

ters 24, 786 (1970)].

<sup>3</sup>F. Bulos *et al.*, Phys. Rev. Letters 22, 490 (1969); G. McClellan *et al.*, Phys. Rev. Letters 22, 377 (1969); D. Caldwell *et al.*, Phys. Rev. Letters 23, 1256 (1969); A. M. Boyarski *et al.*, Phys. Rev. Letters 23, 1343 (1969), and references therein.

<sup>4</sup>H. R. Collard, L. R. B. Elton, and R. Hofstadter, in Landolt-Bornstein: Numerical Data and Functional Relationships in Science and Technology (Springer, Berlin, 1967), New Series, Group I, Vol. 2.

<sup>5</sup>R. J. Glauber and G. Matthiae, Istituto Superiore di Sanità, Roma, Report No. 67/16 (unpublished).

<sup>6</sup>G. v. Bochmann, B. Margolis, and C. L. Tang, Phys. Letters 30B, 254 (1969).

<sup>7</sup>H.-J. Behrend, F. Lobkowicz, E. H. Thorndike, and A. A. Wehmann, Phys. Rev. Letters 24, 336 (1970).

<sup>8</sup>J. Weber, thesis, DESY, 1969 (unpublished).

<sup>9</sup>J. S. Trefil, Nucl. Phys. B11, 330 (1969).

<sup>10</sup>J. D. Jackson, Nuovo Cimento 34, 1644 (1964), with

$$r(m) = \frac{1}{\pi} \frac{m_\rho \Gamma(m)}{(m_\rho^2 - m^2)^2 + m_\rho^2 \Gamma^2(m)},$$

$$\Gamma(m) = \frac{m_\rho}{m} \left( \frac{(m/2)^2 - m_\pi^2}{(m_\rho/2)^2 - m_\pi^2} \right)^{3/2} \Gamma_0.$$

<sup>11</sup>M. Ross and L. Stodolsky, Phys. Rev. 149, 1172 (1966); G. Kramer and J. L. Uretsky, Phys. Rev. 181, 1918 (1969).

<sup>12</sup>P. Söding, Phys. Letters 19, 702 (1966), with  $I(m) = (D/2m)(m^2 - m_\rho^2)/[(m_\rho^2 - m^2)^2 + m_\rho^2 \Gamma^2(m)]$ ,  $D = \text{const.}$

<sup>13</sup>P. E. Hodgson, The Optical Model of Elastic Scattering (Oxford Univ., Oxford, England, 1963).

<sup>14</sup>D. V. Bugg *et al.*, Phys. Rev. 146, 980 (1966); J. Engler *et al.*, Phys. Letters 27B, 599 (1968); K. J. Foley *et al.*, Phys. Rev. Letters 19, 857 (1967); G. Bellettini *et al.*, Phys. Letters 14, 164 (1965); E. Parker, University of Michigan Report No. 03028-3-T, 1970 (unpublished). The earlier data of V. S. Pantuev and M. N. Khachaturyan, Zh. Eksperim. i Teor. Fiz. 42, 909 (1962) [Soviet Phys. JETP 15, 626 (1962)], are inconsistent with all other results and have not been included in Table II.

<sup>15</sup>We have also calculated the total absorptive  $\pi^-$ ,  $K^-$ ,  $\bar{p}$  cross sections on the nucleus at  $40 \text{ GeV}/c$ . Our results for  $A > 27$  are  $\approx 6\%$  higher than the values of J. Allaby *et al.* (We thank Professor A. N. Diddens for communications.) This difference can perhaps be explained by inelastic shadowing effects at extremely high energies. (See J. Pumplin and M. Ross, Phys. Rev. Letters 21, 1778 (1968); G. Alberi and L. Bertocchi, Nuovo Cimento 61A, 203 (1969).)

<sup>16</sup>Using our radii, we have reanalyzed the preliminary data of  $\varphi$  production on nuclei [U. Becker *et al.*, DESY Report No. F31/2, 1968 (unpublished).] We obtain these preliminary results:  $\beta = 0$ ,  $\sigma_{\varphi N} = 16.2 \pm 3.0 \text{ mb}$ ;  $\beta = -0.2$ ,  $\sigma_{\varphi N} = 11.3 \pm 2.5 \text{ mb}$ ;  $\beta = +0.2$ ,  $\sigma_{\varphi N} = 20 \pm 4.0 \text{ mb}$ , all with  $\xi = 0$ . We stress the extreme preliminary nature of these results. A 20-element, high-statistics experiment, including measurements of  $\beta$ ,  $R(A)$ ,  $\xi$ ,  $f_i$ , and background, has not yet been finished. The difference of  $\sigma_{\varphi N}$  by one standard deviation from the old value is due to the difference of radii used in the analysis.

## ERRATUM

### TOTAL PHOTOABSORPTION CROSS SECTIONS UP TO 18 GeV AND THE NATURE OF PHOTON INTERACTIONS. D. O. Caldwell, V. B. Elings, W. P. Hesse, G. E. Jahn, R. J. Morrison, F. V. Murphy, and D. E. Yount [Phys. Rev. Letters 23, 1256 (1969)].

On page 1258, Eq. (1), the denominator in the right-hand side should read  $d\sigma(\gamma p \rightarrow \rho P)/d\sigma_{t=0}$ .

On page 1259, left column, lines 9 and 33 read "••• $\rho$ -nucleon coupling•••" and should be changed to read "••• $\gamma$ - $\rho$  coupling•••".