

foundation, their adaptability, and their warfare. But so complicated and so biologically big is this communal life that the author appears really to be "writing not the history of a community but the chronicles of a hundred nations"

Ants probably began as insect hunters, and from this predatory life they evolved through the pastoral to the agricultural method of life, thus affording a parallel to the three stages of human history—conquest, defence, industry. What is the secret of this wonderful evolution? We are told that it is rooted in the capacity to live in social communities, and with this capacity has developed a 'mob intelligence' far surpassing that of the individual. Social organisms are endowed with a social organ. For man it is the brain, while for the ant it is a stomach sac used for food storage, and from which regurgitation takes place in response to a caress—that touch of Nature which makes the whole world kin. Their powers of communication—the author suggests the power of speech—and of orientation have been the subjects of research for many naturalists. These powers are seated in the antennæ, organs largely concerned with olfaction, but also, we are told, they are endowed with electric, magnetic, etheric, and psychic perceptive ability. The general point of view is distinctly anthropomorphic. The book is delightfully written and beautifully translated.

*The Electrical Equipment of Automobiles: a Book on Principles for Motor Mechanics and Motorists.*

By Prof. S. P. Smith. Second edition, revised and enlarged. Pp. xii + 198. (London: Chapman and Hall, Ltd., 1931.) 5s. net.

THIS excellent little book, the outcome of lectures given by Prof. Smith at the Royal Technical College, Glasgow, contains just what is required by the motorist who has an elementary knowledge of electricity and wishes to understand the electrical equipment of his car. Its seven chapters deal with the storage battery, the action of electrical machines, the starting motor and the dynamotor, the charging generator and the automatic cut-out, miscellaneous electric equipment, wiring systems and location of faults, and the ignition system.

Explanations in simple language are given of the principles and construction of the various equipments, their action is explained, hints as to their proper use are given, and the likely faults are tabulated, together with the appropriate methods of detecting and remedying them. A study of the book will go far towards heightening the interest of the motorist in the many ingenious pieces of apparatus which discovery and invention have placed at his service.

*Introduction à la géométrie projective différentielle des surfaces.* Par Prof. Guido Fubini et Prof. Eduard Čech. Pp. vi + 291. (Paris: Gauthier-Villars et Cie, 1931.) 60 francs.

ALTHOUGH the metrical part of differential geometry has been studied for two hundred years, the projective aspect received little attention until much later. Perhaps the earliest work on the subject was that of G. H. Halphen in 1875, but the

systematic investigation of the projective differential geometry of surfaces was commenced by Wilczynski about 1906. Since then a great deal has been done, especially in Italy and the United States.

A good account of the history and present state of knowledge is given in the book under review, the authors of which have themselves published many researches in the subject. After an introductory chapter there follow two chapters on curves in the plane and in space. The remaining eleven chapters deal chiefly with surfaces, including an account of Cartan's methods. In addition to historical and bibliographical notes at the end of nearly every chapter, there is an extensive list of research papers, occupying thirty-four pages. It is regrettable to find that among all these papers there is only one by an English author. Possibly this book and the larger Italian treatise in two volumes by the same authors will stimulate the study of projective differential geometry in Great Britain.

H. T. H. P.

*Problems in Practical Physical Chemistry.* By F. A. Philbrick. (Dent's Modern Science Series.) Pp. xiii + 146. (London and Toronto: J. M. Dent and Sons, Ltd., 1931.) 3s. 6d.

MR. PHILBRICK'S book is a joint product of the Oxford school of physical chemistry and of teaching experience at Clifton. In the narrow compass of 146 pages, and at a very modest price, it includes instructions for 33 problems, on reactions, ionic equilibrium, the phase rule, distribution, reaction velocity, electrical conductivity, and indicators. One obvious merit of the book is that a number of exercises in volumetric analysis are set in the form of a physico-chemical problem instead of a mere exercise in analysis, since the student is required to find out the nature of the interaction in question. This procedure not only provides useful experience of chemical methods, but is also a very welcome relief from the too highly standardised exercises which have done duty for a generation in practical courses of physical chemistry.

*Villages et Kasbas berbères: tableaux de la vie sociale des Berbères sédentaires dans le sud du Maroc.* Par R. Montagne. Pp. ix + 22 + iv + 73 planches. (Paris: Félix Alcan, 1930.) 50 francs.

IN this volume, Dr. Robert Montagne has given his readers, literally, a panorama of social development in Morocco according to his interpretation of certain aspects of material culture. The text is reduced to a minimum; the information is conveyed by a series of excellent photographs. In these are shown the different types of villages, fortified and unfortified dwellings, granaries, hill-forts, and structures of a like character, each of which is regarded as appropriate to some phase of the history of the country, ranging from the small independent agricultural community to centralised government through the agency of local governors or tributary chief. The photographs are arranged in groups accordingly, each group being preceded by a brief general account of the social phase it illustrates.