In the monadology of Leibnitz, we find a reversion to atomism under an ideal form. He considers the substance of the universe as an active force, represented by monads. These, after the manner of atoms, are a distinct unity, unchangeable and indestructible. Contrary, however, to atoms, which do not present any qualifying diversity in themselves, monads are distinguishable one from the other, each one personating, as it were, a distinct form. Moreover, atoms being capable of expansion, can be regarded as separable, but monads cannot, because they are metaphysical conditions. And inasmuch as metaphysical conditions, no matter how they unite, can never go beyond a certain limit, Leibnitz denies the objective reality of space, and looks upon it as a kind of co-existence.

But the most important part of his doctrine is the conception he places upon the action of monads. Each one has its peculiar representation apart from the other monads and consequently, the universe. All the ulterior developments of the latter are therein portrayed, so that in monads we may read the future. Such representative power is not the same in all of them, however. Some, monads of the lowest degree, have a confused representation which may be compared to vertigo or dreamless sleep; a condition in which representations are not wanting, but being neutralized cannot attain consciousness. These lower orders of monads represent the first link belonging to the chain of existence, which is called inorganic nature, and the bodies resulting from them may be likened to a fish pond whose elements are alive while it is not.

Occupying a higher grade, in the vegetable kingdom, are monads in which representation acts as a formative vital force, but always totally unconscious. Higher still, in the animal world, monad life rises to sensations and memory, and finally to reason and reflex action. However, let us repeat, in order that it may be well understood, that the representative contents of the various orders of monads do not differ, because each one, like God, reflects the entire universe *(parvo in suo genere deus)*. The difference lies solely in the clearness and perfection of the representations.

We will not linger here, however, that we may slowly follow the ideas of Leibnitz in regard to the relations existing between God and monads, or between them and the soul by means of pre-established harmony. We will merely observe that if we remove from monadology all the purely imaginary elements with which it overflows, there still remains something both novel and important which is not to be met with in old atomical theories. This novel determination consists in a peculiar active force which each monad possesses *internally*. It is a prior intuition of *pampsychism* which being enriched moreover by positive facts, can lead the way perhaps, to the greatest reconciliation of which the human mind is capable.

We find another reversion to atomism in the metaphysics of John Frederick Herbart. We have already seen his conception of absolute positiveness. However, experience receives many suggestions from the phenomenal world, which is composed of manifold appearances. And as every appearance insinuates a determined Reality, the latter must be considered as a compound of several single entities or monads, each one posessing different qualities. The individual groups of these monads are those which, working upon our senses, there produce the representation of definite objects. We find a vast difference between Herbart's conception and that of Hegel; while the former considers Nature as a plurality, the latter conceives it to be a unity. To one, absolute positiveness is the Ideal, while for the other, on the contrary, it is Reality.

But how can we reconcile the absolute condition of the Real, the peculiar conservation of monads with the phenomenon of mutation. Herbart has recourse to *accidental perceptions* and *intelligible space*. By accidental perceptions, we mean the manifold relations which can proceed from a single conception, according as it may be compared with others, but, nevertheless, remaining always unchanged. Thus, for example, a straight line can be considered as a radius or as a tangent without changing its position, just as a sound can be harmonious or discordant, according to the relation it bears towards other tones. In the same way, in the grouping of various qualities of monads, while on one side there is no change, on the other there is a very perceptible one. By means of *intelligible space* we may consider existence either as a complex form or as an individuality.

This theory, which in some ways closely resembles the old atomic dogma, is far removed from it, inasmuch as the monad or atom, according to Herbart, does not possess an impenetrable character.

Looked at from a mathematical point of view, several monads may coincide perfectly one with the other. Between the monad of Leibnitz and that of Herbart, there is also a noteworthy difference, because the former considers the *internal condition* as original and individual; while with the latter it is wanting, if we consider a single monad, but develops with the reciprocal relations between the monads.

We will finish with Herbart, our brief explanation of atomism revealed upon a field of pure metaphysical speculation. On the other hand, a new doctrine arises, an experimental one, from which we shall see produced an atomic theory, which is not the work of more or less arbitrary deductions, but the slow result and synthesis of a multitude of positive facts.

ASTRONOMY.

SPECTRUM OF "LALANDE 13412."

We are indebted to Prof. Pickering for the following note upon some observations recently made at Harvard College Observatory:

"The star *Lalande* 13412 has a very curious spectrum. It belongs to the same class as *Oeltzen* 17681 and the three stars in *Cygnus* having bright lines. Besides the yellow and blue bands, it has a marked line in the green, which is faint, if not wanting, in the other stars. It is also about a magnitude brighter than either of them, so that it is the only object of the kind within reach of small telescopes. Professor Young found *Oeltzen* 17681 difficult with 9-inches aperture, while I discovered this object with 4-inches aperture. The position for 1880 is:

R. A. 6^h. 49.3^m.
Dec. $-23°$ $47.'$

or about $15'$ north of *o Canis Majoris*. In winter this star is conveniently observed when all the other stars of this class are below the horizon.

The same evening I found that the spectrum of α^2 *Puppis* is banded. As the declination of this star is $-44\frac{1}{2}°$, this is probably the most southern object ever usefully observed here. Its altitude at the time of observation was only about 2°!"

The Transit of Venus Commission established by the French Academy of Sciences, has resumed its labors under the presidency of M. Dumas. A credit has been given by the Government for constructing new refractors. Not less than twelve are now building, to be used on the several stations which have been already selected, and will be ready by the end of the year. The heads of the scientific missions will soon be appointed, as well as their staff. The greater number of instruments built for the 1874 transit has been disposed of to several public institutions.—*Nature*.

W. C. W.

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