spherules from the deposits. It is easy to indicate the origin of this coating if we grant the rapidity with which meteorites penetrate the atmosphere. This would determine a superficial fusion, and the formation of a coating of magnetic oxide, as in the case of these spherules. Their formation may, indeed, be compared to what is observed in the little particles of iron that fly away from the anvil under the stroke of the hammer, and are transformed in part or entirely into magnetic oxide. The non-oxidised nucleus being placed under protection by the layer of magnetic iron remains in a metallic condition, and in this way we may account for the presence of these unoxidised metallic particles at the bottom of the sea.[1] It is the same phenomenon as takes place with iron in industrial processes by the coating of Barff. The superficial fusion and oxidation of the external coating thus probably took place in the atmosphere at a very high temperature, and on account of their small dimensions the particles at once assumed a spherical form. The contraction of the superficial crust on cooling would lead to the formation of the cupule. Thus the composition of the nucleus, the formation of the black coating and the cupule, the form, and, in short, all the peculiarities of these spherules, lead us to regard them as cosmic bodies that must be grouped with the holosiderites.

(*b.*) *Brown-coloured Spherules or Chondres.*

If we now turn to the spherules with a crystalline structure, there are many reasons for believing that they, too, have probably a cosmic origin. It is well known that chondres are more or less spherical concretions, and are characteristic elements of a great group of meteorites—the chondrites. Tschermak considers them as drops of matter of cosmic origin, in fusion, that have become solidified. Chondritic globules have never, moreover, in spite of all the researches that have taken place, been found in eruptive rocks, nor, indeed, in any rocks of terrestrial origin.

The distinguishing characters of these globules of silicates from the deep-sea deposits, and their relations to the chondres of meteorites, may now be referred to in detail. In the first place, they present profound analogies in external aspect with the chondres of meteorites, although, as will be presently pointed out, they differ from them in some of their crystallographic details. These brown-coloured spherules are either yellowish or brown, with a pronounced bronze lustre. Under the microscope, in reflected light, this metallic lustre is seen to be due to a finely lamellated structure; their surface, in place of being smooth as in the black spherules, is seen to be striated. Their diameter rarely attains a millimetre, and their mean diameter may be about 0·5 mm. They are not regularly spherical. The cupule, when it exists, is not very deep, but rather

[1] It may be well to recall here that some meteoric irons, *e.g.*, the meteoric iron of Santa-Catarina (Brazil), do not oxidise under the action of water; this is the case when the iron contains a relatively large amount of nickel (see Boussingault, *Comptes Rendus*, tom. lxxxvi. p. 513, 1878).