Values of $a' = \sqrt{(p^2+q^2)}$. Mean $p$=mean $q$=0. S.d. of $p$=s.d. of $q$=10. 500 pairs taken.

| | Experiment | Theory |
|---|---|---|
| Mean $a'$ ... ... ... ... | 12·5 | 12·53 ± 0·20 |
| Standard deviation of $a'$ ... | 6·5 | 6·55 ± 0·14 |
| Per cent. exceeding 25 ... | 4·0 | 4·39 ± 0·62 |

the agreement being very close in all three values.

Manchester. H. E. SOPER.

**Antarctic Fossil Plants.**

IT should have been stated that Prof. Seward's memoir (reviewed in NATURE for August 26) is the first dealing with the *geological* results of Capt. Scott's Expedition. Two numbers of the Zoological series had previously appeared—No. 1 of vol. i. on June 27, and No. 1 of vol. ii. on July 25, 1914.

D. H. S.

## *HENRY GWYN JEFFREYS MOSELEY.*

SCIENTIFIC men of this country have viewed with mingled feelings of pride and apprehension the enlistment in the new armies of so many of our most promising young men of science —with pride for their ready and ungrudging response to their country's call, and with apprehension of irreparable losses to science. These forebodings have been only too promptly realised by the death in action at the Dardanelles, on August 10, of Henry Gwyn Jeffreys Moseley, 2nd Lieut. in the Royal Engineers, at the age of twenty-seven. A son of the distinguished zoologist, the late Prof. H. N. Moseley, of Oxford, he was educated at Eton, entering as a scholar, and passed to Trinity College, Oxford, where he gained a Millard Scholarship. He obtained a First Class in Mathematical Moderations, and Honours in Natural Science.

Moseley early showed marked originality and an enthusiatic interest in science. A year before his graduation he had decided to undertake original work in physics, and visited Manchester to discuss the matter with me. After graduation, he was appointed lecturer and demonstrator in the physics department of the University of Manchester, and immediately devoted all his spare time to investigation. After two years he resigned his lectureship in order to devote his energies entirely to research, and was awarded the John Harling Fellowship. During the past year he went to Oxford to live with his mother, and to continue his experiments in the laboratory of Prof. Townsend. He went out to Australia with the British Association, took an active part in the discussion on the "Structure of the Atom" at Melbourne, and gave an interesting account of his recent work on the X-ray spectra of the rare earths, in Sydney. On the outbreak of war he put aside all thought of continuing the investigations in which he was so vitally interested, and returned at once to England to offer his services to his country, and was granted a Commission in the Royal Engineers. He was later made signalling officer to the 38th Brigade of the First Army, and left for the Dardanelles on June 13. He took part in the severe fighting at the new landing on August 6 and 8, and was instantaneously killed on the 10th by a bullet through the head in the act of telephoning an order to his division at a moment when the Turks were attacking on the flank only 200 yards away.

Moseley was one of those rare examples of a man who was a born investigator. He rapidly acquired the technique of experiment and soon gained a remarkably wide and accurate knowledge of modern physics. His undoubted originality and marked capacity as an investigator were very soon ungrudgingly recognised by his co-workers in the laboratory, while his cheerfulness and willingness to help in all possible ways endeared him to all his colleagues. His first research, published in the Proceedings of the Royal Society, consisted in the determination of the average number of beta particles emitted during the transformation of an atom of radium B and radium C—a difficult and important piece of work. It then occurred to him to determine the potential to which radium could be charged in a high vacuum by the escape of its own beta particles. He was able to achieve such a high stage of exhaustion—and this before the advent of the molecular pump—that a small quantity of radioactive matter retained itself at a potential of more than 100,000 volts for several weeks. He devised an ingenious method for detecting the possible presence of very short-lived radioactive substances, and in conjunction with Fajans utilised the method to determine the period of transformation of a newly-discovered product in actinium, which was found to be half transformed in 1/500 of a second.

Moseley's interest was greatly aroused by the discovery of Laue of the diffraction of X-rays in their passage through crystals, and in conjunction with Mr. Charles Darwin he immediately started an investigation to examine the quantity and quality of the X-radiation scattered from crystals at different angles. Prof. Bragg, who was working simultaneously at Leeds on the same problem, observed the presence of definite maxima in the scattered radiation corresponding to definite lines in the X-ray spectrum. This result was confirmed and extended by Moseley and Darwin, and they mapped out accurately for the first time the spectrum of the characteristic X-radiation from an X-ray tube with a platinum antikathode. These pioneer investigations in Leeds and Manchester were of fundamental importance, for they laid the foundation of the new science of X-ray spectroscopy, which is now in the process of rapid development.

Moseley next decided to examine the X-ray spectra of a large number of different elements with the definite object of testing whether the spectrum was connected in a simple way with the atomic number of the element when arranged in increasing order of atomic weight. Suggestions had been previously made that the charge on the nucleus of an atom, which defines its chemical and physical properties, was possibly equal to the atomic number. For this purpose he developed the photographic method for accurate measure-