stances can hardly afford. The whole scheme cannot be implemented at once even if funds are available and it will take time before the disease can be controlled to any appreciable degree by adopting this measure. In the meanwhile something must be done and the author suggests that the only solution to the problem appears to be mass immunisation. The method which has been of late widely adopted is preventive vaccination with B.C.G. Experience of over ten million vaccination with B.C.G. has demonstrated the safety and harmlessness of the measure and the protection it affords. After discussing protective value of B.C.G. vaccination and the effect of this vaccination on general infant mortality, the author points out that the Ministry of Health, Government of India, after careful consideration, have come to the conclusion that mass vaccination with B.C.G. will be a cheap and effective method of control. It has been decided to introduce this method at first on a limited scale in a few large centres in the country under the supervision and control of the Central Government.

In conclusion, the author stresses upon the need for further research in this direction and urges the authorities to launch a campaign for the mass vaccination with B.C.G. Given the will and the drive, it will be possible, with proper organisation, the author remarks, to give protection to millions of the population and thus bring this disease under control. N. N. De.

THE PLACE OF PHYSIOLOGY AMONGST THE MODERN SCIENCES AND THE IMPORTANCE OF ITS STUDY TO THE NATION*

Dr. SARKAR in his Presidential Address has described Physiology as the study of the normal working of the delicately adjusted systems and of the various factors belonging both to the internal and the external environments, which influence and modify their activities. The importance of physiological knowledge for the health and welfare of individuals and the nation as a whole is universally recognised. Physiology therefore should be a special subject of study and research. Dr. Sarkar has indicated a few lines along which we should proceed to improve and develop the study of physiology and intensify research in the subject.

Discussing the claim of physiology for being considered as an independent science, the author says that as an independent subject of study, it rests on the tripod, Morphology, Physics and Chemistry. He emphasised that in our country Physiology has to be viewed and fostered as a fundamental subject of importance. It should be developed on proper lines like other important science subjects. It is true that the growth of physiology is inseparably connected with that of medicine. But physiology is not a branch of medicine though it forms one of its principal basic subjects. And as such it forms the solid foundation on which the clinical knowledge is built up. Therefore, the systematic study of physiology should be continued with advantage during the subsequent years in the clinical classes and post-graduate studies in medicine.

Dr. Sarkar suggests that when there are plans for improvement of education for the proper training of high class scientists and technicians in this country, immediate steps should be taken for carefully preparing plans for the improvement of medical curriculum. All the outstanding results of modern progress should be included in the study and it is not a bad idea as Dr. Sarkar points out to provide additional course of study in physiology of a higher standard.

Acknowledging the importance of the study of physiology as advancing our knowledge regarding the working capacity of man under various conditions of stress and strain imposed by modern civilisation, the author says that proper arrangements should be made for training scientists in the theory and practice of some of the highly specialised technical branches of physiology. With this object in view it has to be decided whether physiology should find a place in School and College curriculum. The author sees no reason why elementary physiology should not be introduced in schools as a compulsory subject of study. It should also be included

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* Abstract of Presidential Address delivered by Dr. B. B. Sarkar before the Section of Physiology, 36th Indian Science Congress, Allah abad, 1949.

in the graduation course and post-graduate study encouraged.

Dealing with researches in physiology Dr. Sarkar goes on to say that extensive research must be undertaken not only for the development of the subject but also for the solution of many urgent problems for the benefit of mankind. Researches in fundamental physiology are the bases on which Applied Physiology will grow and develop and the many problems on the applied side such as physiology of growth and development, physiology of reproduction, of regulation of body temperature, aviation physiology, physiological effect of radiation, industrial physiology, etc., call for immediate attention. Plans for future progress in all directions should be instituted so that posterity will benefit most from these investigations. Another problem which is very urgent is the solution of nutritional problem which is confronting people in every sphere of life all over India. It will be the duty of the physiologists and the nutritionists to study the nutritional requirements of the people and the biological food values of available material and to devise a physiologically suitable diet from them.

The author concludes by saying that India will need a large number of well-trained physiologist to tackle her innumerable problems and the Department of Physiology will be required to supply these workers. This is only possible, the author points out, by treating physiology as an independent science subject of great importance. Dr. Sarkar appeals to all the physiologists to put their heads together, to prepare carefully plans for inaugurating and stimulating higher studies and extensive researches in physiology. He also appeals to the Government, the Universities and the learned scientific bodies to give their serious attention to this essential matter and help to develop this important science.

N. N. De.

OBITUARY

JAMES HORNELL, 1865–1949

THE recent death of Dr. James Hornell in England has caused profound regret in India particularly among the fishery workers.

After a brief service in Ceylon in connection with investigations on Pearl Banks initiated by Professor W. A. Herdman, Hornell joined the Madras Fisheries Department as Marine Biologist in 1915. In 1918 he took over charge of the Directorate of Fisheries from Sir Frederick Nicholson. Though he could not put through many of his schemes on account of financial difficulties caused by the war of 1914-18, his regime was marked by conspicuous progress on all aspects of fisheries. Among some of the contributions of Hornell are the initiation of fisherics research, establishment of biological stations at West Hill, Krusadai and Ennore, a technological station at Tanur and of a fish cannery at Chaliyam, reorganisation of the chank fisheries, fish curing yards, the aquarium and the maintenance of fishery statistics and the initiation of welfare work amongst fishermen such as general and technical education and co-operation. He retired in 1923 after a distinguished record of service.

From 1924 onwards he was engaged by the Colonial Office in England to study and reorganise fisheries in Palestine, Malta, West Africa and Fiji. He took an active part in a number of fisheries conferences and meetings including the Colonial Fisheries Conference held in England in 1946.

His contribution to the fishery literature is rich and varied. The *Madras Fisheries Bulletins* published by him are invaluable guides to fishery workers. His recent book "*Water Transport*" is a great contribution on the crafts of different parts of the world. The excellent pioneer work of Hornell in the field of fishery development and fishermen welfare will be long remembered in this country.

K. C.