poses that, when the missing constituent is discovered, it should be called "Tammite." Mr. Tamm's analysis of the new mineral gives:—Metallic Tungsten 88·05, Metallic Iron 5·60, Metallic Manganese 0·15, Undetermined Substance 6·20. Mr. Tamm ventures upon various conjectures as to this last substance, and thinks it just possible that, after all, he may have made an analytical error, and that there may be 6·2 per cent. more of tungsten than appears in the analysis. He has, however, strong doubts on this point.

REGARDING "sea-serpents," the following note may be interesting:—The South African Museum, Cape Town, recently received a specimen of the Ribbon fish (*Gymnoterus*) fifteen feet long without the tail. It appears that this fish is known to distant inland fishermen as being forty feet long, and from its slender shape and snake-like movement is probably the "sea serpent" of late years so minutely described by navigators. From its head there is erected a plume of flexible rose-coloured spines, and from head to tail along its back there is a conspicuous mane-like fin. Its general colour is like burnished silver. The eye is large and silvery, and the profile of the head comports well with that of the horse. The specimen could not be preserved, but there are two smaller specimens in the Museum.

THE *Garden* calls attention to the great value of the Island of Jamaica as a tropical garden. Its oranges, pine-apples, bananas, limes, lime-juice, cocoa-nuts, and other such products, could not be surpassed in quality, and might be cultivated to any imaginable extent. Besides all this, the soil and climate are eminently suitable to the growth of precious drugs and plants. Bark is raised easily, the cinchona plantation being in a most satisfactory state. Then there are hemp and China grass of excellent quality, nor would any arrowroot be superior to that of Jamaica if it were but more carefully prepared for market. Here, it will be said, is a noble prospect for the colony. True, but it is a prospect only. Not until the very last returns is there shown any "tendency to the development of new industries requiring little capital and no extraordinary skill." It is the old story, "minor articles" are neglected, though they are the very articles which are wanted, and which the colonists could send. However, Jamaica is fortunate in having a Governor in Sir J. P. Grant, who can discern the true capabilities of the island, and the true place for its industry in the markets of the world.

A CORRESPONDENT of the *Madras Mail*, quoted by the *Times of India*, says that on the night of June 15 last the plain to the east, north, and north-east of Nandidroog was covered with "many thousands" of lights, which have been observed occasionally in former years. The correspondent compares the appearance to that of a large city brilliantly illuminated, and in one direction the scene, through a binocular glass, "looked like a view of part of the starry heavens, each flame being like a star." As many of the lights were from ten to fifteen miles distant from the reporter's point of view, he conjectures that each flame must have been five to six feet in length. An attempt is being made to find out the cause of the curious phenomenon, the most likely hypothesis being that the lights are "caused by the ignition of some inflammable gas escaping in jets from the surface of the earth."

WE learn from the *Field* of July 20, that Mr. Parnaby has succeeded in bringing sixty black bass fry home from America, and that they are safely deposited in the tanks at Troutdale, Keswick, and are feeding heartily, so that they may now be considered safe. He found great difficulty in collecting the fry and bringing them safely across the Atlantic on account of the intense heat. Mr. Francis considers this the second greatest feat in pisciculture, the first being the conveyance of salmon to Australia.

*PROFESSOR AGASSIZ'S SOUTH AMERICA EXPEDITION**

III.

IN Mayne Harbour, on the western side of Owen's Islands, I had an opportunity of investigating two very interesting new genera of naked-eyed Acalephs. The locality naturally suggested appropriate names, and I called one after Captain Mayne, *Crossotoca Maynei*, from the festooned disposition of the ovaries, and the other after my old friend Owen, *Staurotoca Owenii*, from the cross-like figure of the ovaries. While I was collecting on board, Pourtales and Steindachner ascended the adjoining hills in search of glacial marks and land animals. The result of their excursion was most satisfactory. Pourtales found very well preserved glacial scratches and furrows upon wide greenstone dykes, which here intersected the rocks in every direction. Upon one such ledge the marks were divided into two distinct series, one running S.W. by W., the other crossing these S.S.W. Higher up on other dykes of the same character, the first series of marks occurred again, being perfectly rectilinear, in the same direction, and though in one instance interrupted, were renewed on the other side of the break on the same level with the same bearing. Still higher up on the same hillside he found also very distinct glacial furrows upon granite ridges, the furrows bearing S.W. by S., and finer lines again on greenstone dykes. The highest marks in the locality were some 500 or 600 feet above the sea level. Steindachner collected frogs and their tadpoles, and some insects and earthworms.

On approaching the Guia Narrows, the hills on Chatham Island are plainly furrowed in a north-westerly direction, and large boulders are seen all along upon the ridge of the range, while Esperanza Island appears in the south like a large rounded dome between two channels running N. and S. In wide channels we saw many whales and also small icebergs. The hills to the height of about 2,000 feet were everywhere distinctly *moutonnées*. Saumarez Island, opposite the mouth of Eyre Sound, and the island to the west of it, were particularly instructive. We followed the western channel, which is also the narrowest, and it soon became plain that wherever opposite shores with high walls approached near one another the glacial scratches and furrows, alike distinct, assumed an ascending direction, as is the case whenever a moving glacier meets an obstacle. That the south side was here also everywhere the strike side, was equally apparent from the facts that all these marks were either wanting or less distinct on the north side of the islands. Had any abrading agent advanced from the North, all appearances must have been reversed in these narrow channels; or they must have crossed them at right angles had the action come from East or West. Floating ice is out of the question where the furrows are not horizontal, and here in the narrowest part of the channel, west of Saumarez Island, there is a track where the scratches and furrows are distinctly ascending on the west side of the channel, and horizontally on the eastern side opposite, showing that the pressure of the ice-sheet must have been from S.E. to N.W.

Looking south, after passing Saumarez Island, the scenery appears totally different, from the fact that this is the lee side of the glacier action; and yet the channels have about the same width and bear the same relations to one another. In the narrowest channels the polished surfaces, with their scratches and furrows, are as well preserved and as distinct as in those of the Helle Platten at the Handeck in the valley of the Hassli in Switzerland. About Iceberg Sound all the mountains are beautifully rounded and *moutonnées*. That local glaciers, however, existed, and extended much beyond their present range, may be plainly seen in many of the inlets crossing the main channels in an east-westerly and west-easterly direction. It is true that general and local glacial phenomena are so interwoven throughout this region that it is at times difficult to appreciate their true connection; but there are also many localities where the difference is quite obvious. The most interesting of the places here have been well photographed by Dr. White, and may serve at some future time as illustrations of the fact described in this report.

In some places the various kinds of glacial marks were as plain as in the valleys of Switzerland, and I am surprised that travellers who have visited this region since the glacial phenomena have been so much discussed, have failed to notice them here. As in Switzerland, there seems to be a level above which the ice-sheet has never risen; at least there is a line above which the mountain ridges remain jagged and abrupt, while

* Reprinted from the *New York Tribune*, concluded from p. 231.

below their crusts the whole land is *moutonnée*. The abrasion by ice is so uniform and so general that I found it difficult to trace the direction of the abrading motion. There seemed to be nowhere a distinct lee and strike-side among the hills. But, as I grew more familiar with the appearance of the country, I became satisfied, and succeeded in convincing others also, that the abrading movement had taken place from the south northward—or, in other words, had been connected with the climatic condition of the Southern Hemisphere. In Smyth's Channel there is no possibility of mistaking the evidence. I know no more interesting locality for the study of glacial phenomena than the vicinity of Saumarez Island. It shows in the most palpable manner that glaciers only—that is, terrestrial masses of ice moving upon solid ground—can have produced these abrasions, that floating icebergs cannot have been the cause. Their direction is such, also, that no one could suppose the adjoining cordillera to have been in any way connected with the abrasion or planing of the rock, or with its grooving and furrowing. The country has everywhere a glacier-worn aspect as far as the Gulf of Pennas. On reaching Chiloe I noticed that the rounded knolls became somewhat less marked, but yet the prominent trend of the hills continued to be in a north-southerly direction. An observer not familiar with the character of glacial denudation may sometimes be perplexed by finding the seeming lee and strike-side of the rocks in a position exactly the reverse of the general one. A critical scrutiny shows that these appearances are due to a superficial disintegration, often producing a rough side of a hill or rocky ledge where the observer of glacial phenomena would expect a smooth and polished surface. This is especially the case here, where, from the character of the stone as well as from the climate, the rock peels off and splits up very readily. One must be careful not to blinded by local appearances to the more general phenomena. At the entrance of Corner's Cove, for instance, a beautiful inlet trending east-west in Messier Channel, the rocks forming the southern and northern entrance might seem at first sight to have been ground or smoothed by a local glacier, moving out of the cove in an east-westerly direction. Seen however from a certain distance, where the local disintegration is merged in the general aspect of the exposed surfaces, the direction of the main abrasion from south-northward becomes as plain as daylight. You can trace rectilinear furrows upon the knolls both south and north of the entrance of the cove, following not only the same direction, but occupying the same identical level on both sides. There can be no doubt that they were continuous. Darwin has stated that the erratics, the only part of the ancient glacial phenomena observed by him in these regions, follow everywhere the course of the main channels, and he believes this to be an evidence of iceberg action. Valuable as are his results, being, indeed, almost the only connected geological observations ever made in this region, he is mistaken in his facts upon this point. Whenever we entered an inlet opening at right angles into the main channel and intersecting several parallel ridges of hills, the *roches moutonnées* and all the accompanying glacial phenomena trended in a south-northerly direction; as they did also in the main channel. Before entering the Gulf of Pennas, in Messier Channel, we passed an opening through which seven parallel ridges could be seen on the eastern side and five toward the west, all trending mainly northward, and plainly exhibiting glacier-worn surfaces.

Moreover, the Strait of Magellan itself has a main trend from east to west, and yet there is no sign throughout the whole length of any transportation of erratics from east to west, or from west to east. Dawson has made a similar mistake with reference to Switzerland. He supposes that the erratics of the Jura were deposited by icebergs sweeping up and down the great valley of Switzerland, from east to west and from west to east. He seems not to know that the older Escher von der Linth and Leopold von Bach had already clearly demonstrated the line of their transportation across the valley of Switzerland from south to northward; and that Guyot, more than twenty-five years ago, traced the different tracks of those boulders separately through the chief valleys of Switzerland northward across the very road which Dawson would have them follow.

The erratic pebbles and boulders from the eastern to the western coast of Patagonia, judging from my observations at Montevideo, in the Bay of San Mathias, in Possession Bay, at Sandy Point, in all the ports of the Straits of Magellan which we have visited, at Shell Bay, on entering Smyth's Channel, throughout Smyth's Channel itself, and upon the shores of Chiloe, have the same character. They consist of a mixture of plutonic and metamorphic rocks, among which the hardest siliceous rocks prevail. Their geological identity is further shown by the unfailing presence of a very hard, compact, epidotic rock, never absent from these erratic materials, yet never found in place, as far as I know, over the whole extent of country through which I have traced them. You will remember that I mentioned it among the loose pebbles of San Mathias Bay; nor did I lose sight of it until we left San Carlos, at the northern end of Chiloe Island, where I found it again, and as you will soon see, in still more interesting juxtaposition. This fact is of great significance, inasmuch as it shows that the drift phenomena in this region cannot have been due to the enlargement of the present glaciers, otherwise the drift would consist mainly of the rocks in place, and differ from one locality to the other. And yet their glacial origin is unmistakable, since a considerable proportion of these pebbles and boulders are polished, scratched, grooved, and furrowed, like the erratics of the United States and of Northern Europe. It is this uniformity in the character of the drift which has led me from the first to discriminate between the glaciers as they exist, and even as they once existed in their greater extension, in short, between all the phenomena connected with local glaciers, and those belonging to what I have called the glacial period, during which the two hemispheres must have been capped with a sheet of ice of enormous thickness and extent. The equatorial limit of this ice-sheet, both in the northern and southern hemisphere, is part of the problem upon which we have thus far fewest facts in our possession. In South America I have now traced the facts from the southernmost point of the continent uninterruptedly to 37° S. latitude, on the Atlantic as well as the Pacific coast. Even here at Talcahuano, large erratic boulders and *roches moutonnées* exist at the mouth of the Biobio on the hills of Hualpen.

In San Carlos de Anend, at the northern end of Chiloe Island, I have observed a fact which introduces a new element in the study of the glacial period. The ground upon which San Carlos is built is volcanic: the promontory of San Carlos consists of a volcanic breccia, the precise age of which I had no means of determining. From its mineralogical character, it must belong to the age of volcanoes proper. Now, erratic materials, small pebbles, and large boulders, among which some exhibit unmistakable glacial polish, rest in considerable quantity upon this volcanic ground. It is therefore plain that the glacial period in this part of the world, at least, has followed the older volcanic eruptions. Among these erratic materials the green epidote which I had followed so far was still to be found. The facts observed by me at San Carlos, taken in connection with Pourtales's discovery of a great many extinct craters near Possession Bay, point to the possibility of climatic changes in this region, which, should similar facts be found elsewhere, may account for the glacial period. At all events, it shows a direct connection between the glacial period and volcanic phenomena. Since finding drift upon volcanic ground at Anend, I have been watching for erratic pebbles and boulders of volcanic rocks along the coast of Chili. Their presence near the shore would prove that the glaciers of the Andes formerly reached the sea-level, after crossing the coast ranges in the temperate, and perhaps also in the tropical zone. Thus far I have failed to find anything of the kind. Darwin assumes that the erratics of western Patagonia have descended from the Andes, and he compares the outlying islands, such as Chiloe, in their relation to the Corderillas, with the chain of the Jura in its relations to the Alps. But the erratics of Chiloe have the same character as those of the Strait of Magellan and of San Mathias Bay and the two latter, and those of the two latter can hardly be referred to this source. Neither did I see any indication of very large glaciers coming down from the Andes in a westerly direction, though I have no doubt that I shall find them farther north. Evidently we are not yet sufficiently advanced in our journey from the southern extremity of the continent northward that the influences of altitude should outweigh those of latitude in the increase and decrease of those climatic conditions upon which the extension of glaciers has depended in former ages. During the waning of the glacial period, the glaciers of the Cordillera have unquestionably been much more extensive than now, and I shall not be surprised to find, upon a more careful survey, that the glacier of Snowy Bay in Smyth's Channel and those of Eyre Sound, and perhaps some of the other parts of the Cordilleras, once crossed the main channel and reached the opposite island. But I doubt that they ever reached the shores of the Pacific Ocean. It is at all events certain that the local glaciers of the present time have never had

the power in their greatest extension, or lasted long enough to obliterate or even obscure the phenomena of the glacial period. To refer the latter to an enlargement of the present glacier is simply absurd.

This leads me naturally to some remarks about the present glaciers of South America, of which we have seen great numbers during our journey. On the whole the glaciers of these southern regions recall those of Switzerland, with which I am so familiar. And yet there are marked differences also. The form of the mountains in the Straits is not favourable to the accumulation of large masses of snow, in extensive depressions and troughs like those from which the river-like glaciers of my native country descend. There are some of that character, it is true, on the highest ranges bordering Magdalena Bay and Gabriel Channel, such as Mount Sarmiento, Mount Buckland, and no doubt also Mount Darwin, though the latter were too far out of our track to be examined. Of course, as we have approached the range of the Andes with its deeper valleys, I have seen more glaciers with an Alpine character. But most of the glaciers of the Straits are dome-like, with an indented edge marking the limits where the glacial ice moved down beyond the névé. It is already known to all students of glacial phenomena that these southern ice-fields have the same general aspect, produce the same effects, and are bordered by the same loose materials, as those of other countries. But it is interesting to find that, like the glaciers of Switzerland, those of the Straits of Magellan have had a much greater extension in past times, and have gradually shrunk to their present size and relations. I have studied these facts in one of them very carefully, choosing for that purpose a glacier occupying a gorge on the northern side of the Straits. I preferred the northern side, because a glacier moving from the north southward must necessarily have encroached upon the area covered, at a still earlier time, by the Antarctic ice-sheet moving from the south northward. By the way, our party agreed, at my suggestion, to call this glacier the "Hassler Glacier," in remembrance of the Coast Survey and of the vessel in which our trip was made. It lies in what is known as Glacier Bay, so marked on the Admiralty maps, made from the combined observations of Capts. King, Fitzroy, and Mayne.

I expected to find here all the "facts" now accepted by geologists as evidence of the former greater extension of glaciers. I looked, in other words, for polished ground and furrowed surfaces, for dykes and strata on edge abraded to one level with the surrounding rocks; for moraines on a higher level and at greater distance from the ice than those at its present terminus; for erratic glacial materials of all kinds in the trough formerly occupied by the ice, and even for the peculiar scooped surfaces, called *coups de gouge*, on otherwise level slopes of rocks. I was not disappointed. All these signs are as legible about the Hassler glacier as they are in the neighbourhood of the glacier of the Aar, or that of the Rhone, and I found, besides, what is quite as characteristic, namely, a small lake shut into its basin, and kept there by an old moraine, 500 feet above the trough of the valley. There can be no doubt that this glacier once filled the whole bay down to its entrance into the main channel of the Straits, that is, three miles beyond its present termination.

Although I made a more careful examination of this glacier than of any other, we saw many local glaciers descending from the south northward, or from the north southward through similar gorges toward the main channel of the straits, and in Smyth's Channel also we passed many glaciers moving down from the W. and E. through valleys on either side of the Channel. Along our whole course we met with like evidence that all these ice fields have had a greater extension in former times. From a general survey of these appearances, it is plain that all phenomena connected with local glaciers and their former extension are independent of those produced by the more universal accumulation of ice during the glacial period proper. They form, of course, a consecutive phase—the last phase, indeed, of the waning glacial period during its passage into the present condition of things. By what combination of circumstances the glacial period was ushered in cannot be determined as yet; but after seeing the dispersion of the drift in a south-northerly direction over this part of the South American continent, and observing the relation of the local to the general glacial phenomena, I protest anew against the confusion introduced into the subject by those who imagine that what I have called the glacial period was produced by the gradual enlargement and subsequent shrinking of the glaciers now in existence.

You see that my anticipation of finding drift phenomena here independent of any local glacial action, has been realised on a greater scale than I had dared to hope. I most earnestly wish the European geologists would make a special investigation of glacial tracks upon the summit of high table lands and of mountain ranges, where, from their position, these characteristic marks cannot be traced to other ranges in the neighbourhood rising to greater heights. The true way to study general glacial phenomena is indeed to trace them over disconnected mountain surfaces, which were once entirely covered by the great ice mantle of the glacial period. Such localities I have already pointed out in New England and in Great Britain. Several appear to exist in Scandinavia also. It is most important to discriminate between the local and the general phenomena. Until this is done, we shall never understand the true relations of the facts.

Let me state that I have not noticed anything to confirm the idea that the glaciers of the northern hemisphere have alternated with those of the southern hemisphere in their greatest extension, as is assumed by those who connect with the precession of the equinoxes the difference of temperature required for the change. The abrasions of the rocks seemed to me neither more nor less fresh in one hemisphere than in the other; nor do the veins of molten rocks rising above the surrounding disintegrating rocks stand out in a more or less bold relief in either case. However astronomical causes may have been connected with the climatic conditions of the world, I see no reason for believing, from any facts I have observed, that alternations of temperature in the northern and southern hemispheres have ever been the primary and efficient clause of glacial phenomena. The more I consider these phenomena, the more am I satisfied that ice has been the great paring machine by which rocky surfaces have been fashioned. The great geological agents are not alone fire and water, as is universally admitted. Ice has had a great share in the work, and I believe this also will sooner or later be recognised with equal unanimity. After having traced what seems to me palpable evidence of an ice mantle over-spreading once the southern part of this Continent, the effect of which I have seen from Monte Video on the Atlantic to Talcahuano on the Pacific coast, the question naturally arises how far the southern extremity of Africa, as well as New Zealand and Australia, were involved in the extension. I hope I may live to see younger naturalists investigate these regions with the same object. I believe that whenever such an investigation is undertaken by a competent observer it will be found that over and above all local glacial phenomena, and still by side with them, there is also evidence of a southern circumpolar glacial agency.

You may think that I have given you too many details. I have done so purposely that no one may accuse me of basing theories on imperfect observations. I am well aware that my results will be questioned, and I shall be thought fanciful by geologists of all schools, as I have been at every step of my glacial researches. But an old hunter does not take the track of a fox for that of a wolf. I am an old hunter of glacial tracks, and I know the footprint whenever I find it.

While I was transcribing this report, Pourtales came in with the statement that he had noticed the first indications of an Andean glacier in this vicinity. I have visited the locality twice since. It is a magnificent polished surface, as well preserved as any I have ever seen upon cold glaciated ground, or under glaciers of the present day, with well marked furrows and scratches. Think of it! A characteristic surface indicating glacier action in lat. 37° S., at the level of the sea! The place is only a few feet above tide level upon the slope of a hill on which stand the ruins of a Spanish fort, near the fishermen's huts of San Vicente, in the Bay of San Vicente, which lies between Concepcion Bay and the Bay of Aranco. Whether this polished surface is the work of a glacier descending from the Andes to the sea shore or not I have not yet been able to determine. I find no volcanic pebbles or boulders in this vicinity, which, after my experience in San Carlos, I should expect all along the shore if the glaciers of the Andes had descended to the level of the ocean in this part of the country. The erratics here have the character of those observed farther south. It is true the furrows and scratches of this polished surface run mainly from east to west; but there are some crossing the main trend at angles varying from 20° to 35°, and running south-east and north-west. Moreover, the magnetic variation is 18° 3′ at Talcahuano, April 23, the true meridian bearing to the right of the magnetic. I shall soon know what to make of this, as I start to-morrow for the interior to go to Santiago and join the ship

again at Valparaiso. The trend of the glacial scratches in San Vicente reminds me of a fact I have often observed in New England near the sea shore, where the glacial furrows dip to a considerable extent eastward toward the deep ocean, while farther inland their trend is more regular and due north and south.

While in Talcahuano we have made very extensive collections of littoral marine animals, so that we now have an excellent basis for comparison with the results of the deep-sea dredgings, which Pourtales is going to make between this and Juan Fernandez. I shall make similar collections in Valparaiso, and in order to do so in the short time allowed me I take Dr. Steindachner with me.

I had almost forgotten to say that I have obtained unquestionable evidence of the cretaceous age of the coal deposits of Lota and the adjoining localities north and south, which are generally supposed to be tertiary lignites. They are overlain by sandstone containing baculites. I need not adduce other evidence to satisfy geologists of the correctness of my assertion. I have collected myself a great many specimens of these fossils in beds resting upon coal seams. L. AGASSIZ

To Prof. Benj. Peirce, Superintendent U.S. Coast Survey

ANATOMY

The Placenta of the "Tamandua" Ant-eater

To the last number of the *Annales des Sciences Naturelles* M. Alphonse Milne-Edwards contributes an important paper upon the structure of the placenta of the "Tamandua" ant-eater (*Tamandua tetradactyla*)—important, at all events, to those who, with us, reckon the *Bruta* as one of the most interesting, but, at the same time, spite of Dr. Gray's most elaborate but somewhat intricate arrangement,* least satisfactorily classified groups of the mammalian class.

M. Milne-Edwards, after mentioning his countryman Lenou's division of the ant-eaters proper into three genera—viz., the terrestrial *Myrmecophaga*, and the *Tamandua* and *Cyclothurus* with arboreal habit and correlated prehensile tail, draws attention to the fact that as yet no opportunity has been had of examining the fœtal envelopes of the great ant-eater (*M. jubata*), that the placenta of the two-toed genus *Cyclothurus* is described in the *Leçons* as a kind of concave disc, but it has not been determined to what extent the walls of the ovum are occupied by the specialised vascular tuft.

The fœtal specimen of the Tamandua examined by M. Milne-Edwards was derived from a female which had come from New Grenada. The placenta is described as situated at the end of a pretty long and cylindrical umbilical cord, in which the vessels did not take any special course. It occupies a considerable extent of the ovum, and though circular and made up of but a single lobe, is of a form too convex (*trop bombée*) to come under the category of the so-called "discoidal" placenta. It would be, in fact, more correct to term it a "placenta discoïdale envahissante." It is not made up of single villosities, such as the placenta of Pachyderms, of Camels, and of Tragulines, for the vascular tufts are much crowded together, especially at the central portion, so as to give the organ at this point a spongy appearance. The edges are sharply defined, leaving that portion of the chorion smooth which corresponds to the neck of the uterus. The vascular vegetations do not, in their disposition, remind one in any degree of the reticulated fold and the honeycombed aspect described by Sharpey as occurring in the placenta of the Pangolin. Towards the centre there appeared to be *débris* of the uterine tissue, suggesting the existence of a "decidua," but on this point there is, unfortunately, no certainty. No trace of an allantois was discovered, from which it is concluded that this fœtal appendage must be at least greatly reduced in size. Owing to the long immersion of the animal in alcohol, it was impossible to dissect out the laminæ of the envelopes of the ovum, or the factors of the umbilical cord. The internal surface of the chorion is stated to have been perfectly smooth, and not to have presented any of the protuberances which have been observed on that of the Unau.

If the placenta of the Tamandua, remarks M. Milne-Edwards in conclusion, be compared with that of some other members of the groups into which the *Edentata* have been subdivided, we shall not fail to be struck with the considerable differences which seem to exist in the structure of this organ in the different members of a group considered by zoologists as constituting but a single order.

The figures given by Carus (*Tabulæ Anatomiam comparativam illustrantes*, Pars. iii., Pl. ix., fig. 15), of the placenta of the Unau, do not, in the eyes of M. Milne-Edwards, resemble that of an ant-eater, of any other kind of Edentata, or even of any Mammal.* According to Prof. Owen's description of the placenta of the "Tatou,"—a general term for the Armadilloes—this organ resembles, at least in general form, the discoid placenta of an Insectivore, while that of the Pangolin, described by Huxley "Introduction to the Classification of Animals," p. 98), after Sharpey, presents a third mode of organisation not less distinct from the preceding. The Tamandua, in fine, thinks M. Milne-Edwards, offers an arrangement which, though differing in some particulars from that existing in *Cyclothurus*, seems to be only an exaggeration.

M. Milne-Edwards concludes by putting the pertinent question—"are we to regard this diversity in the order *Edentata* as of less importance than that accorded by naturalists to like variations in the fœtal envelopes in other groups of the class Mammalia? or are we to conclude that the different zoological types included by zoologists under the name *Edentata* have less affinity between them than is generally believed, and might be represented in our system of classification by division of a higher character." M. Milne-Edwards inclines—and in this we feel also disposed to follow him—to the latter proposition, and proposes at some future time to discuss and enlarge upon the same.

J. C. G.

* "Revision of the Genera and Species of Entomophagous Edentata." Proc. Zool. Soc., April 11, 1865.

* Rapp seems to have made more out of Carus's plates than did M. Milne-Edwards, for he states (*Anatomische Untersuchungen über die Edentaten*, 2te Aufl., p. 103. Tübingen, 1852), that according to the said anatomist, the placenta in this animal is made up of several *cotyledons*, which are from half-an-inch to an inch in transverse measurement.

METEOROLOGY

On a Meteoric Iron lately found in El Dorado County, California†

FOR my knowledge of the meteoric iron of El Dorado Co., I am indebted to Mr. Alfred Stebbins, librarian of the Mercantile Library Association of San Francisco. A letter from him, dated April 26, inclosed a few grams of turnings obtained during the separation of a slice of the mass destined for the collection of the geological survey now in progress under the direction of Prof. Whitney.

The mass is described by Mr. Stebbins as having the size and shape of a man's head. It was found in a field, and, as usual, was first taken to a blacksmith's shop, where it was soon found to be an unmanageable subject for working, and hence, fortunately, found its way into scientific hands. Its surface possesses the indentations common to these bodies—the crust or coating being partially oxidised. It weighs eighty-five pounds.

I find the turnings to have a specific gravity of 7·80, which may perhaps be a trifle above what the mass possesses, as it is presumable that the turnings have suffered a slight condensation in the process of separation.

The fragments sent are free from all traces of sulphur. A single analysis upon one gram has afforded me,

Iron	88·02 per cent.
Nickel	8·88 ,,
Insoluble, consisting of a mixture of Fe_2O_3 and FeO, with minute silvery particles of supposed phosphor-metals (Schreibersite)	3·50 ,,

The amount of material at command was too small to search for the other metals commonly found in meteoric irons.

† By Charles Upham Shepard, Sen., Massachusetts, Professor of Natural History in Amherst College. Reprinted from the Amer. Jour. Science and Art.

SCIENTIFIC SERIALS

Le Moniteur Scientifique, April, 1872. This number commences with a translation of a paper by M. Mayer, on alcoholic fermentation, and on the nutrition of the yeast plant, and is followed by a long dissertation on scents, according to recent discoveries in chemistry and physiology, by M. Papillon. The next is a translation of a lecture by Dr. Hofmann on organic chemistry and therapeutics. The author points out the numerous discoveries which have advanced the science of