After the discourse, the procession formed again for the ascent to the summit. The women led the way, the clergy formed the centre, and the men closed the march. They stopped at every one of the stations of the Via Crucis, and recited the appointed prayers, after the blessing by the Bishop.

On the pinnacle of the mountain, a gigantic cross had been erected, one hundred feet high, six wide and four thick. It was fastened in the rock by twelve enormous chains. At the foot of the cross, a chapel, twenty feet square, was built and intended for religious service. There, in that presence, at that height, under these most solemn circumstances, the emblem of our redemption was blessed and a magnificent sermon delivered by Bishop Janson. Among the spectators, was seen a solitary Indian, standing aloft on the angle of a rock and gazing with troubled eye on a spectacle so novel to him. He looked like a mysterious apparition of the past, a representative of those extinct tribes sent by the primitive masters of these realms to inquire into the strange noises that disturbed their slumbers.

For six years from that date, the cross of Rouville Mountain stood there, amid the tempests and the convulsions of the elements like a benediction on the good people of Canada, followers of the Crucified. From the St. Lawrence, the Richelieu, the Yamaska, it could be seen towering in the high heavens, and travellers of every creed, looking up to it, exclaim in the words of the old mediaval chant-

## O Crux ! Ave ! Spes Unica !

But the situation of the cross was too much exposed, or else it was not sufficiently well fastened to the crags of the mountain, for in November 1847, it was blown down during a severe storm of thunder and lightning. Nothing remained of it but the pedestal, which it still left standing as a memorial of a beautiful ceremony, and a religious enthusiasm.

The view from the top of Rouville Mountain is unique in the country. It extends over a radius of fifty miles. The whole of Montreal Island, the Ottawa, Lake St. Francis, the whole of the Richelieu Valley from Lake Champlain to Sorel, portions of Vermont, New Hampshire and New York, most of the Eastern Townships, rivers, lakes, forests, villages, towns, cities, stretches of field and prairie, all enter within the marvellous vision.

As a place of summer resort for families, there is none finer in Canada. We wonder that something is not done to utilize it for that purpose, and the more, that mountain scenery is comparatively rare in that part of the country.

The whole mountain is private property. It has passed from the male line of the Rouvilles into the hands of Major Campbell, who resides at St. Hilaire. That gentleman places little or no restriction, however, on travellers who desire to explore the mountain.-St. John's News.

## SCIENCE.

## The Origin of Minute Life.

BY HENRY J. SLACK, F.G.S., SEC. ROYAL MIC. SOC.

Controversies about "spontaneous generation" ought in these days to be replaced by inquiries into the conditions under which or ganisms of a low character can exist, or become developed. "Spontaneous generation" is a bad term, involving a metaphysical idea not properly belonging to physical science, or to biological science either. The term would indicate that something is generated of its own accord--a notion barely intelligible, and bordering upon ab-<sup>surdity</sup>. What one set of investigators meant by it was, that, under certain circumstances, physical and chemical forces aggregated inorganic matter in such a way as to produce organic matter, or an organized being, which had no connection of hereditary descent with with previously existing beings of the same species, or of any species whatever. Were it desirable to investigate this belief in an accurate manner, we should have to consider what various writers meant Thomas's Hospital. Churchill.

by physical and chemical forces; and by " nature," which was supposed to call them into action, and whether those terms were made to include what vitalists would call vital powers. The notion of life arising from a fortuitous concourse of atoms is an absurdity not contained in any speculations to which we need now pay attention, but there are two schools whose theories continue to exert a practical influence upon experimental inquiries and methods of reasoning. The one, in the words of Pouchet, affirms that, "under the in-fluence of forces still unexplained, and, as Cabanis says, which will remain truly inexplicable, either in animals themselves or elsewhere, there is a manifestation of a plastic force which tends to group molecules tegether, and impose upon them a special mode of vitality, from which results a new being, corresponding with the medium in which its elements were primitively drawn together (*puiser*)." (1) This plastic force is much like the "vital force" of a recent school of physiologists, but I do not understand where M. Pouchet supposes it to reside; but, however that may be, he says that it does not create an adult being, but operates in the same way as sexual generation.

The second school, at present of importance, adopts the idea of Otho Frederick Müller, cited by Pouchet, to the effect that animals and vegetables decompose into organic particles endowed with vitality, and capable of developing as germs. Pouchet also quotes J. Müller as admitting a spontaneous generation, which is only the result of the decomposition of large organisms, whose molecules

dissociating themselves, become animalcules. A few years ago, Mr. H. J. Clark, of Cambridge, U. S., commu-nicated a paper to the American Academy, which I find published in the "Annual of Scientific Discovery for 1860," in which he states, that a portion of the muscle of a Sagitta in a decomposing state formed vibrios out of its separating fibrilla. He said that " what would be declared by competent authority to be a living being, and accounted a species of vibrio, is nothing but dead muscle." I have often observed, when soft creatures like freshwater worms, or large infusoria, break up, that some of their molecules behave very much like living beings, but appearances of this description do not give much help in settling the question. Vibrio-like things may result from a physical coalescence of particles, and move by some force quite distinct from vital. Unless they can be *proved* to perform some vital action, it may be unwise to conclude too positively that they are alive.

The experiments of D:. Montgomery with myeline show how readily certain objects comport themselves like organic cells, although they are really nothing of the kind. To obtain myeline, the yolk of they are really nothing of the kind. To obtain myeline, the yolk of an egg is boiled with about one ounce of alcohol; the liquid is filtered, and the sediment, myeline, collected. Dr. Montgomery states, (2) that the least particle of this myeline sediment will exhibit under the microscope, with the addition of water, the curious spectacle of tubes shooting forth, and wriggling about. When mixed with white of egg, bright globules formed instead of tubes. Very dilute nitric acid, added to the above, coagulated the albumen in the artificial cell, and gave the appearance of mucous nuclei. Blood serum answered better, and the resulting artificial cells are described resembling corpuscles of saliva. In other experiments various cell appearances were obtained, including those multiplications by divisions. I have nothing to do with Dr. Montgomery's reasonings upon these experiments; I adduce them simply for the purpose of showing that things which are not alive may, from physical agencies, go through a series of performances that might easily cause them to be taken for living beings, or for organic units, if that term be preferred, which is, perhaps, advisable.

When a microscopist has to deal with objects of very minute size, it is clear that, unless great caution is used, he may ascribe life to them without sufficient reasons. Even with objects as large as Dr. Montgomery's cells, deceptive appearances would be very likely to mislead. An observer might see a mother cell give rise to daughter cells, and forthwith pronounce them alive. He tells us of "the most splendid examples of 'cells,' in all stages of fissiparous divi-sion,'' resulting from the processes above described. In cases of true living cells, the physical results of absorption of water, or other fluid, the mechanical enlargement of the plastic material, fission, etc., probably takes place in simple accordance with natural laws. The old notions that life controlled and modified chemical and physical laws is exploded by the progress of discovery, especially in organic chemistry, and there is strong evidence that organic sub-

(1) "Heterogenie," pp. 7, 8.

(2) "On the Formation of so-called Cells in Animal Bodies;" by Ed-

1869.7