erroneous calculations of Ghosh, pp. 117-120, on the conductivity of strong electrolytes, have not been eliminated or replaced by those of Milner and Debye and Hückel. The book is specially valuable, as it is the only one of which the reviewer is aware in which the various types of electrification which can be produced at interfaces are described and discussed. In biology, at least, phase boundary membrane and electrokinetic potentials appear to be of the greatest significance.

(2) The volume of Kolthoff and Furman covers a somewhat different field. Here emphasis is laid on the more recent work on oxidation reduction potentials as well as the employment of metal electrodes in volumetric potentiometric analysis. The book is very well written and the conditions necessary for accurate work fully described. Possibly the weakest portion of the text is the descriptive portion in Chapts. vii. and viii. There are many simple and accurate potentiometers now on the market, such as that constructed by the Cambridge Instrument Co. designed specially for this work. These are now employed almost universally in research laboratories and works, and a short description of such might well replace some of the more complicated but no more accurate systems described. It is interesting to note that adsorption of precipitating ions may cause quite serious errors in the end points of various volumetric titrations in which precipitates are formed.

(3) Kopaczewski has confined himself to the potentiometric and colorimetric methods for the determination of hydrogen ions. The theoretical discussion on the nature of electrolytic dissociation and on the various activity coefficients is treated very inadequately, whilst the remainder of the book, chiefly experimental in character, follows the usual course. ERIC K. RIDEAL.

The General Theory of Relativity.

Les équations de la dynamique de l'éther. Par Prof. Henri Eyraud. Pp. iii + 67. (Paris: Albert Blanchard, 1926.) 12 francs.

THIS monograph, dealing with the general theory of relativity, has a particular interest of its own in so far as it deals with a novel application of a recent generalisation of M. Cartan to the dynamics of the ether. Besides a brief historical introduction of three pages, and an appendix of nine pages on the technique of space and time measurements, there are two chapters, one of nearly thirty pages, dealing with the geometry of the spaces of the relativity theories, and another of nearly twenty pages dealing with the application of the principle of least action to the theories of gravitational and electromagnetic fields.

The first chapter works out, by traditional methods, the generalisation of M. Cartan already referred to, in which the components $\Gamma^i{}_k$ of the affine connexion in Weyl's geometry are no longer assumed to be symmetric in the two lower indices. Consequently a new true tensor arises, namely, the *torsion* $\Lambda^i{}_{jk} = \Gamma^i{}_{jk} - \Gamma^i{}_{kj}$, which plays an important part in the geometry of the generalisation of Weyl's space. The second chapter, which is the novel part of the monograph, introduces an action integral after the fashion of Mie and Weyl, in which the action density is assumed, initially, at all events, to be a function of two tensors of the second order: one, the skew symmetric electromagnetic tensor, which is the rotation of the contracted components of the affine connexion, $\Gamma^k{}_{jk}$, and the other, the gravitational tensor, which is the symmetric part of the contracted Riemann-Christoffel tensor, R_{ij}.

The ether thus defined is deduced from a Riemann space by a projective conformal transformation, and that the vector potential of the electromagnetic tensor, apart from a numerical factor, can be identified with the contracted torsion tensor $\Lambda_j = \Lambda^k{}_{jk}$. With the action density so far defined as a function merely of the electromagnetic and gravitational tensors, the ether is empty, that is, devoid of electric charge and current. When, however, the action density in addition is an explicit function of the contracted torsion tensor, the current vector appears as the partial differential coefficient of the action density with respect to the new tensor. A plausible assumption as to the form of the action density in the general case leads to an energy tensor of the usual type, with a part representing the electromagnetic energy, another part representing the electronic energy, and generally a third complementary part, which has the character of a pressure. The additional hypothesis that the action density depends mainly on the gravitation potentials, g_{ik}, whilst the influence of the electromagnetic and current terms is comparatively small, leads to the results that (1) the Lorentz electrodynamics holds, (2) the atoms are bounded universes with constant total curvature, and (3) the complementary energy is absent, both in the ether and the atoms.

The monograph is very concise, but offers no particular difficulty for readers familiar with the technique of the general theory of relativity. For such readers it will prove to be most interesting.