

on logical grounds. For example, if two boys are measured and found to differ in height by $\frac{1}{4}$ in., and if two girls show exactly the same difference in their statures, Bartlett's test gave a probability of 50 per cent of inferring a highly significant sex difference in stature, and this whether the difference between the boys and the girls was great or small. I criticized the proposed test at the time and received from Bartlett the assurance that he would not think of using it in practice. It seemed that the matter was at an end.

Later, I understand that Dr. J. Neyman, sharing Bartlett's objection to Behrens' original solution of the problem, had advocated this proposal of Bartlett's. I could not, therefore, ignore its existence, and so did not say that no solution alternative to Behrens' had been put forward, but only that no tolerable alternative solution had so far been advanced, since the only alternative then available appeared to be manifestly inapplicable to real problems.

I am quite aware that Bartlett, following Neyman, feels bound to identify the populations of samples envisaged in tests of significance with those generated by repeated sampling of a fixed hypothetical population, and I do not expect him to change his opinion, although it appears to me to be logically fallacious. What I commented on, in view of the great confidence with which criticisms of Behrens' solution had been launched, was the long delay in putting forward an alternative solution satisfactory to the Neyman-Bartlett point of view with which that of Behrens could be compared. The fact that Bartlett can now announce a new solution by B. L. Welch which "appears to be exact, at least in the sense . . ." leaves us still some way to go before the two next necessary steps, namely, an examination of the logical basis of the new solution, and the numerical comparison of its consequences with the tables available for that of Dr. Behrens.

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Oct. 18.

¹ Bartlett, M. S., *Nature*, 158, 521 (1946).

² Bartlett, M. S., *Proc. Camb. Phil. Soc.*, 32, 560 (1936).

The Rutherford Papers in the Library of the Cavendish Laboratory

THIS material relating to the late Lord Rutherford was generously presented to the Cavendish Laboratory by Lady Rutherford in 1939, and is preserved in the Library. It has now been classified, and is of such great biographical and historical interest that we are giving a brief account of it here. It covers Rutherford's scientific career from his first research papers on "The Magnetisation of Iron by High-Frequency Discharges" (*Trans. N.Z. Institute*, 1894) to his last contribution in *Nature* of August, 1937 on "The Search for the Isotopes of Hydrogen and Helium of Mass 3".

One set of letters represents correspondence over many years with scientific men such as B. B. Boltwood, N. Bohr, W. H. Bragg, H. Geiger, O. Hahn, S. Meyer, F. Soddy, Madame Curie, H. Moseley and J. J. Thomson. They afford a fascinating study of the development of radioactivity and nuclear physics, and are interesting because they reveal the way these men were thinking at the time the letters were written. In another set there are letters from his pupils, such as J. D. Cockcroft, J. Chadwick, H. Robinson and

P. Kapitza, and other letters which he kept for their especial interest.

Among the biographical material are his letter of application and testimonials for the chair at McGill, and correspondence about the Manchester and Cavendish appointments. There is also a short autobiographical note written in 1930, and some of his "Lists of Projected Researches" which he drew up each year.

There are his manuscript sheets of "Radioactive Substances" and the "Radiations from Radioactive Substances", his notes for his Royal Institution lectures between 1921 and 1937 and many popular lectures and addresses. The collection also includes many of his experimental notebooks. Newspaper cuttings cover the whole of his career from 1897 to 1937. Among the items of historical interest one deserves special mention—J. J. Thomson's original letter accepting Rutherford as a research student in the Cavendish.

Future historians of science will find in the collection a rich mine of information, not only about Rutherford himself but also about many famous men of his time.

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The Illustrations of the Australopithecinae

IN *Nature* of June 29, p. 863, there appeared a very appreciative review by Prof. W. E. Le Gros Clark of the recent book on the South African fossil ape-men, by Dr. G. W. H. Schepers and myself. There is only one minor point on which I should wish to comment. The reviewer says: "The illustrations, too, while they give a good general impression of the bones, are not sufficiently accurate for comparative studies. For example, the text-figure of the *Paranthropus* talus, although stated to be natural size, actually represents the bone as somewhat larger than the cast". The reviewer has assumed that the discrepancy is due to the illustrations being inaccurate. Here he is in error. All the drawings of teeth and bones are, I think, accurate to a millimetre, and most to a fraction of a millimetre. The discrepancy complained of is due to the inaccuracy of the cast.

The ankle bone was found in 1943. It was war-time. Our preparator was in North Africa with the army. The discovery was so important that I thought I would attempt to make some casts with latex, and send them to some of the leading anatomists. Unfortunately, owing to shrinking of the latex, the casts, though they give an excellent idea of the shape, are a little smaller than the specimen. It was probably unwise to attempt what I could not do with complete success.

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Sept. 16.

I MUCH regret that, by my assumption that the cast of the talus which Dr. Broom so generously distributed was accurate, I was led to question the accuracy of certain of his illustrations of the Australopithecine material in his recent monograph. Dr. Broom's reference to the slight shrinkage of some of the latex casts (which were produced under exceptionally difficult war-time conditions) explains clearly how this misunderstanding arose. W. E. LE GROS CLARK