SHORTER NOTICES

Mathematical and Physical Papers, 1903–13. By Benjamin Osgood Peirce.
    Harvard University Press, 1926. 444 pp.

The publication of the collected papers of those who have made important contributions to science is always a valuable undertaking, and it is gratifying to have this volume which includes most of Professor Peirce's publications during the last ten years of his life. Most of the papers in this volume are concerned with the magnetic properties of iron. Professor Peirce devoted much time to the study of this subject, and his work is marked by the great care he took in his experiments and by his thoroughgoing analysis of the details of the problems involved; it is an admirable example of the best type of experimental work.

There are also included in this volume four papers of more mathematical interest, dealing with problems in the theory of the potential.

At the end of the volume there is a bibliography of all of Professor Peirce's publications. Of the 56 papers listed there, 21 are included in this volume.

<div align="right">E. P. ADAMS</div>

Les Équations de la Dynamique de l'Éther. By Henri Eyraud.   Paris,
    Blanchard, 1926.

Some years ago Cartan generalised Weyl's idea of space by supposing that the coefficient Γ^i_{pq} which occurs in the equations defining parallel displacement of a vector, changes, by an amount A^i_{pq} when the suffixes p and q are interchanged.

The new quantities A^i_{pq} can be regarded as the components of a tensor which is called the torsion of the space of affine connection. This tensor plays an important part in Eyraud's geometrical theory of the ether, for its contracted components represent the vector potential of the electromagnetic field.

When the torsion is zero and in this case only can we, by a suitable change of coordinates, annul at any given point all the components Γ^i_{pq}.

Eyraud shows that the space which supports electromagnetic actions is projectively Riemannian so that there is always a Riemann space having the same isotropic lines (rays of light) and the same geodesic lines (orbits for free motion) as the ether itself. It is Hamilton's principle which leads him to a knowledge of the true geodesic character of the ether. It gives besides the electromagnetic equations of Maxwell, the two corresponding systems of gravitational equations, and the second system of gravitational equations expresses precisely that the ether is applicable projectively and conformally on a Riemann space. He claims to have shown that the energy of the electromagnetic field and an electronic energy are the only types of energy both in the ether and inside the atoms.

<div align="right">H. BATEMAN</div>