

his own country even by commendation. Under the Soviets, the imposition of Marxist doctrine on archaeological theory has constrained research workers, members of the staffs of archaeological museums, and teachers in universities and higher schools to subscribe to a particular theory of cultural development, in which emphasis is laid on economics to the exclusion of all other influences bearing on the development of peoples. The enforcement of this political doctrine on scientific teaching and research has fixed a gulf between the Russian archaeologist and his Western colleagues, and the Soviet political dictatorship is evidently determined that it shall be completely effective against Western archaeological thought, which in taking a broader view is accused of interest only in the study of the exploiters of the proletariat. Hence the Russian archaeologist must be guarded against the views of those who, for example, attach weight to the influence of migration. Those who do not conform implicitly to this frustration and perversion of the spirit of science and the aim of research, or such variation of it as may occur to Soviet rulers from time to time, have been removed from the performance of their duties, while some have vanished, leaving no trace.

Prof. D. H. Campbell

ON December 16, Prof. Douglas H. Campbell, emeritus professor of botany in Stanford University, California, will attain his eightieth birthday. His repeated presence as a foreign guest at meetings of the British Association has passed him almost as one of ourselves. His many friends among British botanists will wish to congratulate him on carrying as a light burden his tale of years. The nature and extent of his researches brought him early into prominence. Having learned Continental methods of research in the laboratory of Kny, his own fine memoir on the Ostrich fern (1887) opened that long series of researches, the results of which he compressed into the well-known volume on "Mosses and Ferns" (1895). This book ran into its third edition in 1918. In point of detailed observation of archegoniate plants, and particularly of their development, Campbell thus proved himself a most prolific observer.

BUT the scientific stature of an investigator is not so truly measured by the volume of his output as by the acceptance of his conclusions, and their passage into the web of his subject. In January 1890, in a short memoir on "The Affinities of the Filicinae", Campbell introduced a new aspect into the problem with which it dealt. In opposition to the views then current, he held that the relatively massive eusporangiate ferns were primitive types, while the more delicate Leptosporangiate were derivative. By thus inverting the current evolutionary sequence, he provided a more probable key than this to the origin of a vascular flora of the land. Others at once saw the cogency of Campbell's reasoning, while palaeontology rapidly supplied its own essential substage of fact. His view was confirmed later by his own

treatise on the Eusporangiatae (1911). When we consider the early date of Campbell's first statement, his generalization takes a high place in the history of comparative morphology.

PROF. CAMPBELL has been a great traveller in quest of material for research. Latterly he has assembled his impressions and conclusions into "An Outline of Plant Geography" (1926). With modesty he offers his volume, though he confesses in the preface that he can scarcely claim rank as a plant geographer. We may gratefully receive these collected impressions of a first-class observer. As a water-colour artist he has also been able to record pictorially much that he has seen. His sketches form a counterpoise to the vast number of his detailed drawings of plant-structure and development, so many of which have been borrowed for use in current texts.

Rights and Duties of Science

IN an article "Rights and Duties of Science" in the *Manchester School* of October 1939, Prof. M. Polanyi examines the Marxist claims, and particularly those of Prof. J. D. Bernal in "The Social Function of Science", for a radical reconsideration and readjustment of the duties of science, and of the assurances accompanying these claims that they will not impair the vital rights of science. The main points at issue are comprised in the relation of pure and applied science. A distinction between these is not admitted in Marxism, which attributes such a distinction in capitalist countries to the inner conflict of a type of society which deprives men of science of the consciousness of their social functions. Stating the liberal view of the distinction between pure and applied science, and concerning the relation of science and society, Prof. Polanyi points out that, to the liberal, science represents in the first place a body of valid ideas. Science consists of autonomous branches, ruled by their several systems of ideas, and these systems have proved permanent while waves of civilization have come and gone. In a shifting world the mind clings persistently to the rare structures of sound and consistent ideas, and in these structures all scientific interest resides.

THE direct appeal of a subject does not in itself signify scientific interest. Prof. Polanyi emphasizes the mutual reactions between science and practical knowledge, and urges that attempts to direct research towards results of possible practical applicability cannot lead to a growth of science that is of much value. A consistent policy on these lines would stop the development of science altogether, turning in effect the efforts now directed to scientific research into attempts to discover empirical solutions for practical problems. Prof. Polanyi condemns, for example, cancer research, and urges that all progress depends on the freedom of the systematic branches of science to pursue their own specific scientific aims. Universal adoption of a policy of endowing research for practical aims would bring science to a standstill and gradually exhaust its practical applications.