calix alone was known, being placed by me and by Mr. Phillips in Poteriocrinus, whereas in reality they belong to another genus, but of which it was impossible then to suspect the existence.

These are Poteriocrinus granulatus, Phil., P. Calyx, M'Coy., P. Phillipsianus, De Kon., and P. Maccoyanus, De Kon. These species are distinguished, nevertheless, from the true Poteriocrini by the brevity and open form of their calix, which is usually conoid in the others. These latter appear to have smooth stems, formed of articulations, having very nearly the same diameter; and, in consequence, not possessing the ringed character above referred to. Two of the species which I have to notice have been placed by Mr. M'Coy (Palæoz. Fossils in Mus. of Cambridge, p. 117), in the genus Cupressocrinus of Goldfuss; and I shall not now dwell on the inexplicable error committed by that palæontologist, because I have already had occasion to refer to it in my "Recherches sur les Crinoides" (p. 88).

It is almost superfluous to add that the genus in question ought to be placed in the family of Poteriocrinidæ.

Distribution.—All the known species of Hydreionocrinus belong exclusively to the "Productus-bed" (P. giganteus.) of the carboniferous limestone. Most of the specimens have been found in England or in Scotland—some in the United States. The limestone of Visé has furnished me with two, but one only is special to it.

(*To be continued.*)

FOREIGN CORRESPONDENCE.

By Dr. T. L. Phipson, of Paris.

Mercury in the soil of Montpellier—Mud-volcanos of Java—Ancient superstitions—Fearful eruptions—Origin of the mud in these volcanos—Rarity of Sulphate of Potash in nature—Abundance of Sulphate of Soda—Beds of this salt in Spain.

As early as the year 1760, M. l'Abbé Sauvages made known to the world that mercury, in a metallic state, existed in the soil on which the town of Montpellier is built—a discovery made by himself. Since that time Amoreux, Gouan, Gensanne, and Poitevin have successively mentioned the same fact. Poitevin, in 1830, remarked: "We must

not forget a singular circumstance, namely, that the town of Montpellier is built upon a mine of *pure mercury*." He had found this precious metal in many of the streets, in the rue Carbonerie, the rue de l'Université, the Grande rue, the Halle aux Poissons (fish-market), &c. In 1837, M. Marcel de Serres and Leymerie described the ground in which the metal lay, and moreover made known the existence of the latter in the soil of a field which had always been remarkable for its sterility. A few days ago, M. de Rouville and M. Marcel de Serres have again written upon the same subject.

The reason why so many observers should have called attention to this fact is doubtless to be found in the curiosity of such a discovery. In fact, pure quicksilver has, up to the present time, not only been considered a rare mineral, but has almost always been found near the middle strata of the earth's crust, and in those strata which repose upon crystalline rocks. It has, indeed, been mentioned by Mr. Daniel Sharpe as having been met with in the Tertiary sand on which the capital of Portugal is built; and in 1847, some workmen who were laying down gas-pipes at Lyons were surprised at seeing a remarkable quantity of quicksilver filtering, as it were, through the soil in the very centre of the town. The metallic mine indicated by Mr. Sharpe was actually worked for some time; but the presence of mercury at Lyons was attributed to the facility with which this slippery metal, much employed in the manufactories, escapes from the hands of the workmen.

At all events, M. de Rouville has recently discovered, at Montpellier, a new deposit of metallic mercury, which, until now, had never been remarked. In building the foundation of a new fish-market, near the place where the old one stands, a quantity of earth was removed, and a species of pudding-stone, containing the precious metal, laid bare. M. de Rouville describes this pudding-stone as formed of large fragments of limestone strongly cemented together, containing a little silica. It is of a reddish colour, and reposes on grey fresh-water marl, in which M. Paul Gervais formerly discovered the teeth of a new species of monkey. According to M. Marcel de Serres, the following is the description of the soil in which the mercury is found:—

"Uppermost, a bed of reddish mud, then a thin layer of grey marl mixed with gravel and calcareous pebbles about as large as the hand. Next comes a layer of whitish marl, and under this a very greyish calcareous sandstone, containing calcareous pudding-stone and pebbles

much smaller than those just mentioned. It is in the fissures of these deposits that the globules of mercury show themselves."

The presence of calomel (proto-chloride of mercury) was also formerly noted by Poitevin, and afterwards by M. Marcel de Serres, in the white marl of which we have just spoken. This substance was seen in small cylindrical branches, but has not been again discovered among the strata laid bare in building the new fish-market.

Mercury generally accompanies cinnabar (red sulphuret of mercury) in nature, but not a vestige of the latter substance has yet been discovered at Montpellier, although a very slight quantity of black sulphuret has been observed; but the presence of this appears to be accidental, *i.e.*, it has been formed since the mecurial deposit has been exposed to the air. As to the pure quicksilver, it is a question whether large fortunes await the good *bourgeois* of Montpellier by the re-discovery of this precious metal in the soil of the town they inhabit. However, if speculation is no better off than before, science has perhaps gained something; for, as M. de Rouville justly remarks, it appears now an established fact that native mercury does not belong exclusively to the palæozoic and ancient secondary strata, but that this metal is also to be met with in some of the most recent deposits which geological science has brought to light.* How it found its way there is a question that will doubtless puzzle geologists for some time to come.

M. Junghuhn, to whose researches we have already alluded in a former paper, and whose name we shall always see with pleasure associated with geological investigation, has passed twelve years of his life in the Island of Java, for the express purpose of watching the volcanic agencies manifested there to so great a degree. The forty-five volcanos of Java, he tells us, are constantly in activity, pouring forth hot acidulated water, ashes, and mud, but no lava. In 1470, when the Mahometans conquered the island, the dominant worship in the country was that of Siva, the divinity of destruction, which proves how closely religious notions may be connected with the natural phenomena or the local physical circumstances of a country. Driven from the plains, the Sivaites retired to the vast craters of their volcanos, and the remains of temples erected by these

* The mercuriferous deposit at Cividale (Lombardy) and perhaps others, have been referred to the Eocene age. See Jahrb. K.K., Geol. Reichs. Wien, 1855. Galeotti has described tertiary mercuriferous rocks in Mexico.—Ed. Geologist.

fugitives may still be seen there. In latter times the last existing worshippers of Siva inhabited the crater of the volcano called Tengger, in the centre of which there is a cone of eruption in full activity. The volcanos of Java lie nearly in a line coinciding with the principal axis of the island, and those of Sumatra form a line parallel to the former. When an eruption occurs, torrents, not of lava, but of mud, roll down the sides of the mountain; when such a torrent meets with an obstacle, the mud generally accumulates on one spot, and there forms a hillock; it is thus that the bases of these volcanos are often seen studded with thousands of these incipient mountains. Sometimes the eruption is dry, or consists only of ashes, as is often the case with the Eamongon and the Semerso. The former volcano detonates once every ten or fifteen minutes, the latter at intervals of about three hours.

The mud which seems to replace lava in the Javanese volcanos derives its origin from the materials of the mountains themselves, whose rocky structures are violently acted upon by the hot acidulated water and the acid vapours emitted from the crater. The latter are extremely abundant at Java, and destroy all kinds of rocks.

In June, 1822, the Gelung-Gung volcano broke forth in violent eruption, amidst earthquakes and subterranean thunder; the inhabitants of the plain were startled out of their *sieste*, at about noon, by a violent report, which was heard from one extremity of the island to the other. An immense column of black smoke was immediately seen rising in the air that completely darkened the sky; volumes of cinders soon fell like a burning rain, the mountain sunk considerably into the earth, and from its fissured sides streamed forth torrents of hot sulphureous water and boiling mud, transforming, in an incredibly short space of time, villages, forests, and rice-fields into a streaming lake, on which trees, fragments of dwellings, and dead-bodies of men or other animals were seen floating along. What a picture of devastation! Another awful eruption of the same kind took place on the 8th and 12th of October. Beudant assures us that in 1772 the highest mountain of Java, the Papandayan volcano, *completely disappeared* *—swallowed up, as it were, in a lake of mud, together with forty villages and their inhabitants.

(*To be continued.*)

Dr Junghuhn and Mr. G. P. Scrope both consider the truncation of Papandayan to have been due to explosive eruptions, not to engulfment. See Journal Geol. Soc., Vol. XII., p. 331.—Ed. Geologist.