CORRECTION TO "A CONSTRUCTION OF SIMPLE PRINCIPAL RIGHT IDEAL DOMAINS"

P. M. COHN

The proof of Lemma 2 is invalid, since $\delta$ is not defined on $K^{[a]}$. When $\alpha$ is surjective, the proof is correct (and the remark preceding Lemma 2 is not needed). The lemma is applied in the proof of Theorem 4 to show that if $d, f$ are monic right invariant of degrees $r, n$ respectively, then $f' = d^n a$ for some $a \in K^{[a]}$ and this is used to show that $f = d^n$. Here is a direct proof.

The hypothesis of Theorem 4 may be simplified by assuming that no power of $\alpha$ is inner. Let us call $f \in R$ right $K$-invariant if for each $c \in K$ there exists $c'$ such that $cf = fc'$; it is clear by comparing highest terms that $c' = c^a a \in K$, where $n = \deg f$.

Let $f$ be monic right $K$-invariant of degree $n$, and choose $d$ to be monic right $K$-invariant of least positive degree $r$. We have $f = dq + s$, where $\deg s < \deg d$. Now for any $c \in K$, $c(dq + s) = (dq + s)c^a = dc^aq + cs$,

hence

$$d(qc^a - c^aq) = cs - sc^a.$$  

The right-hand side has lower degree than $d$, hence both sides are 0 and $cs = sc^a$. By the minimality of $\deg d$ we have $s \in K$, but no power of $\alpha$ is inner, so $s = 0$ and $f = dq$. Now $q$ is again right $K$-invariant, and an induction on $\deg f$ shows that $f = d^n$. In particular, this applies for every monic right invariant element $f$, and Theorem 4 follows.

In Theorem 5 the hypothesis on $\alpha$ may also be replaced by the simpler hypothesis that no power of $\alpha$ is inner.

REFERENCES


DEPARTMENT OF MATHEMATICS, BEDFORD COLLEGE, REGENT'S PARK, LONDON NW1 4NS, ENGLAND

Received by the editors February 21, 1979.

AMS (MOS) subject classifications (1970). Primary 16A04, 16A40; Secondary 16A08, 16A72.