

of whom were black. All the direct labour employed by the Royal Engineers in England in peace time was civilian ; it was subject to exactly the same rules as the labour with which engineers had to deal in civil life, and the same difficulties were experienced.

He thought that the Author's purpose in writing the Paper would have been served if he had stimulated a certain amount of active thought, and he would like, on the Author's behalf, to thank the various speakers for the thought they had given to the Paper and for the obvious care they had taken in commenting upon it, which had been very gratifying.

The President proposed a vote of thanks to Brigadier Harrison, which was accorded by acclamation.

If any reply to the discussion is made by the Author, it will be published in the June Journal.—SEC. INST. C.E.

OBITUARY.

ROLLO APPELYARD, O.B.E., J.P., was born in London on 1 January, 1867, and died there on 1 March, 1943. He was educated at Dulwich College and privately, and commenced his scientific training at the City and Guilds College. Later he was appointed a demonstrator in Physics and Telegraphy at Cooper's Hill. In 1888 he gained the medal for electricity and magnetism of the Science and Art Department. In 1892 he joined the submarine cable department of the India Rubber and Gutta Percha Company, and after assisting in duplexing the cables between Pernambuco and Santos, Brazil, he was put in charge of a research laboratory. During his 22 years with the Company he made many improvements in dielectrics and carried out extensive researches on various physical problems ; one of his inventions was the conductometer for the measurement of electrical conductivity.

In 1914 he was called by Admiral Lord Fisher to the Admiralty, with a commission as Commander R.N.V.R., to organize submarine defences. He designed booms for the Clyde, the Tyne, Portsmouth, and elsewhere, and also worked on urgent aeronautical problems for the Grand Fleet. In February 1917 he was lent to the Air Service to advise on aeronautical instruments, and in September of that year was appointed to the War Staff for the Convoy Section, where he prepared several confidential statements on convoy defence. He also designed improved methods of

measuring height and air-speed, the Appleyard Ring for course and distance calculations, and, with Admiral H. P. Douglas, the arcless sextant. In 1918 he founded the Technical History Section of the Admiralty and directed it until 1920; and he was the editor of "Convoy Instructions." After the war he was appointed Engineer to Messrs. Crosse and Blackwell, Ltd., and later obtained an appointment in the scientific and technical department of Messrs. Constable & Company. At the time of his death he was engaged in perfecting an aeronautical instrument of an entirely new character.

He was the author of several books and a frequent contributor to scientific periodicals.

Mr. Appleyard was elected an Associate Member of The Institution on 5 March, 1901, and was transferred to the class of Member on 26 April, 1910. He presented the following Papers:—(1) "The Measurement of Electrical Conductivity¹"; (2) "Measurement of Electrical Conductivity of Short Rods²"; (3) "Direct Reading Instruments for Submarine Cable and Other Calculations³"; (4) "Errors in Height Scales of Barometers⁴"; (5) "The Relation between the 'Bight', 'Span', and 'Dip' of Catenaries⁵"; (6) "Catenary Measurements⁶"; for two of these Papers—Nos. (1) and (5)—Telford premiums were awarded.

In 1901 he married Mabel Laming, daughter of the late Mr. Worthington Evans, and had one son, who predeceased him.

¹ Min. Proc. Inst. C.E., vol. cliv (1902-03, Part iv), p. 342.

² *Ibid.*, vol. clxiv (1905-06), Part ii), p. 389.

³ *Ibid.*, vol. clxxxiv (1910-11), Part ii, p. 319.

⁴ *Ibid.*, vol. cxovi (1913-14, Part ii), p. 347.

⁵ *Ibid.*, vol. 208 (1918-19, Part ii), p. 402.

⁶ Selected Engineering Paper No. 9 (1923).