

as showing what has been done on this side of the Atlantic, and it is earnestly desired by the council of the Royal Photographic Society that the United States should continue to be fully represented in this exhibition.

C. E. K. MEES

KODAK PARK,
ROCHESTER, N. Y.

THE CARNEGIE FOUNDATION

THE president of the Carnegie Foundation for the Advancement of Teaching has printed and distributed a long discussion of the policies of the foundation. Although this has been sent to thousands of teachers it is curiously, but characteristically, marked "Confidential." As it can not be discussed directly, the writer has reprinted the articles on the subject which appeared in *SCIENCE* several years ago and will be glad to send a copy to any reader of this note who may care to ask for it. It is desirable at least to watch the Greeks, both when they bear gifts and when they take them away.

J. McKEEN CATTELL

GARRISON-ON-HUDSON, N. Y.,
April 15, 1916

SCIENTIFIC BOOKS

The Telephone and Telephone Exchange, Their Invention and Development. By J. E. KINGSBURY, M.I.E.E. Longmans Green & Co. 1915. Cloth. 558 pages, 170 illustrations. Price \$4.00 net.

Considering that the telephone, in its serviceable form, is an American invention; that the telephone switchboard and exchange were first developed in America, and that the number of telephones per unit of population is much greater in America than in any other part of the world, it is remarkable that this is the first book that pretends to give a comprehensive outline of the history of telephonic development, and that this first book should have been written in England. This is an index of the general condition of inventors, engineers and engineering, all the world over. As a body, engineers are rarely gifted with talents for literature, or for historical re-

search; yet collectively, they have transformed the surface of this planet, and have revolutionized its modes of living. However, if one should ask of a local resident near some monumental structure, grand bridge, or imposing viaduct, as to who erected it, the answer would be likely to be limited to the name of a capitalist.

This book traces very entertainingly the development of the Bell telephone, from its early conception in the mind of the inventor, to the standard instrument on so many a table of to-day. The author modestly disavows the title "history" for his book. Nevertheless, a very large amount of historical research must have been carried on by him, in order to make up the interesting narrative contained in these pages.

The following list of chapter headings will convey an idea of the scope of the historical work: Introductory, The spoken word, The growth of an idea, The undulatory current, The solution of the problem, Development and demonstration, The production of a commercial instrument, The application to commercial uses, The telephone exchange, The battery or variable-resistance transmitter, The microphone, Philipp Reis and his work, Call bells, The telephone switchboard, The organization of the industry in the United States, Competition, Consolidation and development, Introduction of the telephone in Europe and abroad, Public apathy and appreciation, The multiple switchboard, Outside or line construction, Ten years' progress, The Development of dry-core cable, Early exchange systems, Telephone engineering on a scientific basis, The branching system, The common-battery system, Automatic and semi-automatic switchboards, Long-distance service, Instruments, Rates, The economics of the telephone, The telephone and governments, Conclusion.

The task of considering the invention and development of each individual element in a modern telephone system is a very difficult one. There are so many claimants, and their claims are so antagonistic. The author has carried out this task in his own way, and with a fairmindedness that merits approbation. It