36,524 units, the unit being of the value 1·0011 British inches.

The reviewer confuses our historical treatment with our treatment of the fictitious chronology of the Egyptians and our treatment of the Jewish chronological forgeries. These are dealt with as separate considerations in our book. The two latter have been proved successively in every stage of evolution, together with the reasons prompting the various stages. They are not, therefore, brought into operation to show the fiction and forgery at a stage in our historical treatment when, as the reviewer alleges, we find " the records are not convenient." The real fact is that the proofs of the said fictions and forgeries are found to be inconvenient for the historical theory your reviewer has adopted.

It is also alleged that our proof of the fixed calendar year in early Egypt is a matter of assertion. An attempt is made to justify this by a misrepresentation. The reviewer selects what he deems to be an exception to a general rule established in the first chapter of the book, and advances this alleged exception as typical of the application of the general rule. Other authorities have already recognised the importance of the data establishing this general rule—as graphically collected on our Plate IX., as proving the fixed year in Egypt. This element is the real disturbing feature of the book to your reviewer, and while it is a remotely secondary feature of the book itself, it is made almost the entire point of criticism.

The whole range of the reviewer's criticism is entirely covered and satisfied by the graphical analyses of our Plates IX., XVI., and XVII. An unbiassed critic, whether an Egyptologist or not, can really satisfy himself, by the examination of these three plates, as to which statements, the reviewer's or our own, " belong to the assertionist class." I am content to let the whole construction of our work rest upon these three plates as a definite basis, if for no other reason than that your reviewer has summarily dismissed all the other really essential features of the work in the last six lines of his criticism.

I would emphasise, in conclusion, that our work throughout has been based on the very trustworthy archæological and metrological *facts* of Sir Flinders Petrie, but that our co-ordination of these and other related *facts* has compelled us to reject his elaborate Egyptological *theories*. Unfortunately, your reviewer evidently considers a thesis to be " devoted to confusing the public mind " if it fails to accord with the *theories* of the Petrie school of Egyptology.

D. DAVIDSON.

47 Park Square, Leeds,
　November 5.

THE review referred to the physical statements, which were suitable because they could be dealt with on ground familiar to the readers of NATURE. They were not " remotely secondary," but are put in the forefront of the volume, in the first 64 pages, and are referred to as a basis for other assertions. The assumed curvature of the casing of the pyramid is contradicted by the mark of the edge of the casing, which is now exposed at the north-east corner ; it was straight within an inch. The length of the sides is asserted to have been 9141 inches, and this involves disregarding the sockets, and adding 10 inches to the longest socket side. The intricate assertions about chronology could not be discussed in a year of NATURE ; but it is a safe method in all treatment of complex matters to look at the product ; if that is physically impossible it is of no effect to argue about the detail. Now the proposed contemporaneousness of the

Dynasties XII. and XIII., and the blank left between 1477 and 1216 B.C., are impossibilities in any view held by any scholar familiar with the monuments. Such a sample, of fundamental importance, relieves us from discussing how such results are reached. All that a discussion could prove would be the untrustworthiness of its material or method. There are well-known equations proving that $a = 2a$, but they do not convince.　　　THE REVIEWER.

Spectrum Observations on the Copper Arc.

DURING some work in this laboratory with the copper arc, certain pole effects were observed. The arc was formed by two rods of pure copper, 4 mm. in diameter. The length of the arc was 6 mm. and the current strength 3 amp. on a 220-volt circuit. An image of the arc was projected on to the slit of a Hilger quartz spectrograph (size E.1), the arc being in line with the slit.

Above λ2800, practically no effects were observed, but below this wave-length a number of lines showed a change of intensity between the centre of the arc and the two poles. Lines at the positive pole were more intense than at the negative pole, while a few lines were seen in the positive pole only. Table I. was drawn up according to the notification of Merrill (*Astro. Jour.*, v. 56, p. 475).

TABLE I.

λ.	Group.	λ.	Group.	λ.	Group.
2824·378	I	2276·244	3	2192·236	3
2544·85	5	2263·09	I	2189·599	4
2489·659	4	2246·984	3	2181·68	I
2442·625	I	2242·599	4	2179·37	3
2406·661	I	2230·071	I	2148·93	4
2403·327	5	2228·845	4	2135·92	4
2400·102	3	2227·74	I	2125·978	5
2369·877	3	2218·079	3	2122·916	5
2303·109	2	2210·240	4	2112·023	4
2294·353	4	2199·65	2		

Group (1) slight observable increase, (2) small increase, (3) considerable increase (about twice), (4) great increase, (5) very great increase.

The following lines showed a greater reversal towards the negative pole : 2293·832, 2263·09, 2230·071, 2227·74, 2225·665, 2215·65, 2214·56, 2199·65, 2181·68, 2178·91.

Among the lines found by Shenstone (NATURE, v. 114, p. 501 (No. 2866)) in an 8-volt copper arc, 2293·832 was the only line showing an appreciable change of intensity. The wave-lengths given above are Hasbach's as given in " Handbuch der Spectroscopie " (Kayser and Konen), vol. 7. Basing a Hartmann formula on the lines 2148·93, 2112·023, and 2054·88 (Hasbach's Values), the wave-lengths of the following four lines were interpolated : 2138·49 (Hasbach, 2138·44 ; Huppers (" Handbuch der Spectroscopie," Kayser and Konen, vol. 7), 2138·54) ; 2105·03 ; 2104·70 (Hasbach gives one line at 2104·717) ; 2079·53 (Pina, *loc. cit.*, 2079·47). The line given by Hasbach at 2085·22 was not found. The dispersion of the instrument in this region is 0·7 mm. per angstrom.　　　F. SIMEON.
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