bers, and cause widespread consternation. No doubt climatic and other influences have much to do with these sudden up-risings, as we find species that are known to be parasitized but very little, which fluctuate in numbers greatly with different seasons. All the effect, then, cannot be attributed to parasites.

The difference between the work of parasites and other influences, is quite marked and distinct in certain channels, and can be easily traced. The tendency of parasites is to increase or decrease in numbers as the host is numerous or scarce. A few years ago the wheat aphis was so numerous over the wheat plants that it threatened to destroy the whole crop in this region. Presently certain of the aphis looked brown and swelled, which told plainly that the parasites were there too. The wheat grew and headed. Still the aphis increased by the thousands daily, and the parasites increased in numbers also. Then there came a time when the parasites were in the majority, and, before the wheat-heads had ripened, a live aphis was a scarce and hard thing to find. The next year the wheat aphis was not common, and what did appear were disposed of early by the parasites.

Sometimes the work of the parasites is not as prompt as the instance just cited. For illustration, the oak army worm, *Edema albifrons*, was never known to be numerous enough to greatly injure the oak till two years ago, when the species came in such numbers as to strip whole forests of their foliage. Of the several hundred caterpillars and pupæ collected, only one pupa was parasitized. Last year the trees were again stripped by countless numbers as the year before, but from the pupæ collected, about every one in ten was parasitized. Probably this year the caterpillars will be less numerous, and by next will be scarse, because of the work of parasites.

An ideal parasite is one that would keep its host in such complete subjection that no outbreak would occur, and the numbers not great enough to do any harm. While the effect of parasitism is not ideal in every respect, it nevertheless is a boon to economic entomology, and has already been used to good advantage, by introducing many foreign parasites that are known to work on certain species. As we become still more familiar with these parasites and their hosts, much more good, through parasitic species will undoubtedly result.

EARTHQUAKES IN AUSTRALASIA.—II.

BY GEORGE HOGBEN, M.A., SECRETARY OF THE SEISMOLOGICAL COMMITTEE OF THE AUSTRALASIAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE.

In my former communication I explained the nature of the work that the Seismological Committee of the A. A. A. S. proposes to do anent earthquakes. In the present contribution I shall endeavor to sketch briefly what has already been done for New Zealand earthquakes.

The committee has published two reports, 1891 and 1892. The former was drawn up by Sir James Hector, F.R.S., and deals with New Zealand earthquakes to the end of the year 1890. It contains a list of earthquakes (587) felt in New Zealand from the earliest settled times, and gives interesting details concerning the somewhat severe shocks of October, 1848, and January, 1855. The last-named is notable as being one of the few in any country in which movement of the land has been actually observed by skilled observers on the spot. Captain Drury, R.N., was engaged at the time on the nautical survey of the New Zealand coast, and, being in the neighborhood of the land raised, was able by actual re-measurement to confirm the general impression. "An area of 4,600 miles was estimated to have been raised from one foot to nine feet, the greatest elevation being on the west side of the Wairarapa Valley, the vicinity of Porroria Harbor not being affected, and the west side of Cloudy Bay, north of Blenheim, having actually been depressed to the extent of five feet." (Transactions, A. A. A. S., 1891, p. 522). The elevation has been permanent. The same report (1891) contained a map by Sir James Hector, showing the seismic areas, principal fault and earthquake-rents in the islands of New Zealand. The division into seismic areas is not, however, based upon the determination of the earthquake origins, and, in the opinion of the present writer, is on that account misleading. At the same meeting of the Australasian Association (Jan., 1891), I read a paper on New Zealand Earthquakes, which contained a somewhat larger list (775) than the report of the committee, together with two maps and a diagram showing curves of monthly seismic frequency, the New Zealand curve based upon the records of 745 shocks being compared with Mallet's curves for the Northern and Southern Hemispheres — 5,879 and 223 earthquakes, respectively — (See Milne on Earthquakes, p. 256). The record for New Zealand shows a maximum of frequency in September, with smaller maxima in January and March, and minima in April and October, November, December. The inclusion of these facts might modify Mallet's curve for the Southern Hemisphere, but it does not appear that they point to any connection between earthquake-frequency and the season of the year.

One of the maps exhibited showed, by shading, the earthquake-frequency of the shocks in various parts of New Zealand, the region most effected being a portion of Cook Strait, included in the triangle Wellington, Blenheim, Wanganui; the next shade of frequency includes Christchurch, the next, Nelson. There is an isolated district of local earthquakes round Rotorua and Tarawera. On my other map were marked the epicentra of 35 earthquakes for which the data were sufficient to ascertain them with any degree of probability, and I have since been able to determine more or less exactly the origins of a few of the earthquakes of 1891–1892. The two chief sources are situated — (1) 10 miles north of Lake Sumner, or about 80 miles north-northwest of Christchurch. Hence proceeded the shock which on the 1st of September, 1888, threw down the upper portion of the spire of Christchurch cathedral. To the same origin I am able definitely to assign 10 other shocks, and probably many more belong to it. (2) 45-50 miles north-northwest of Wellington, in Cook Strait. This and some other origins near it are accountable for most of the New Zealand shocks, the average intensity being very low, III.—IV., on the Rossi-Forel scale.

The method used for finding the origins has been, in general, founded on the observed times of the shock at the several places at which it was felt, with the help of the isoseismals, when the effects were sufficiently definite to assign the degree of intensity on the Rossi-Forel scale.

One somewhat striking point in connection with all the recent earthquakes in New Zealand, is the low velocity of propagation they possess (less, with one exception, than 20 miles a minute). At first this made me doubt the correctness of the calculations, but the large number of shocks for which the velocity can now be approximately ascertained renders the results tolerably certain. In the solitary exception (an earthquake of the present year, which I am still investigating) the velocity is probably between 45 and 55 miles per minute. The depth of the origin has not been found in many cases, but in those for which the solution of the equations is most satisfactory, the depth is in each case about 24 or 25 miles below the surface.

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.*

On request in advance, one hundred copies of the number containing his communication will be furnished free to any correspondent.

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

Some Recently Discovered Trilobites with Appendages.

THE past winter the Geological Department of Columbia College came into possession of some extremely interesting specimens of *Triarthrus Beckii*, which were discovered by Mr. W. S. Valiant, now of Rutgers College, in the Utica shales at Rome, N.Y. They were entrusted to W. D. Matthew, our fellow in geology, for complete description, and Mr. Matthew's paper, recently read before the New York Academy of Sciences, will appear in the Transactions of the Academy for May. Owing to the unavoidable delay in their issue, and because the subject is such an interesting one, this preliminary announcement is made. The Trilobites possess two undoubted antennæ that come out together

from under the front-central portion of the head-shield, and project forward. They are jointed and entirely analogous to the antennæ of living crustaceans in structure. In full or in stumps, they have been identified on upwards of fifty individuals, some twenty of which belong to Columbia College. On one specimen, where the cheeks have been broken away, Mr. Matthew has detected comb-like structures, which we suppose to be gills. Leg-like appendages are well preserved, opposite the divisions of the body.

At the posterior end of the pygidium, tetson-like appendages can be distinguished, which are of great interest, and which are regarded as perhaps indicating an ability in the animal to propel itself backwards, as does the lobster, although its ordinary motion would be forwards, by means of its legs. Mr. Matthew brings out some other interesting facts and deductions, which will be illustrated by drawings in the full paper. J. F. KEMP.

Columbia College, May 26.

Cedar Waxwing.

IN view of the articles published in your paper during the past few months regarding the plumage of the cedar waxwing (*Ampelis cedrorum*), it may be of interest to call attention to a paper published in the "Transactions of the Norfolk and Norwich Naturalists' Society," Vol. III., pp. 326-344 (read Nov. 2, 1881), by Henry Stevenson, in which there is a very full discussion of the plumage of the allied Bohemian waxwing (*Ampelis garrulus*).

The presence of the wax-like tips in nestling birds is here recorded, and several captures of young in this plumage are referred to; the first nestling secured with red tips to the wing-feathers seems to have been taken by one of Mr. Wolley's collectors in Finnish Lapland in 1856. WITMER STONE.

Academy of Natural Sciences of Philadelphia.

Native Lead.

IT may be of interest to mineralogists to note a new locality for native lead, which occurs near Saric, Sonora, Mexico, about 35 miles south of this place.

The metal occurs in thin scales; and pellets, like small shot, have been reported, but I have not seen them. The scales seem to approach a rectangular form, and have been found nearly an inch long.

The gangue rock is evidently a pyrocene, of pale-green color, streak yellowish. The accompanying minerals are iron oxides, with traces of manganese, and carbonate of lime.

C. W. KEMPTON.

Oro Blanco, Arizona, June 8.

The Ancient Egyptian Language.

IT is the growing opinion of scholars that the ancient Egyptian language has more intimate Semitic relationship than has been generally admitted. The grammatical construction of Egyptian is distinctly Semitic; the pronouns, prepositions, and other particles are traceable for the most part to Semitic roots; the Semitic system of pronominal suffixes is often used. Benfey sought to establish this affinity by various considerations, grammatical and lexicographical, and the conclusion to which he came was that the Semites are only one branch of a great family, which includes not only the Egyptian, but also the other languages of Africa. De Rougé, Ebers, and Brugsch have declared their belief in the descent of the Egyptian from the same stock as Semitic. Dr. Fritz Hommel, in his recently-published brochure, "*Der babylonische Urspruug der ägyptischen Kultur*" (Munich, 1892), brings forward many proofs showing the Semitic origin of the Egyptian language and writing. He not only specifies a number of identical words, but shows the grammatical relations of the two languages. He also puts side by side some thirty-five characters which resemble each other in the two languages, both in form and signification, and even in sound. Dr. Hommel maintains that Egyptian culture originated in Babylonia.

In this connection we may mention the interesting fact that the Egyptian documents recently discovered in Palestine, rigorously transcribed in Hebrew characters, gave almost everywhere the regular Hebrew forms in the Bible, without change or correction. CHAS. H. S. DAVIS.

Meriden, Conn.

Funnel-Shaped Clouds.

DURING the afternoon of May 17 there appeared not far north-east of Colorado Springs numerous cloud-masses resembling incipient thunder-storms. They were not so large as ordinary thunder-storms. From a cumulus mass depended the fringes that mark the storm-cloud, but they were unusually long as seen in profile at a distance. Only a little rain fell from any of them, and none from most of them. From the centres of several of them also depended funnels or narrow cones. In one case this column reached fully one-fourth of the angular distance to the ground, the others nearly as far. The columns changed their form somewhat, but I could not discover any marked swaying or writhing, perhaps owing to the fact that those observed were at a distance. At the time the surface winds were light and variable, but the following days have been marked by very violent winds. These were nearer the tornado than I ever before saw in Colorado. G. H. STONE.

Colorado Springs, Col.

Glaciers in the United States.

AT this season of the year many scientists are preparing to visit and study the glaciers of Switzerland, that country being the Mecca of geologists who are converts to the glacial theories. I desire to call the attention of the readers of *Science* to the fact, that here in Pierce County, Wash., we have a system of glaciers surrounding Mount Tacoma, beside which those of Mt. Blanc are insignificant, both in area and distribution.

The glaciers of Mount Tacoma are eighteen in number, and are arranged in radial lines from the central dome of the mountain, which is 14,450 feet in altitude. As this mass rises from the sea-level, it is the most conspicuous peak in the United States. The limit of perpetual snow on the spurs is 4,000 feet, while the glaciers and snow-fields that lie in the cradles extend as low as 2,700 feet. With care, the glaciers and spurs are not over-dangerous travelling. The scenery is superb, and well repays the many campers who yearly seek the mountain slopes for health and recreation. About fifty persons have attained the summit, including two ladies. The glacialist may there study moraines, terminal, medial, and lateral, and make observations on the flow of ice to his heart's content.

If any of your readers desire further information upon this subject, it may be obtained gratis by addressing

FRED. G. PLUMMER,
Secretary Washington Alpine Club, Tacoma, Wash.

Tacoma, Wash., June 1.

Binocular Vision.

Professor LeConte's remarks on my note about binocular vision seem to call for a word or two in addition from me. Of course I should not have troubled the readers of *Science* with my ways of looking at things, had I not known that they were unusual, and quite at variance with everything accessible to me on the subject, including Professor LeConte's own excellent little book, to which he makes reference, and had I not also been quite certain of the subjective part of the phenomenon. It is now about ten years since I noticed it first. Though a student of physics, I had not then read enough of physiological optics to have met with any thing on this subject, hence I had not been told what I must expect to see — a fact that I have no doubt is responsible for my unhappy deviation from established rules. Since that time I have tried the experiment under every available set of conditions — almost whenever I have found myself looking at any kind of a pattern. I have tried it with perfectly flat decoration, relief, and actual net-work, such as the bottom of a cane-seated chair, or a coarse wire-cloth, always with the same