to that of an open sewer. Several large indignation meetings have been held, as well as demonstrations of unemployed boatmen, etc.; and deputations have waited upon the Home secretary, but all to no purpose; this high official practically declared himself powerless to act, in consequence of the sanction of the law having been extended to both proceedings. On one Sunday during the warm weather, when the condition of the river became practically unbearable, the water company, yielding to strong representations made to them by medical men and others, raised its sluices and allowed the whole volume of the river to flow along its natural course. This produced a partial and temporary mitigation of the evils complained of at a considerable loss to the shareholders. Fortunately the summer heat has passed without serious outbreaks of illness in the neighborhood, but meantime the deadlock continues, and apparently will continue, until the new parliament reverses one or other of the decisions of its predecessors.

The condition of the Thames itself is an illustration on a large scale of the results of the same legislative action, and has been the subject of investigation recently by a royal commission. The Metropolitan board of works is the body charged with dealing with the sewage of London as a whole. At present the sewage of London is discharged into the Thames mainly at two points some miles below London bridge, one on the north and one on the south bank of the river. The latter station, called Crossness, which receives all the sewage from the Surrey side of London, was visited by the present writer, in company with several other members of the Society of chemical industry, last July; the object of the visit was to see the measures which had been taken by the board for the purpose of diminishing the nuisance caused by the sewage discharge at this point. For a considerable period on either side of low-water the sewage can be pumped direct into the river, but at other times it has to be pumped into huge covered reservoirs, which are allowed to empty themselves at low tide. The ameliorating measures consisted in running into the sewage during its discharge a solution of sodium manganate, mixed with a quantity of sulphuric acid supposed to be sufficient to decompose the sodium salt, liberating a solution of manganic acid. The sodium manganate was manufactured on the premises by fusing caustic soda (of which there was a large stock on the ground) with black oxide of manganese. The inefficiency of the process adopted, to do any real good, as well as its great cost, was somewhat freely commented on by the visitors, as well as the crude manner in which all operations were carried out. Several schemes are before the public for dealing with the sewage of the north bank of the river, some of which involve the use of Canvey Island, a large low-lying tract of land in the estuary of the Thames, where probably sewage irrigation could be carried out on a very large scale. We may perhaps recur to these in future letters.

The Society of chemical industry, before referred to, has just sustained a severe loss in the sudden death of one of its most active founders and past presidents, Mr. Walter Weldon, F.R.S. Wherever the manufacture of soda from common salt is known, Mr. Weldon's name was a household word. Not himself a manufacturer, his prolific brain devised a large number of most valuable improvements in various details of almost every branch of the alkali manufacture, including bleaching-powder, etc. He knew almost every alkali works in Europe, and his labors abroad received the recognition of the grand cross of the Legion of honor. His addresses to the society were most valuable *résumés* of the position and prospects of the alkali trade at the time at which they were delivered, and such as probably no other man could have written.

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.*

Flood Rock explosion observed at Princeton, N. J.

WE had arranged to observe the arrival and character of the wave by reflection of images in mercury, and precaution was taken to stop all movement of pedestrians and vehicles within 500 or 600 feet of the observatory. At eleven o'clock (standard time), Professors Rockwood, McNeill and myself, were at our posts. Between 11.05.25 and 11.07.40 we, all three, observed, accordantly, a series of four slight tremors which blurred the reflected images in a pronounced manner. We now suppose they were due to trains on the railroad three miles away, or to carriages on the main street, distant more than 1,000 feet; but at the time we had no doubt that they were due to the explosion; and so, at 11.10, I stopped the chronograph, and took off the sheets.

Having a spare half hour in the morning, I had rigged up a very rude, but fairly delicate, vertical seismoscope, which was connected with a cylinder of the chronograph so as to make an automatic record of anything vigorous enough to affect it; but it was not sensitive enough to feel the tremors above mentioned. While I stood at the table reading off my sheet, suddenly, without any apparent cause, the seismoscope magnet began to rattle. I immediately took the time from the clock, and, all corrections applied, it gives $11^h\ 14^m\ 41^s \pm 1^s$, eastern standard time, as the beginning of the signal. Mr. McNeill instantly went to his instrument, and found the mercury strongly disturbed: the reflected image was invisible at first, but the disturbance ceased in about

20 seconds, with a series of small north and south oscillations. My daughter, who was sitting in the second story of my house, at the same time (as proved by her mantel clock) felt the floor quiver, and heard the windows rattle. As the explosion, according to the New York papers, occurred at 11.13 ± some uncertain number of seconds, and as the seismoscope registered no other shock between 11.00 and 11.20, when traffic was resumed, there can be no doubt that we caught the explosion wave, which was much more vigorous than I had expected, at a distance of fully 50 miles. I suppose we did not get the beginning of the disturbance, which probably began gently and rose to a maximum like any other earthquake.

The delay of 13 minutes at New York was very unfortunate, and caused the total or partial loss of many valuable observations. One cannot suppose that it was intentional; but it put all other observers at a great disadvantage, as compared with those of the engineer corps, who received a telegraphic signal from the firing key. The officers in charge, knowing of the elaborate preparations made for observations along other lines than the two occupied by their own men, ought to have taken great pains to prevent it.

C. A. YOUNG.

Princeton, N. J., Oct. 12.

False report of the fall of a meteorite in western Pennsylvania.

On the afternoon of Saturday, September 26, at a little after four o'clock, loud detonations were heard over a considerable area of western Pennsylvania, and circumstantial reports were subsequently given in the press of the fall of a large meteorite, which was described as being half buried in the ground and visited by numbers of people. On examination, these latter reports appeared to me to be unfounded, and I should have given the matter no further attention but for the numerous inquiries which are being addressed to this observatory with requests for specimens. To settle the question, I sent a competent observer, Mr. J. E. Keeler, to the scene of the alleged fall near the West Virginia boundary in Washington county. After an investigation on the spot, he finds that no meteorite has been found. A meteorite undoubtedly passed over, and was seen by Mr. Buckston and others to burst in a southerly direction from the town of Independence. The report, according to Mr. Buckston, was heard a minute or more after the explosion was seen, and from this and the apparent height at which he saw the meteor burst, Mr. Keeler infers that the actual explosion occurred twelve or fifteen miles to the southward, when the meteor was still two or more miles above the earth. In spite of statements to the contrary, no fragments are as yet known to be found.

S. P. LANGLEY.

Allegheny, Oct. 7.

Spectrum of the great nebula in Andromeda.

A week or two since, the finding of bright lines in the spectrum of the great nebula in Andromeda, found place in your columns. Since then by the aid of the spectrum of β Lyræ and γ Cassiopeiae certain results have been obtained.

The line described in the last notice as crossing the spectrum is H β, and is due to the brightening of the aurora as a whole.

The two lines described as appearing as bright knots have wave lengths 5312.5 and 5594.0. Thus agreeing well within the limits of error with 1250 +20 and 1474 of the solar corona, lines which are also found in the auroral spectrum, and in the spectrum of a solar protuberance (Schellen. 2.136).

In spite of the uncertainties natural to the observation and identification, the resulting suggestion of a similar origin for the light of the new star is not without considerable interest. O. T. S.

Yale college observatory, Oct. 5.

Science in common schools.

Your notes on teaching science to children need qualifying, so far as inference is concerned. The boy of nine years was evidently badly managed, but a boy of nine with a good head is capable of comprehending physiology, botany, geology, biology, if properly taught. The chief difficulty with the case in hand was that his information led to a cuteness of intellect. He would be set down for a 'smart' boy. Of all the text-books for the young the one that best suits me is Shaler's 'Geology for beginners.' This I have allowed my nine-year-old to use during the past summer. He has talked over each chapter with me, and we have discussed matters as if both were boys, using simple words, but no tricks of illustration, such as your boy seems to have been indulged with. Occasionally he has been exercised in an attempt to tell the contents of a few pages where these together make one picture. In no case has he verbally memorized, except to clearly comprehend the division of protozoa, mollusks, articulates, vertebrates, and that of orders, species, etc. Having once finished a chapter, we reviewed it to call out new points and illustrations. This book has been his story book; he will not read an ordinary story when such material is at hand. To say he fully comprehends the theories advocated by Professor Shaler is not to say too much. As he is four-fifths of his time out of doors or working with his tools, it has been easy to make the soil and the stones under foot illustrate his book. Now, if any one will write as good a biology, the nine-year-old shall have that next; then botany and physiology. I am suspicious of pen-work at this early age. It is a precocious, unnatural cramping of a boy's knowledge into formal artistic shape. It involves the art of expression and the art of restraint, or a skill in leaving out as well as putting in. The boy would best be left to talk the subject over in free language.

But when shall pen-work begin? Later; at about about twelve years or fourteen. Then let the lad have a portfolio and write something on any topic he is thinking about each day of his life. Nothing spoils a mind so quickly as composing, as nothing so assists if wisely managed. I should decidedly prefer that the first efforts of composition should be in the dramatic form. Let him set his characters talking, and put in their mouths the notions he has of them. For instance, Garibaldi, King Victor, Cavour, Louis Napoleon, or President Cleveland and his cabinet talking over the Indian question. Contemporaneous history being his regular historical study, his characters should be living characters, or mainly so.

The composition on iron ores is, however, a most excellent specimen of descriptive writing for a very