A CORRECTION TO A PREVIOUS PAPER

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1. **Introduction.** In a previous paper,[1] the author gave the following result (AC, Theorem 8.8):

A necessary and sufficient condition that the family $\{z(x)\}$ of functions of class $\mathfrak{P}_1$ on the bounded region G be compact with respect to weak convergence in $\mathfrak{P}_1$ on G is that the following two conditions hold:

(i) $\bar{D}_1(z, G)$ *is uniformly bounded;*

(ii) *there exists a non-negative convex function* $\varphi(r_1, \cdots, r_n)$ *with the property that*

$$\lim_{|r| \to \infty} |r|^{-1} \varphi(r_1, \cdots, r_n) = +\infty, \qquad |r|^2 = r_1^2 + \cdots + r_n^2,$$

and such that

$$\int_G \varphi[D_{x_1} z, \cdots, D_{x_n} z]\, dx$$

is uniformly bounded.

This result, in the generality stated, is false. However, it is possible to replace this result by other results which are sufficient for the applications which the author makes to the calculus of variations.

In this note, we shall use the notations and terminology of AC and shall assume that the reader is familiar with that paper. For purposes of clarity, however, we shall recall the definition of weak convergence in $\mathfrak{P}_1$ and a necessary and sufficient condition for compactness of a family with respect to weak convergence in $\mathfrak{P}_1$. One of the principal results of AC was that any of the spaces $\mathfrak{P}_\alpha$ (elements of which are classes of equivalent functions of class $\mathfrak{P}_\alpha$ on a bounded region G) are Banach spaces. Thus weak convergence in $\mathfrak{P}_\alpha$ is already defined in terms of that in a Banach space. A necessary and sufficient condition that a sequence $\{z_p(x)\}$ converge weakly on G to z in $\mathfrak{P}_\alpha$ is that $z_p \to z$ and $D_{x_i} z_p \to D_{x_i} z$ weakly in L_α on G $(i = 1, \cdots, n)$. The following necessary and sufficient condition for compactness with respect to weak convergence on a general bounded region G has been proved in AC.

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[1] *Functions of several variables and absolute continuity*, II, Duke Mathematical Journal, vol. 6(1940), pp. 187–215. Part I of this paper by J. W. Calkin appeared in the same issue of this journal, pp. 170–186. We shall hereafter refer to the two parts as one paper and shall denote it by the letters AC.