

The Nebular Theory.

BY HERMAN WETTSTEIN.

There is probably no question upon which scientific men are more "at sea" than that of the nebular hypothesis. Three distinct attitudes seem to be held in regard to it: one that rejects it, another that accepts it, and one which endorses it with a view to misconstruing its inevitable deductions. An illustration of the latter class was recently presented in an article by Prof. Harrold Jacoby, in the Popular Science Monthly, who aired his views under the heading: "The Sun's Destination," (reprinted in the Torch of Aug. 16th.) says he at the outset: "Three generations of men have come and gone since the Marquis de Laplace stood before the Academy of France and gave his demonstration of the permanent stability of our solar system." A more unwarranted utterance was never made. Laplace was the one who gave distinct form to the nebular hypothesis of the origin of our solar system and to say that he demonstrated its permanent stability flies directly in the face of the theory of which he was the immortal author. Nothing can be more contrary to this hypothesis than to claim permanent stability for our or any other solar system. Then why make such a preposterous statement as that the one who proposed the origin of worlds out of a nebulous haze and their eventual return to it, should demonstrate their "permanent stability." Can a more absurd statement be conceived of? Anything more contradictory? Evidently Prof. Jacoby don't know his own mind concerning these matters, else he would never have uttered anything so flagrantly inconsistent.

How do his views of the "permanent stability of our solar system" coincide, for instance, with the following observations made by the astronomers of the Lick Observatory, of which a succinct account has recently been given by Prof. Serviss in the New York Journal? (See also The Truthseeker of Aug. 18th.)

Speaking of the Crossley reflecting telescope, devoted to the photographing of the celestial orbs, he says: "Especially among those mysterious and wonderful clouds of faintly glowing gases called 'nebulae' has this telescope proved its exceptional power. Vast spirals, immense gulfs of blackness surrounded by luminous walls, intricate patterns of nebulous traceries as delicate in structure as the finest lacework, beaded with stars, interlinked rings of light, gleaming like the phosphorescence of the sea, but each so stupendous in circuit that the whole solar system and many solar systems together might be embraced by it; orbs of pale fire

whose gigantic whirling motion and whose gradual compaction into new suns under the pressure of gravitation are all but visible—such are some of the marvelous shapes and appearances that these photographs show.

"In one respect particularly the latest Lick's photographs are intensely interesting. Frequently the question is asked by those who, although interested in astronomical research, have not followed it closely: 'Has the famous nebular hypothesis of the origin of the world been exploded by recent discoveries?' How the impression that it had been exploded became so widespread it would be hard to say, but no one studying the photographs in question could long entertain any doubt as to the standing of the nebular hypothesis. Instead of being exploded by the progress of discovery, as some overzealous church men have pretended, (Prof. Wakeman, please take notice—H. W.) it has been immensely strengthened, and the Lick photographs alone would have given birth to such an hypothesis if the genius of Kant and Laplace had not anticipated it.

"Out of a nebula we came; into a nebula we shall return—is a proposition the first half of which at least can be regarded as established. There are photographs, for instance, which exhibit as clearly as anything possibly could do, the emergence of suns, planets and satellites out of the nebulous clouds. The process is there before your eyes. You can not dispute it. The various stages of world-creation are represented, not all in one nebula, of course, but many nebula in different stages of development and condensation. . . . To doubt that the results of the process are before us, would be as irrational as to doubt that the grain of seed in the ground, and the sprout pushing above the soil, and the full grown stalk with its leaves and berries, are all bound together as successive phases of one continuous process of growth and evolution.

"Take the wonderful photograph which Prof. Keeler has recently discussed in the scientific journals, representing the strange Trifid nebula in the constellations Sagittarius . . . This curious haze, sprinkled with stars and channeled with endless branches like the roots of a gigantic tree, contains the whole potency of a future system of suns and worlds. No miracle is needed; no intercession of creative power. That nebula holds the atoms of coming planets and moons and the essences from which their inhabitants are to be compounded. Once on a time this solar system of ours was as formless and chaotic as that huge glowing mass of gasses in Sagittarius, but it held the seed of hu-

manity, awaiting its time to sprout and spring up and grow into the beauty of 'the image of God.' (As for us being images of God, I don't see where the credit to the Christian joss comes in.)

Verification for the nebular hypothesis having thus been obtained by unquestionable scientific demonstration, how can a learned gentleman assert in the face of this verification the "permanent stability of our solar system?" With the facts before him, as revealed by the Lick photographs, showing that: "out of a nebula we came; into a nebula we shall return," how can he maintain the position assumed by him? What can the evidence presented prove more absolutely than the transiency of all existing things, barring only their constituents, the permanency of which we are forced to postulate?

That "overzealous churchmen" attempted to "explode" the nebular hypothesis, shows from what quarter the opposition emanated. Why, then, should Liberals "fall in line" with the opposition, if they are unable to produce valid arguments against it, which in view of the unimpeachable confirmation it has received by the Lick photographs, is, of course, now entirely out of the question.

Note, also, the following incongruous statement of Prof. Jacoby, which it is impossible to reconcile with the nebular hypothesis, which he to all appearances accepts.

"And so men asked," he says, "has this magnificent solar system been built upon a scale so grand, been put in operation subject to a law sublime in its very simplicity only to change and change until at length it shall lose every semblance of its former self, and end perhaps in chaos and extinction?"

This question has been answered most positively by the Lick photographs in the affirmative, i. e., that our solar system and every other one that makes up the constellations, is bound "to end in chaos and extinction," or, as Prof. Serviss puts it, "Out of a nebula we came; into a nebula we shall return."

There is "chaos and extinction" for you. But note how Prof. Jacoby misconstrues the inevitable conclusions to be drawn from the nebular hypothesis. Says he: "Laplace was able to answer confidently, No!" I say, Laplace never asserted anything of the kind! Never was there a more positive Yes expressed in any proposition or theory whatsoever than that involved in Laplace's, which argues the transiency of all bodies of matter. And never has an attempt come to my notice from a scientific quarter that so transparently seeks to pervert what must be apparent to the most ordinary mind.

P. S. I can see nothing but the "cloven foot" [or "hoof"] of Orthodoxy in the attempt of Prof. Ja-

coby—using the columns of the Popular Science Monthly for its instrument—to deduce "the permanent stability of the solar system from the nebular hypothesis. Realizing that this theory would give the theistical concept of the world's "creation"[?] the deathblow if it were verified beyond all reasonable doubt, as it now has been by the Lick photographs, the only recourse left to Theists is to question its inevitable implications. Such attempts would be but in accordance with the Jesuitical precept, that "the end justifies the means." And that all shades of dissenters from the Roman Catholic Church, i. e., of Protestantism, have adopted this maxim, our daily experience only too forcibly proves. What Loyola declared in the above injunction was generalized by all the churches under the form that "the integrity of Ecclesiasticism, i. e., of the theistical concept of the universe, must be preserved at all hazards—by fair means or foul."

The Nebular Hypothesis vs. The Nebular Theory. Please Don't Foreclose the Universe.

BY T. B. WAKEMAN.

The Torch is devoted to Liberal education and propaganda. In lengthy discussions over disputed hypotheses and speculations, the size and purpose of this paper forbid us to indulge as we often wish to do. We stand, for instance, in Astronomy and Physics on known facts and laws, like the heliocentric solar system, the law of equivalent correlation, and their plain consequences. There are other papers more expressly devoted to explorations and disputations.

We print Mr. Wettstein's article, "The Nebular Theory," therefore, not only because it is interesting, but because when looked at from the scientific point of view it is highly educative, as a little attention will show, thus:

1. Is he right about Prof. Harrold Jacoby's article, which was printed in the Torch of August 15th, from the Popular Science Monthly, which is quite a reliable scientific publication?

The point of that article was to show, that the durability of the solar system had been demonstrated by La Place in such a way as to receive general acceptance by scientists, and that such acceptance was fully justified by all subsequent discoveries and observations. The Torch, because the article was short and good, reprinted it.

Friend Wettstein says No! For, says he, this same La Place was the great advocate, if not the originator, of the Nebular Hypothesis, to the effect that the sun and solar