

ARE THERE ANY ERRORS IN EINSTEIN'S THEORY?

Mr. T.-J.-J. See, the author of the famous theories on capturing planets and on the formation of spiral nebulae, tells us the following fact. In an article entitled "Relativity and approximation", presented in September 1923 at the "American Astronomical Society", Professor Charles Lane Poor believes that in the calculation of the deviation of light rays near the Sun, Eddington would have neglected an important term. This would result in the figure 1".75 given by relativists, and verified, as we know, at recent eclipses, would be erroneous. Deviation, both in the case of the theory of general relativity and in the hypothesis of the emission will not be 0".87, and the verification that we believed to take from the Einstein's theory would therefore be completely inaccurate. Given that this is a pure question of approximation in the calculations, the question will undoubtedly be clarified quickly.

Mr. T.-J.-J. See explains, moreover, and it is, we believe the general opinion, that the two other proofs by the movement of Mercury and by the movement of lines spectral, have not yet given indisputable results.

Finally, the author recalls that in the *Astronomische Nachrichten*, no. 5048. he drew of a new kinetic theory of the Aether a simple explanation: 1° from experience by Michelson and Morley; 2° the phenomenon of aberration; 3° the experience of Lodge on spinning discs; 4° the anomaly of the movement of Mercury; 5° of changes in the medium motion of the Moon; 6° of the contraction hypothesis by Fitzgerald, which would be completely superfluous.

Mr. T.-J.-J. See concludes that the theory of relativity must be definitively recognized as false and useless. We see that Einstein's theory has opponents determined and this fact is very important for astronomers. We organized, in effect, and we must organize in the future long, costly and dangerous expeditions to obtain the verification of Einstein's theory by the observation of the deviation of star rays during an eclipse. It is therefore unfortunate to see contest the principle and the very possibility of this verification.

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Given the importance of this question for astronomers, we have calls on the expertise of Mr. Jean Becquerel, whose well-known books on Relativity are models of clarity. From a letter that he kindly sent to us, we extract the following passage:

"Einstein's theory gives 1.74 for the deviation of light rays at edge of the Sun; there is no doubt on this point. The half deviation would be that which we would obtain by applying Newton's law of attraction to light, and taking for mass of light energy the value given by electromagnetic theory... The value 0.87 was corrected by the theory of general relativity; we find the double because, for a mobile moving at the speed of light (limit speed), the deformation of space and that of time have equal influences."

We could, without doubt, predict that in a mathematical theory examined in detail by the greatest mathematicians of our time, there was no error calculation, strictly speaking. However, the mathematical results of this theory are perhaps not yet absolutely sure, and some scholars dispute them; but this is not because of mathematical errors, but rather due to uncertainty foundations of the theory.

Larmor ⁽¹⁾ believes that these foundations have not been examined with enough care and the criticism he makes of it would lead to a value of the deviation of the light two times less than that given by Einstein.

According to him, the principle of equivalence between a gravitational field and a field acceleration must be rejected; the new theory *does not* explain gravitation which would be an independent phenomenon and would remain as inexplicable as it could be of Newton's time. "Unless there is some hidden contradiction in the development of these ideas, he said, the deviation of the rays must be reduced, to the half of the currently accepted value; if this argument is legitimate, the same halving must be applied to the expected displacement of the lines in the solar spectrum."

We could undoubtedly respond that the assimilation which manages to connect gravitation to radiation, however artificial it may be, will be justified precisely if the experiment confirms the predictions of Einstein's theory, and the research of astronomers to this topic is therefore still extremely important.

Moreover, we believe it would be wrong to attach to Einstein's theory a somewhat absolute value that it can only have for dogmatic minds. This theory, like any physical theory, can only be a hypothesis, *a working hypothesis* as the English say. A scientific mind should not demand from a theory an absolute certainty that man cannot achieve, but a means of relating known phenomena, of discovering their laws and above all of predict and discover new phenomena.

From this point of view, it must be recognized that the theory of relativity had a considerable importance in astronomy. It was it who raised the suspicion that the shift of the lines towards the red in the solar spectrum was perhaps not due to the effect pressure. This resulted in a complete change in the estimation of this pressure, and as a result of temperature taken from Saha's new theories. It is again there theory of relativity which pushed astronomers to look for the deviation rays passing near the Sun, research that we absolutely did not think about, and to discover that this deviation does indeed exist.

The role of astronomers is to collect the numerous suggestions given to them Einstein's theory, to study without preconceived ideas the new phenomena that this theory allows them to discover and study its laws experimentally.

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⁽¹⁾ *Philosophical Magazine*, v. 45, 1923, p. 243.