discern small indentations corresponding to the knots and twigs upon the trunks of trees. I was convinced that the hole had once been occupied by a tree, and, procuring a jointed pole, probed the cavity to a height of twenty-two feet. Toward the top the indentations became more numerous; and, by replacing the stiff pole by a flexible bamboo, the side orifices could be probed to a depth of two or three feet, and seemed to have a slight inclination (see figure).

Examining the ore on roof and sides, I was rewarded by finding a network of roots, which retained their original forms perfectly, although petrified. I procured one specimen an inch and a half in diameter. An analysis of it showed the material occupying the position of the original bark to be kaoline; it being perfectly white, and about a quarter of an inch in thickness. Inside this ring of kaoline the wood had been replaced by iron ore, not differing from that of the surrounding vein.

Above and below the ore I found no roots; the tree having grown in the space now occupied by the ore-vein, and at an inclination to it. The strata dip to the north at an angle of 35° to the horizon.

Immediately under the ore is a stratum of scoriae one to three feet in thickness. Below this is hard, compact basalt. The roof of the mine is 'greenstone,' decomposed by heat to coarse sand-rock immediately over the ore. The ore-vein averages five feet and a half in thickness.



SECTION IN MINE AT OSWEGO, ORE.

1, 'greenstone'; 2, sand-rock; 3, gangway; 4, scoriae; 5, basalt; 6, ore-vein.

At six hundred feet I found pieces of wood not petrified, and in a good state of preservation, some parts showing a charred surface. I found afterwards, in other parts of the mine, several smaller orifices in the roof-rock, and similar to that described above.

HAROLD B. NYE.

Congenital deafness in animals.

Mr. Lawson Tait, quoted by Professor Bell in *Science*, No. 54, says that 'congenital deafness is not known to occur in any animal but the cat.' In contradiction to this statement, Dr. Burnett has reported to you (No. 57) the cases of two deaf dogs; and I now refer you to the mention of a deaf-mute cow in Dr. Haubner's 'Bericht über veterinärwesen,' quoted in the 'Organ der taubstummen-und blinden-anstalten in Deutschland,' vol. xxv. p. 176. This cow was twelve years old, and had been in the possession of the same owner since she was three weeks old. She was perfectly deaf to all sounds. At feeding-time, or when a calf was taken away from her, she made the same demonstrations that other cows do, stretching out her head and neck, and opening her mouth wide as if to bellow, but only making a short, deep, gurgling sound, very different from the ordinary lowing of cattle. Her sight was good, and she was an intelligent animal. Nothing abnormal could be discovered in her ears or throat. Her color is not mentioned. She had had eight calves: but whether these inherited their parent's deafness is not known; for in this case the danger, if such a danger existed, of 'the formation of a deaf variety' of the bovine race was effectually prevented by the early butchering of the calves.

EDWARD ALLEN FAY.

National deaf-mute college, Washington, D.C.,
March 14.

Muraenopsis.

Is it not by mistake that you state, in the review of 'Yarrow's check-list' (*Science*, No. 56, p. 264), that the generic name 'Muraenopsis' must be suppressed because 'pre-occupied among the eels'? The name was first applied to eels by Kaup (1856, 'Catalogue of apodal fish,' p. 11), though credited by him to Le Sueur. The latter, however, did not use it. His name was 'Muraenophis' (1825, *Journ. Philad. acad.*, v. p. 107), or 'Muraenaphis' (l.c., pl. iv.), or 'Muroenophis' (l.c., index). Kaup's error was copied by

Günther (1870, 'Catalogue of fishes,' viii. p. 68). It is probable that by one or the other of these authorities you have been misled. 'Muraenopsis' was given to the batrachian by Fitzinger (1843, 'Systema reptilium,' p. 34) as a substitute for *Amphiuma* Garden, 1821. Subsequent writers have limited the genus *Muraenopsis* to the species with three toes, retaining in *Amphiuma* that with two. Examination of a considerable number of specimens shows that about one of every five individuals of tridactyla, from the same locality, has less than the normal number of three toes to each foot. For this reason it seems as if the species is not sufficiently distinct from the two-toed, *Amphiuma* means, to be entitled to rank in a different genus. In this view the genus *Muraenopsis* should be suppressed, and the name placed as a synonyme for *Amphiuma*.

S. GARMAN.

Mus. comp. zool.

[The writer of the review above mentioned must confess to a blunder. Not having a copy of Le Sueur's paper at hand, he trusted to the quotations made by Kaup and Günther. The former writer, as above stated, expressly adopts the genus *Muraenopsis* from Le Sueur.]

STUDY AT HOME.

IN discussing the value of a new plan for making men wiser and better, the thing to do is not to compare it with other plans in successful operation, with which it does not propose to interfere, but simply with the state of things in which it is absent. No one pretends that personal instruction is not of value, or that the urgent stimulus and vivid directness of a living teacher and a *viva voce* explanation can ever be replaced by the slow medium of letters. When an organized effort was made to introduce home study on a large scale, it was on account of the patent fact that there are many young people, and many people no longer young, who are not in a condition to go to school, and to whom, nevertheless, the systematic study of some subject in which they take an interest would be a benefit and a delight. The difference between a sporadic effort to do a little solid reading by one's self, constantly interrupted by flagging interest and by difficulties too hard to overcome, and a regular correspondence with some one who is able and willing to lend encouragement and aid, is very great. If the enthusiasm for this sort of work should become so wide-spread as to keep large numbers of students from giving themselves a regular course of instruction in school and college, it would be time to consider the evils of the plan; but of this there is little danger at present.

Ten years ago some reports of an English organization, called the 'Society for the encouragement of home study,' fell into the hands of a group of missionaries in Boston; and they

were immediately inspired with a desire to work out the idea suggested by the title. An exchange of letters with the English secretary was of very little assistance in the development of the American plan. The English society offered no correspondence, but simply sketched out courses of reading, and plans for botanical and art work, to be carried on without assistance for a year, after which the students were expected to go to London for a competitive examination with prizes. In the autumn of 1873, the 'Society to encourage studies at home' was established by a committee of ten persons, six of whom carried on the correspondence with the forty-five students who offered themselves for instruction in the course of the year. Only two points of method were settled at the beginning; namely, that there should be a regular correspondence, and that there should not be competitive examinations. Later the plan was developed of making the students take notes from memory, at the beginning of each day's work, of the reading of the day before, and send to the appointed teacher at the end of each month a few sample pages of their daily notes, and a full abstract, written from memory, of their month's work. There are also frequent examinations; and by this means the students are divided, at the end of the year, into a first, second, and third rank. The plan of giving certificates, based upon the results of an annual examination, was abandoned after two years' trial. The annual fee charged is merely a nominal one, — two dollars at first, and afterwards three, — but it has been sufficient from the beginning to cover all the expenses of paper, postage, the printing of the necessary circulars, the salaries of the assistants to the secretary and the librarian, and for the last two years the rent of the rooms on Park Street, Boston, where the society has its headquarters.

The work of the teachers is, of course, a labor of love. In numbers the society had a very rapid growth for the first four years of its existence, and since then it has remained nearly stationary. In 1880 over eleven hundred students entered, of whom seventy-one per cent persevered throughout the year, and twenty-six per cent were excused for sufficient reasons. The number of teachers is about two hundred. History, science, and art, French, German, and English literature, are the subjects taught; and the proportion of students in each subject remains almost constant year after year. More remarkable still, the subjects divide themselves into three groups of two subjects each, which keep nearly abreast