CORRECTION TO "THE STEFAN PROBLEM IN SEVERAL SPACE VARIABLES"

BY

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The paper appeared in this Journal, **133** (1968), 51–87. We wish here to correct a few errors.

1. p. 59. The sentence beginning with "It then converges" on line 5 from the bottom is unjustified and, in any case, should be omitted. The assertion in the last sentence of this page is still true. In fact, for almost any point (x, t) of the set A where $u=0$ we have: $v_m(x, t) \to 0$. This readily implies:

$$a(0-0) \leqq \liminf a_m(v_m(x, t)) \leqq \limsup a_m(v_m(x, t)) \leqq a(0+0).$$

Since also $a_m(v_m) \rightharpoonup \beta$ on A, it easily follows that $a(0-0) \leqq \beta(x, t) \leqq a(0+0)$ a.e. on A.

2. p. 60. The second sentence from the top is erroneous. However, the assertion $\delta(x, t)=c(x, u(x, t))$ a.e. on B (B the set where $u \neq 0$) is still valid since $\lim c_m(x, v_m(x, t))=c(x, u(x, t))$ for each $(x, t) \in B$ and since $c_m(x, v_m) \rightharpoonup \delta$.

3. p. 60. The argument leading from (2.24) to (2.25) is erroneous. Also the conclusion (2.27) is unjustified. But the assertion (2.20) of Corollary 1 is still true and can be proved as follows:

Since $a_m(v_m(x, t)) \to a(u(x, t))$ a.e. in Ω_T, it follows that for almost all $\sigma \in [0, T]$ $a_m(v_m(x, \sigma)) \to a(u(x, \sigma))$ a.e. in G. The formula preceding (2.20) (on p. 60) holds also if Ω_T is replaced by $G \times (\sigma, T)$, if $\int_0^T$ is replaced by $\int_\sigma^T$, and if $\int_{G(0)} a(h)$ is replaced by $\int_{G(\sigma)} a_m(v_m(x, \sigma))$. Taking $m \to \infty$ we get (2.20) for all $\sigma \in Z$, where $Z' \equiv [0, t]-Z$ has measure zero.

For $s \in Z'$, redefine $a(u(x, s))$ as the weak limit in $L^2(G)$ of a sequence $\{a(u(x, \sigma_m))\}$ where $\sigma_m \in Z$. Call this redefined function $\gamma(x, s)$. Now redefine $u(x, s)$ such that $a(u(x, s))=\gamma(x, s)$ if $\gamma(x, s)<-\alpha$ or if $\gamma(x, s)>0$, and $u(x, s)=0$ if $-\alpha \leqq \gamma(x, s) \leqq 0$. Since (2.20) holds for all $\sigma=\sigma_m$, it also holds for $\sigma=s$. This completes the proof of (2.20) (when u is redefined on the set $G \times Z'$).

Since (2.26) is clearly valid, the proof of (2.21) remains unchanged.

4. p. 63. The assertion, in the second paragraph, that the sequences $\{u_m\}$, $\{c(x, u_m)\}$ and $\{c(x, u_m)u_m\}$ are a.e. convergent is unjustified. Therefore, what is constructed is not a weak solution in the sense of the definition of p. 54, but in some other weaker sense. (The uniqueness part of Theorem 4 is valid for weak solutions in the sense of the definition of p. 54.) This result, on the existence of a weak solution, is not used anywhere later on in the paper.

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