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ARISTOTLE, NEWTON, EINSTEIN. II

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THE problem that now confronted physicists was this: How can local properties, such as a gravitational field, exist in space when the existence of an ether is not a permissible supposition? The answer was furnished, in 1915, by the "General Theory of Relativity" of Einstein. He discarded Gassendi's assumption that space was a uniform characterless vacuum, and postulated that it had a property of curvature, varying from point to point: and that just as (to make use of a rough analogy) a paramagnetic body when placed in a magnetic field tends to move from the weaker to the stronger places in the field, so a massive body in space might be pictured as moving from places of weak to places of strong curvature. The curvature, in fact, performs in general relativity the same kind of function as the density and rigidity of the ether did in classical physics; but, unlike the ether-properties, it does not come into conflict with the principle of relativity. In Einstein's conception, space is no longer the stage on which the drama of physics is performed: it is itself one of the performers; for gravitation, which is a physical property, is entirely controlled by curvature, which is a geometrical property of space.

In Einstein's theory of gravitation the Newtonian concept of force is completely done away with; a free particle moves in a path determined solely by the curvature-properties of space; it is, as the Aristotelians would say, in potency with regard to space, and things in a state of potency continually seek to become actualized. The changes of position of the particle, in their turn, bring about changes in the curvature of space, so that the particle and space together may be regarded as a single system whose evolution is determined by the law that the total curvature of space-

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