## ASTRONOMICAL DOCTRINES PRESENTED IN NEW ASPECTS

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Astronomical doctrines presented in new aspects by Ph. Aug. Albrecht

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### IN NEW ASPECTS.

Aug. Albrecht.

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"Attempt the end, and never stand to doubt; Nothing's so hard, but search will find it out." — Robt. Herrick.

"Bas tein Berftand ber Berftändigen fiebt, Das übet in Einfalt ein tindlich Gemuth."

Schiller.

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### Astronomical Doctrines.

#### PRESENTED IN NEW ASPECTS, BY PH. AUG. ALBRECHT.

Prevailing scientific ideas of any period are regarded by the mass of the people, not by learned professors alone, as established facts. Scores of scientific men in the past propounded many odd doctrines before acknowledged facts harmonized with theories.

It is astonishing how the path of investigation is cleared, when we come to a comprehensible conclusion regarding the subject under examination. And what induces this investigation? The answer is skepticism.

Just as lightning has a tendency to clear the terrestrial atmosphere, skepticism is charged with the task of brushing the cobwebs from the human intellect.

T. A. Buckley in his introduction to Pope's translation of Homer's Odyssey says: — "Skepticism is as much the result of knowledge, as knowledge is of skepticism. To be content with what we at present know, is for the most part to shut our ears against conviction; we must set aside old notions and embrace fresh ones, and as we learn, we must be daily unlearning something and emancipate ourselves from knowledge previously acquired."

In Sir John Herschel's Treatise on Astronomy we read:----"At this day there is not a single perturbation, great or small, which observation has ever detected, which has not been traced up to its origin in the mutual gravitation of the parts of our system and been minutely accounted for in its numerical amount and value by strict calculations on Newton's principles.

It is the triumph of physical Astronomy to have rendered a complete account of them all and to have left nothing unexplained, either in the motions of the Sun or in those of any other of the bodies of our system." This was written half a century ago.

He also writes: — "The reader will take care not to confound the variation of the position of the earth's axis in space with a mere shifting of the imaginary line, about which it revolves in its interior. The whole earth participates in this movement and goes along with the axis as if it were really a bar of iron driven through it. That such is the case is proved by the two great facts: — First, that the latitudes of places on the earth, or their geographical situation with respect to the poles, have undergone no perceptible change from the earliest ages. Secondly, that the sea maintains its level, which could not be the case if the motion of the axis were not accompanied with a motion of the whole mass of the earth."

As a matter of course other works on Astronomy contain similar explanations in regard to the stability of the earth's axis.

But now we are suddenly surprised with the startling news, that the axis of old mother earth is somewhat loose, in fact that the North pole is wabbling slightly. The annual movement is said to be only 4 feet. Investigations by Prof. Chandler, of Harvard University, have developed the fact that the axis of the earth revolves in a circle, having a diameter of 30 feet, and that the time of revolution around the circle is 427 days. The consequence of this curious phenomenon is a slight change in the geographical position or latitude of places on the earth.

It appears that almost simultaneously with Prof. Chandler, this fact was also discovered in 1889 at the observatories at. Berlin, Potsdam, Prague and Strassburg. To further investigate this remarkable circumstance an expedition was sent to Honolulu, where the surmised changes in latitude found confirmation.

At the Fall meeting 1896 of the National Academy of Sciences at New York, Prof. Simon Newcomb spoke of the physical causes of the periodic variations of latitude.

Apropos, it is interesting to note here, that forty-five years previously the celebrated Astronomer Bessel at Koenigsberg appears to have suspected something to the above effect. In a letter to Gauss, the eminent director of the observatory at Göttingen, the celebrated Humboldt wrote in 1846, after the death of Bessel: - "With Bessel's death a queer conviction of his was carried to the grave with him, as is evident from an autograph letter dated June 1st, 1844. Bessel's words were: I inform you of something which is as yet immature. I entertain a suspicion against the invariability of Polar distances. My observations with our new Meridian Circle, which agree very nicely with one another, are constantly reducing the Polar distance of Koenigsberg, since the Spring of 1842 to the present time but three-tenths seconds, but even this trifle seems to me cannot be an error of observation, as in accordance with my present mode of observation everything is eliminated that might influence the observations in any way. I surmise as a cause changes in the interior of the earth, which influence the direction of gravitation."

Strange that this queer conviction, as Humboldt styles it, should have rested for forty-five years in its grave before it became resuscitated, and that none of the great mathematicians and astronomers, contemporaries with Bessel, should have taken up and pursued the discovery made by him.

Humboldt, in his Cosmos, mentions various views adopted by celebrated physicists regarding the nature of the interior of the earth. He also says: "Venturesome and arbitrary conjectures have given rise to still more fantastic notions, of course, in wholly unscientific circles." To mention one:

Near the North pole, at latitude 82 degrees, whence the Polar light emanates, is an enormous opening through which a descent might be made into the hollow sphere. Humboldt says: "Sir Humphrey Davy and myself were even publicly and frequently invited by Captain Symmes to enter upon this subterranean expedition." Even the celebrated Halley, at the end of the seventeenth century, hollowed out the earth in his magnetic speculations.

About twenty years ago, (see May No. 1876, Pop. Science Monthly), Judge Chas. P. Daly, in his presidential address before the New York Geographical Society, also alluded to the before mentioned Captain J. C. Symmes, an officer of the regular army of the United States, who about the year 1819 advanced a theory, to the propagation of which he devoted the remainder of his life, that the earth was hollow, was inhabited within, and had an opening at the pole, which became known throughout the country as "Symmes's Hole." He pressed the subject upon Congress, urged an expedition to the pole to test his theory, and a Russian gentleman is said to have offered to fit one out if Symmes would conduct it under the auspices of Russia, which the Captain declined on the ground that the honor of establishing the theory should belong to the United States. He went over the country delivering lectures in support of this theory, in which he firmly believed to the day of his death. His son, now an old man, has revived it, and is advocating it, as his father did, by delivering public lectures. The father's theory was, that this hole or opening in the Arctic was about one thousand miles in diameter, and somewhat wider at the Antarctic; and now that we have reached within five hundred miles of the Arctic pole, about half of the assumed diameter of the supposed hole, without any indication so far of its existence, the son believed that if Captain Hall, of the Polaris expedition, had gotten several degrees farther north, he would have found evidence of the truth of the theory. "Captain Hall startled us at the reception given to him and his officers by this society, before the departure of the Polaris, by announcing publicly to us his be-lief in the existence of this hole, and of his determination to

go in pursuit of it; a belief which, being an uneducated man, and but little acquainted with the geography of the Arctic, was firmly fixed in his mind."

In a letter put forth last February, by Mr. Symmes, he not only argues that the earth is hollow, but that it has as much inhabitable surface within as without. He imagines that the inside is inhabited by human beings, who are the progenitors of the white race, now upon the outer surface, and that there are apertures at the poles four or more hundred miles in diameter. This recalls the belief as to the cause of the earth's motion, in the middle ages, when it became apparent from the researches of Copernicus and Galileo that it revolved upon its axis, which accounted for the motion, by supposing that the interior of the earth was hollow and was the place to which the damned were condemned, who produced the motion by their continual attempts to climb up the inside of this hollow ball in their fruitless efforts to get out."

Other scientific and unscientific Zetetics have attempted to prove the earth to be flat, but with signal failure. Now the latest in this line of investigation is according to the following extract from the New York Journal of Dec. 27, 1896: "That there are some who think the earth is hollow, viz: An expedition of scientists is about to leave Chicago and take up its position on the Gulf coast, near Estora, Florida, for the purpose of demonstrating that the earth, instead of being convex, is concave, and that as a matter of fact we live on the inside and not on the outside of it.

This is termed the Koreshan theory."

From the aforegoing statements, and others to follow, it will become apparent, notwithstanding the quotations from Sir John Herschel's work to the contrary, that there are yet problems in Astronomy which admit of solutions other than such as have been accepted by the scientific world as irrevocable.

Sir David Brewster, in his account of Kepler's method of investigating truth, (Martyrs of Science) says: "The influence of imagination as an instrument of research has been much overlooked by those who have ventured to give laws to philosophy. This faculty is of greatest value in physical inquiries, etc."

Wm. W. Payne, in Popular Astronomy, August 1896, says: "The resources of Astronomy for this purpose are evidently exhaustless."

Well, in conformity with Dr. Brewster's suggestion, we have been wearing our thinking cap for a while and exercised our imagination.

It is now our purpose to present in the following lines some ideas and conclusions which this process of reasoning revealed to us.

#### We will begin with

### Motion,

superinduced by electro-magnetism, the inherent quality of all cosmical bodies, is synonymous with Universal Gravitation. It is the exponent of that great Primordial Force which rules the Universe and has for its realm infinite space, with all the cosmical bodies or matter which occupy its bewildering depths.

Aristotle the Stagirite considered: "All changes in the physical world may be reduced to motion."

That the Solar System has a progressive motion, no one acquainted with the subject will be apt to deny, and this very translatory motion of the Sun is the *true cause* of the

#### ELLIPTICAL MOTION

of planets around the Sun.

When Copernicus in 1542, after more than thirty years of study, presented to the civilized inhabitants of the world his revived doctrine of the ancient Pythagorean system of the world, an immense improvement over the fanciful system of epicycles, which was in vogue until then, was attained. Copernicus' circular orbits of the planets would not, however, tally with the real movements of the planets and the moon, in accordance with observations.

It was reserved for the illustrious Kepler, a century later, to supply the deficiency.

He was enabled to utilize observations made and recorded by Tycho de Brahe of the planet Mars.

From calculations based on these observations, his extraordinary genius led him to deduce his first two laws of motion in the Solar system. The first law reads:

"Each planet moves around the sun in an ellipse, having the sun at one of its foci."

The second law is:

"The radius vector of each planet describes equal areas in equal times."

These two laws are true for each planet moving in its own ellipse about the sun.

Sir John Herschel says: "Geometers have agreed in each single revolution, or for any moderate interval of time, to regard the motion of each planet as elliptic and performed according to Kepler's laws, with a reserve in favor of certain very small and transient fluctuations, but at the same time to regard all the elements of each cllipse as in a continual, though extremely slow state of change."

Herschel and other astronomers say: "Were there no other bodies in the universe but the sun and one planet, the