successfully bringing about the explosion, so graphically described in Colonel McFarland's letter.

From the stand-point of an outside would-be observer, the story of the Flood Rock explosion may be told as follows. The idea of determining the velocity of the vibrations through the ground was suggested at a late date, and the preparations were necessarily hurried and incomplete. No official information could be obtained, fixing even approximately the date of the explosion, and we were obliged to depend upon the newspapers for that information. Near the end of the week preceding its occurrence, the papers announced that the time was set for Wednesday, October 7, at 9 A.M. We hurriedly collected the apparatus prepared to date, boxed it, and shipped it to New York on Monday the 5th, and were to follow it that night, when the evening papers announced a postponement probably till Saturday the 10th. Nearly all the astronomical observatories within 200 miles of New York had been invited to co-operate (see *Science*, vi. 327), and had been asked to watch the New York papers, and been promised a telegram several hours before the event, fixing, if possible, the nearest minute at which it would occur.

The announcement and warning by General Newton on the afternoon of Thursday the 8th, together with a letter at the same time to the representative of the geological survey, were the first information we had of the time set for the explosion.

I would say that General Abbot cordially cooperated with us, and that his offer to send his time-signals to the Western union office (after the explosion) was duly appreciated. We did not take advantage of it, however, as it would have been very troublesome to distribute signals to fourteen observatories or institutions scattered in all directions over an area of 200 miles radius, and it was entirely unnecessary, as every one of them had the means of determining standard time for itself, or was in daily receipt of standard-time signals at noon. With the delay in the time of firing, of which we do complain, we understand that General Abbot had nothing to do.

It should be distinctly noted that the engineer observers within sound of the telegraphic ticks from the chronometer at Astoria, and waiting for the preliminary automatic signal from the firing-key, were in a vastly more favorable position in case of delay; and if this had been anticipated, and there had been time and opportunity to distribute the chronometer ticks and firing-signal to all the outside stations, of course it would have been done.

Regarding the observations cited by Colonel McFarland as having been successfully made at Columbia college, Yonkers, Princeton, and Cambridge, I would say that, at the first two, it was due to their proximity, while, in view of Professor Young's description of the Princeton observations (*Science*, vi. 335), it seems somewhat of a strain upon the meaning of language,— unless used in some approximate, engineering sense,— to call them a success; and at present the writer considers it somewhat doubtful if the Cambridge observations refer to the explosive wave. The statement that the two officers at Willet's Point would have watched an hour, if necessary, only goes to show how much better posted the engineer observers were as to a possible delay in the firing.

As to my own observations at Staten Island, their failure is of itself of little importance, but it is to me a source of wonder and sincere admiration to see how much more an engineer officer can know about them than the observer himself. They will be described in due time with the other reports. At present I can only say that under the same circumstances, if endowed with only the same 'degree of intelligence' I then possessed (even after a study of the Hallet's Point explosion of 1876), I should probably do just the same again; but, with the rapid growth since Oct. 10 of my knowledge of engineering science, I can hardly state now how long I would *not* wait for the occurrence of a definitely predicted engineering phenomenon.

Suffice it now to say that eight out of the seventeen stations were successful in observing either the first arrival or the pretty certain non-arrival of the vibrations. The others were all thrown off by the delay, combined, in four cases, with observation of earth-tremors occurring at several places during the first ten minutes after eleven. It would almost seem as if the earth itself were, about that time, growing uneasy at the delay in the oncoming of the dread event.

H. M. PAUL.

Washington, Nov. 9.

The arms of the octopus, or devil fish.

Prof. T. Jeffrey Parker (*Nature*, October 15, p. 586) refers to an octopus of the New Zealand fauna, with arms five feet five inches long, as the longest seen by him, and as exceeding what Mr. Henry Lee calls the longest-armed octopus known, namely, that from Vancouver Island, which had arms five feet long.

In 1874 I speared an octopus in the harbor of Iliuliuk, Unalashka, which was afterward hung, by a cord tied around the body immediately behind the arms, to one of the stern davits of the coast survey vessel under my command. As soon as the animal died and the muscles relaxed, I noticed that the tips of the longer tentacles just touched the water. On measuring the distance with a cord, I found it to be sixteen feet, giving the creature a spread from tip to tip of the longest pair of arms, of not less than thirty-two feet. The arms toward the tips were all exceedingly slender, but rather stout toward the body, which was somewhat over a foot long. The largest suckers were two and a half inches in diameter; the whole creature nearly filled a large washtub. Parts of this specimen are now in the U. S. national museum. Having heard octopi were eatable, and the flesh looking white and clean, we boiled some sections of the arms in salt and water, but found them so tough and elastic that our teeth could not make the slightest impression on them.

WM. H. DALL.

Washington, Nov. 13.

The care of pamphlets.

In printing my letter on p. 408 of your issue of Nov. 6, you printed the Dewey classification numbers with a comma, thus obscuring their character as decimals. According to the custom of Mr. Dewey, you might have placed a comma or period after the third figure, but unless you did that you should have printed them without punctuation marks; 526, for instance, is a primary division, of which 52641 is a subdivision.

P. PICKMAN MANN.