

As we have seen, the whole tendency of stellar evolution is towards a loss of energy, a cooling down, and eventually all the stars we now see will become dead and invisible; and, unless there is some means of replenishing this energy, the whole universe will get to one level of coldness, invisibility, and deadness. Do we know any means by which such a dead system may be revived? So far as any energy from within each body is concerned, no. Nevertheless, each of these bodies contains an inconceivably vast store of kinetic energy, energy of motion. They are all moving in all directions with velocities varying up to about 200 miles per second on the average about ten miles a second. Although they are relatively small as compared with the vast distances between them, nevertheless in the hundred million or so of stars in the visible universe, it is certain that some pairs will come within range of each other's attraction, will be drawn towards each other with constantly increasing velocity and will, under certain conditions, collide either directly or with grazing contact. What will then happen? We know what would happen if two projectiles from modern cannon, each moving with a velocity less than half a mile per second and weighing less than a ton were to collide. They would be practically destroyed and made intensely hot. We cannot conceive the destructive effects of the collision of two bodies, billions upon billions of times as massive as our cannon balls, and moving, as they would be at the instant of collision, about a thousand times as fast. They would certainly be entirely vaporized with explosive violence and scattered over an enormous space and we would have again a nebula which would undoubtedly pass through the process of evolution already described.

This is a very fascinating hypothesis, that the universe contains in itself the forces which will keep it in existence, in undiminished glory. Although we do know that such collisions will occur and have occurred, we do not know whether they are of sufficient frequency to renew the loss of energy constantly going on. That such collisions occur is attested by the appearance of new stars (Novae) which come from time to time. The most notable in recent years (1907) was in the constellation Perseus. It was discovered by a Dr. Anderson of Edinburgh, who only a short time previously discovered a less striking Nova; it suddenly appeared where no star had been previously, blazed up in the most spectacular manner so that in a few hours it was brighter than any star in the sky, and then nearly as rapidly faded. It now has the appearance and gives the spectrum of a nebula. There can hardly be any doubt that these novae