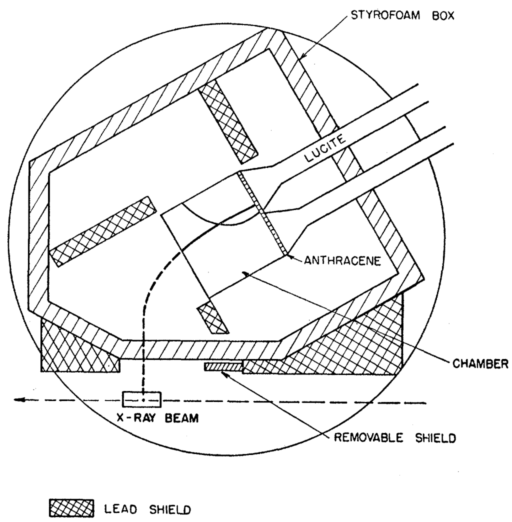

FIG. 1. Schematic plan view of the cloud chamber and scintillation counter—the large circle is the outer edge of the magnet coil.

of a number of possible effects has convinced us that there is no appreciable bias in the sample thus obtained. Of the 830 tracks, 280 satisfied these criteria.

The momentum of each track was obtained from coordinate measurements on the photographic film, plus geometric measurements on the reprojected image, taking into account the corrections for conical projection, gas motion during expansion, radial component of the magnetic field, and variation of the field along the track. The initial energy was then obtained by adding to the observed energy the collision loss of the electron in the Lucite and anthracene.

We compare our results with the energy spectrum which has been calculated from the direct-interaction theory of the decay of a muon into an electron and two neutrinos.[1] The spectrum, neglecting some small terms, may be written

$$P(E)dE=\frac{4E^2}{W^4}\left[3(W-E)+2\rho\left(\frac{4}{3}E-W\right)\right]dE,$$

where W is the maximum possible electron energy and ρ is a parameter which could have any value from 0 to 1 depending on the nature of the interaction assumed. To take account of the radiation loss of electrons in the Lucite plus anthracene (the mean path length was 0.069 radiation length), we have integrated over this spectrum with a radiation-loss distribution function.[2] This "smeared-out" set of spectra should then be directly comparable with the experimental spectrum, and indeed a good fit proves to be possible.

The value of ρ and the corresponding standard error (which includes the uncertainties in W and in individual momentum estimates) are found by the method of maximum likelihood.[3] Using the new value of the muon mass,[4] $m_\mu=207.0\pm0.6m_e$, we find $\rho=0.50\pm0.12$; that is, the spectrum does not go to zero at the end point. This agrees with Bramson, Seifert, and Havens,[5] whose result, when corrected for m_μ, is 0.48 ± 0.13.

Previous results,[6-8] when corrected for the new meson mass (and, in references 6 and 7, for radiation loss) appear to be consistent, within their statistical and estimated errors, with the value reported here.

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† Now at Ecole Nationale Supérieure des Télécommunications, Paris, France.

[1] Tiomno, Wheeler, and Rau, Revs. Modern Phys. **21**, 144 (1949); L. Michel, Proc. Phys. Soc. **A63**, 514 (1950).

[2] L. Eyges, Phys. Rev. **76**, 264 (1949).

[3] H. Cramèr, *Mathematical Methods of Statistics* (Princeton University Press, Princeton, 1951), p. 498. We have also computed ρ from the first four moments of the experimental distribution, and we find $\rho=0.49$, 0.47, 0.51, 0.52. The agreement of these results among themselves indicates that our sample is consistent with the assumed shape of the theoretical curve.

[4] Smith, Birnbaum, and Barkas, Phys. Rev. **91**, 765 (1953); G. Ascoli, Phys. Rev. **90**, 1079 (1953); Lederman, Booth, Byfield, and Kessler, Phys. Rev. **83**, 685 (1951). The latter measurement depended on the pion mass, and therefore now agrees with the former two.

[5] Bramson, Seifert, and Havens, Phys. Rev. **88**, 304 (1952).

[6] A. Lagarrigue and C. Peyrou, J. phys. **12**, 848 (1951); A. Lagarrigue, Compt. rend. **234**, 2060 (1952).

[7] Sagane, Gardner, and Hubbard, Phys. Rev. **82**, 557 (1951).

[8] H. W. Hubbard, thesis, University of California, 1952 (unpublished).

Errata

Unusual $\pi-\mu$ Decays in Photographic Emulsions, W. F. FRY [Phys. Rev. **86**, 418 (1952); **91**, 130 (1953)]. Because of an oversight, a reference to the work of Ioffe and Rudick[1] concerning the γ-ray emission from $\pi-\mu$ decays was not included in these publications. The results of the calculations of Ioffe and Rudick are in general agreement with the experimental observations.

[1] B. Ioffe and A. Rudick, Doklady Akad. Nauk. S.S.S.R. **82**, No. 3, 359 (1952).

Scintillation Study of As^{77} and Br^{77}, M. E. BUNKER, R. J. PRESTWOOD, AND J. W. STARNER [Phys. Rev. **91**, 1021 (1953)]. The third line in the second column on page 1021 should read " . . . a discriminator potential of 6 volts (~26 kev) is much too broad. . . ." The numeral 6 is missing from the printed text.

Phase-Shift Analysis of High-Energy *p-p* Scattering Experiments, A. GARREN [Phys. Rev. **92**, 213 (1953)]. To fit the experimental data, the value of $[\eta_A\eta_B]^{\frac{1}{2}}$ quoted in this Letter should be $\pm0.30\pm0.08$ rather than 0.40 ± 0.12. (Also, the column labeled η in Table I should have been labeled $-\eta$.) The phase shifts consistent with this value are shown in the accompanying table. Correspondingly, the shaded area in Fig. 1 should be a little lower on the diagram.

TABLE I. Some phase shifts (in degrees) at 213 Mev consistent with isotropy, $\sigma(\theta)=4.97$ mb/sterad, $\eta=-0.30\pm0.08$.

δ_1^2	δ_1^0	δ_1^1	δ_0^0	$-\eta$
−5	70	−4.1	36	0.237
−5	80	−0.2	31	0.256
−5	90	5.1	28	0.267
−5	95	10.1	23	0.275
−5	95	16.4	5	0.297
−10	40	−6.1	55	0.251
−10	50	−5.4	46	0.340
−10	−10	29.8	36	0.249
−10	0	36.7	14	0.339
−15	30	−3.2	46	0.261
−15	35	−3.6	39	0.327
−20	20	1.0	49	0.235
−20	30	−0.6	42	0.387
−25	0	13.9	27	0.287
−25	10	7.3	33	0.256
−25	20	3.8	30	0.368