RECENT IDEAS OF MATTER.

In 1904 (a century later) the modern ideas as to the atomic and molecular composition of matter, the kinetic theory of gases, the laws of the conservation and dissipation of energy, so potent in 19th century science, have been surpassed by the latest affirmation that gross matter is, after all, a mere appearance, whose physical basis is electricity.

ELECTRICAL MONADS.

The chemist's ultimate atoms, whose groupings constitute the molecules of the chemical elements are now regarded as themselves groups of sub-atoms or monads. These are not electrified particles of matter; but are electricity itself. The different elements of the chemist are really different arrangements and motions of monads. "Thus" said Mr. Balfour, "two centuries ago electricity seemed but a scientific toy. It is by many declared to-day to constitute the reality, of which matter is but the sensible expression."

QUALITIES OF MATTER.

Formerly matter was said to have primary, essential qualities, such as shape and mass, which existed independent of any observer. It had also secondary qualities, like warmth and colour, which had no existence excepting as effects upon the organs of sense-perception in living beings. Mass is now pronounced to be no longer an attribute or a quality, but a relation. Far from being necessary and unchangeable, as was formerly thought, mass changes with every change in velocity, and especially at high rates of velocity. Professor Rutherford states that these corpuseles have a velocity in some cases 40,000 times greater than a rifle bullet which travels at the rate of about ½ a mile per second. (*Harper's Mag.*, Jan., 1904)

FEEBLEST FORMS OF FORCE CHIEFLY APPARENT.

Chemical affinity, molecular cohesion and the like, hitherto so important in the eyes of the physicist, are mere residual effects, the feebler manifestations of force as compared with the intense electrical forces which keep the atom in being. Gravitation, Newton's imposing discovery, is trifling compared with the attractions and repulsions of electrically charged bodies, while these, again,