In my Lemma 4, I have in fact reduced the condition that A be a division algebra from a condition that a quartic form in sixteen variables be not a null form to an equivalent condition on a quadratic form in only six variables. It is the application of this far simpler condition that has enabled me to prove the existence of non-cyclic algebras.

I have shown in the above that among the algebras considered by Brauer there exist non-cyclic division algebras and also algebras not division algebras. There remains the question as to whether any of the algebras of Brauer are cyclic division algebras. I have recently proved* that the algebra $A = B \times C$ over $R(u, v)$, where we replace u by $-2u^3$, take a to be a rational number which is a sum of two squares and not a square, and take $b = -1$, is a cyclic normal division algebra. This is one of the algebras of Brauer when we pass to a new basis of B by taking i to be replaced by $u^{-1}i$ whose square is $-2u$, and then replace u by the equivalent indeterminate $-2u$.

I have therefore proved the existence of cyclic and non-cyclic division algebras among the algebras considered by Brauer as well as the existence of algebras not division algebras. I have also given, in Lemma 4, a necessary and sufficient condition that a Brauer algebra be a division algebra.

THE UNIVERSITY OF CHICAGO

§ A recent communication from Brauer verifies this conjecture. Brauer used "*Zahl in K*" to mean rational number as opposed to non-constant function of u and v. With this interpretation, his work is correct, but it does not extend to the general case considered here. The difficulty was thus one of the interpretation of language, rather than a mathematical error. [Note added May 10, 1932.]

* This Bulletin, October, 1931, pp. 727–730.

ERRATUM

On page 186 of the March issue of this Bulletin (vol. 38, No. 3), in line 3 from the foot of the page, condition (2) should read

$$\sum n \left|\Delta^2 a_n\right| \text{ instead of } \sum a_n \left|\Delta^2 a_n\right|.$$

C. N. MOORE