quarter of an hour. It is interesting to follow one of these balls through the course of its multifarious duties. It first enters a sling in a tape wound over the escape-wheel axle, and it is the weight of this and three other balls (which have been previously deposited in preceding slings) which keeps the escape wheel going. As the wheel turns round, the balls descend, and after a quarter of an hour the lowest will have arrived at a funnel-shaped opening, where it will get liberated from its sling, and fall. It first strikes a lever which enables the drum to move on and discharge another ball into a sling upon the escape-wheel tape. Then, rushing down a tube, it enters a zigzag. It is within this zigzag that the striking of the quarters is performed; for at each of its angles a bell is placed, against which the ball strikes sharply as it passes them. After leaving this zigzag, the ball is projected down another, where it strikes the hours.

As the number of blows to be struck is regulated by a similar contrivance at each zigzag, we will confine our attention to that for the hours. The channel down which the ball passes is vertical to the face of the zigzag. Now, the front or zigzag side of this channel is a moving tape, which carries a little trap. As the tape is always moving, the position of the trap depends upon the time, and the position of the trap also determines the stage of the zigzag upon which the ball will be projected. Thus, when the trap is opposite the sixth stage of the zigzag, the ball will encounter six corners upon its way down, and consequently six blows will be sounded; when the trap is at the top, twelve blows are sounded; and when the trap is at the bottom, no blows are sounded. When the ball leaves the zigzag, it enters a sling at the lowest part of the chain first spoken of, and is intermittingly carried up again to begin its work over again. For repeating the hours and quarters at will, there is a separate reservoir of smaller balls; and, by pulling a handle, one of these can be discharged above the first zigzag; and when it has done its work, it disappears through a hole, which the regular balls cannot penetrate, back to its own reservoir. It may be mentioned, that, in lieu of bells, the hour zigzag has a single vertical sonorous tube for each set of corners. The time, days of the week, etc., are shown by means of tapes carrying pointers suspended over the escape-wheel and another axle.

The inventor, the Rev. Canon Cinquemani, maintains that the simplicity and precision, by reason of the constant force on the escapement of his "chronologe" (which he has patented), render it peculiarly advantageous for missionary and other distant stations, where the assistance of professional clock-makers is not readily procurable.

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 editor will be glad to publish any queries consonant with the character of the journal.

On request, twenty copies of the number containing his communication will be furnished free to any correspondent.

Mohawk Folk-Lore.

AT various times during the past two years the writer has had opportunity to converse at length with Odjĭdjătĕkhă, an intelligent young Indian of the Mohawk tribe residing near Brantford. From him the material given here has been obtained.

The Child and the Bear.—Once upon a time a child was left an orphan. A council of his clan was held to consider what should be done with him, and to decide as to whose care he should be given over. Some one (a woman) asked permission to keep him, but soon after allowed him to get astray in the woods, where he was taken up by a bear (the Indians believe that bears are more loving to their offspring than men). The old she-bear had six cubs, and she made the child the seventh. She lived in a hollow log. One day she was out, and the hunters spied her, and, with four dogs with four eyes apiece, they pursued her, and she was just able to reach her hollow log and crawl into it. The hunters shot her and split the log open, and discovered the six cubs, but where was the seventh? After searching for a while, they found it in the end of the log, all safe and sound, and they were sorry for having killed the bear.

The above story is represented as being told by an old man to children. At the conclusion of it, the child asked, "Why are you so afraid now to let us go into the woods where there are bears, if the bears are so kind?"—"Because our love for you is great, and because of the way in which the child came into the bear's possession."

A Ghost Story.—Dogs are regarded as giving warning of the approach of ghosts, spirits, etc. One day a dog said to a man that at a certain time the ghosts would come for him, and that he must pack up and be off if he did not want them to get him. If he disregarded the dog's warning, he would be lost. He started, and the dogs, one on each side of him, trotted along, and when he was tired carried him on [how they did this the narrator could not say: the Mohawk word used meant simply "carried"]. Behind them they could hear something flying along, and making a great noise like thunder as it came nearer and nearer. It was the spirit; and when it got too near, one of the dogs would go back and fight it, while the other would go along for a while, and then take his turn at fighting back the ghost. By and by one of the dogs got tired, and said to his master that he could not hold out any longer; and he went back, and the master saw him no more. The other dog, however, kept on, and the man reached home, and on arriving fell down on the threshold. A light was seen, and when the crowd gathered round and questioned him, he said, "I've seen a ghost." The Indians are very much afraid of strange lights, believing them to be ghosts.

A Dog Story.—When asked if the Indians ever believed that dogs spoke, Odjĭdjătĕkhă said that at Caughnawaga (an Indian settlement in the Province of Quebec), some time ago, a man put his dog out of doors in cold weather. After a while he heard somebody outside saying how cruel and bad it was to keep him out in such very cold weather. He thought it was a man, and opened the door, and saw his dog wagging his tail.

Thunder and Lightning.—The Mohawks believe that thunder is caused by seven men, who are up in the sky. Formerly there were only six of them; but once upon a time an indian got up there, and since then has prevented them from harming Indians. Thus it is that no Indian is ever struck by lightning. When it thunders and lightens very much, the Indians exclaim, "Say, old man, enough of that!"

Weather-Lore.—Among the Mohawks the hog is regarded as a sort of weather-prophet. When cold is about to come on, he carries straw in his mouth to make a nest. When a hog is killed, the people examine something in the inside to see what the weather will be. Every year at the Reservation prophecies are made regarding the weather for the following year, and Odjĭdjătĕkhă claims that these are often quite successful. The Indians note a good deal about the weather from trees, and from the actions of various animals and birds, such as the muskrat, the woodpecker, etc.

Feasts, Games, etc.—The Pagan Cayugas and Onondagas still practice their old dances and other rites. The Onondagas have their white dog feast in the spring. There are also the green-corn dance and the fall dance. The dances of the Pagan Indians are celebrated near Brantford towards the end of January.

The chief games of the Indians are, in summer, lacrosse, and in winter the snow-snake. At a sort of religious festival in the "long house," a game of lacrosse is played by women.

The snow-snake is the chief amusement of the Pagan Indians on Sundays in winter. Odjĭdjătĕkhă stated that the snake has been thrown by a skilful player to the distance of from 275 to 375 yards. The Mohawk name for the "snow-snake" is *ăgwădrăhŏntă;* in Tuscarora, *ŭtră hŏntă;* in Onondaga, *hăwhŏntă.*

A. F. CHAMBERLAIN.

Clark University, Worcester, Mass., Nov. 15.

Mount St. Elias and the Culminating Point of the North American Continent.

THE article on Mount St. Elias which Dr. Dall has communicated to your issue of Nov. 14 calls for a reply. In my paper, "Barometric Observations among the High Volcanoes of Mexico, with a Consideration of the Culminating Point of the North

American Continent, published in the current number of the "Proceedings of the Academy of Natural Sciences of Philadelphia," I give what I believe most unprejudiced critics will consider good reasons for doubting the full accuracy of Mr. Dall's measurements of Mount St. Elias (and Mount Fairweather). The reasons for this belief were republished by the editor of *Science* in the issue of that journal of Nov. 7, and need not be restated; but I may be permitted to add that they were formulated two months before the results obtained by Russell and Kerr were made known, which, unfortunately (for St. Elias), only too clearly prove the justice of my doubt, and fortify my statement that the true position of St. Elias is probably "after, and not before, the Peak of Orizaba."

Dr. Dall seeks to throw discredit on my analysis of his measurements by unfavorably criticising my work in Mexico, but I fail to see the relevancy of the citation. He accuses me of being "no geodesist," which I am pleased to admit; but then I am manifestly not far removed from the company of the distinguished naturalist of Washington, since he also sees fit to confess that he makes "no pretence to the character of a geodetic expert." When, however, Dr. Dall wishes to instruct me in the value and deficiencies of an aneroid barometer, I may perhaps be pardoned for looking to other sources for my information; and I would recommend to my learned friend that he acquaint himself more closely with the analyses of the workings of this instrument made recently by German specialists. I append herewith the results of various measurements made in Mexico, which speak for themselves.

Peak of Orizaba.

	Feet.
Humboldt (trigonometric)	17,375
Ferrer (1796, trigonometric)	17,879
Plowes, Rodrigues, and Vigil (1877, trigonometric)	17,664
Von Müller (trigonometric)	18,112
Ratzel (barometric)	18,069
Kaska (mercurial barometric)	18,045
Kaska (mercurial barometric, more recent)	18,200
Doignon (?)	18,322
Heilprin	18,205

Popocatepetl.

	Feet.
Humboldt (trigonometric, corrected to Mexican R. R. levelling)	17,590
Glennie (barometric)	17,884
Sonntag (trigonometric, with correction to R. R. levelling)	17,660
Heilprin	17,523

Ixtaccihuatl.

	Feet.
Humboldt (trigonometric, corrected to R. R. levelling)	15,702
Sonntag (trigonometric, corrected to R. R. levelling)	16,951
Heilprin	16,960

Nevado de Toluca.

	Feet.
Humboldt (barometric, corrected to R. R. levelling)	15,038
Height given by Garcia Cubas	15,020
Heilprin	14,954

The correspondences and divergences may be considered "merely accidental," if it so pleases the critic; but let us contrast with these Mr. Dall's "observations of a higher class" (as compared with previous measurements):—

Mount St. Elias.

	Feet.
From 69 miles	19,464
From 127 "	18,350
From 132 "	19,956
From 167 "	18,033
Russell and Kerr (1890, as reported in the daily papers) less than	15,000
La Pérouse (1786)	13,000

Possibly the critic will consider these "trigonometrical" results as being also "merely accidental." Mr. Dall wrongly interprets me when he accuses me of broadly stating that the system of "extracting averages" is "delusive." What I object to is the "delusive system of extracting averages." I should perhaps have underscored the first word; but the context, it appears to me, ought to have made my meaning clear. When four measurements of a mountain (Mount Fairweather) give individual results of 15,085, 15,247, 15,447, and 16,009 feet, I fail to see how by any correct system of extracting averages we can obtain "unanimity" in the general result. It is the making of this unanimity which is a delusion to me.

The scientific world will receive with interest the publication of the results of the recent expedition to Mount St. Elias, and I agree with Dr. Dall that it is best to await the official publication before building too high on preliminary newspaper statements.

ANGELO HEILPRIN.

Academy of Natural Sciences, Philadelphia, Nov. 15.

Strawberries.

IT needs little proof to show that a a long-season strawberry is more desirable than one that yields all its fruit within a week. The great bearers are always among those with a long bearing season. A plant, like a person, can do more work in two weeks than in one. What we desire in a good variety is not only a large quantity of fruit, but also a regular supply during a reasonably long fruiting period. As to pollen-production, I do not think that this is quite as heavy a tax upon the vital energies of strawberry-plants as the Ohio Experiment Station tries to make us believe. Undoubtedly it requires some effort, but there is nothing in analogy to show that the process is an exhaustive one. Nature is quite lavish in the production of pollen. While it is true that Haverland, Warfield, and Crescent—all imperfect-flowering varieties—may be safely put down as our most prolific sorts, this fact may be due to mere accident as much as to "division of labor." I have frequently seen the perfect-flowering Sharpless, Pearl, Capt. Jack, even the Wilson, and others, out-yield by a great deal the best on the list of imperfect-flowering (pistillate) varieties. The Long John, a perfect-flowering sort which originated here twenty or more years ago, has for the past two years equalled, or rather out-yielded, even the far-famed and truly wonderful Haverland.

T. GREINER.

La Salle, N.Y., Nov. 12.

Structure of the Plesiosaurian Skull.

IN his recently published "Manual of Paleontology" (p. 1067) Lydekker makes the statement, in his definition of the *Lynaptosaurian* branch, that there are "no ossifications in the sclerotic of the eye," and repeats it in his yet more recent "Catalogue of Fossil Reptilia." Upon this authority, I stated in my recent letter to *Science* that sclerotic plates had not been previously described for this branch, including the *Chelonia* and *Sauropterygia*. This is not correct, as Dr. Baur kindly informs me. He says, "Sclerotic plates are present in the *Testudinata*, as mentioned by Huxley and Hoffmann. I have found them in *Pleurodira*, *Cryptodira*, and *Trionycha*."

I do not wish to say that this character, and certain other ones, such as the co-ossification of the jaws, absence of parietal foramen, etc., are of high classificatory value, but rather that their discovery will require a revision of definitions hitherto given.

S. W. WILLISTON.

Lawrence, Kan., Nov. 12.

AMONG THE PUBLISHERS.

THE issue of *Garden and Forest* for Nov. 12 opens with an article on the use of the axe in plantations of ornamental trees. This is followed by an illustrated account of some insect enemies of fruit trees, by Professor Smith, entomologist of the New Jersey Experiment Station. *Celastrus articulata*, a Japanese relative of our climbing bitter-sweet, is described by Professor Sargent, and an excellent figure of the plant accompanies the description. Mrs. Treat writes instructively of evergreens in the pine barrens of New Jersey; and articles on chrysanthemums, asters, and other late-flowering plants, help to make the number seasonable and attractive to every lover of a garden.

— The first edition of "Scientific Lectures," by Sir John Lubbock (London and New York, Macmillan), appeared in 1879. The second edition, now before us, is, so far as we are able to judge, but a reprint of the former. The subjects treated are flowers and insects, plants and insects, the habits of ants, and an introduction