and 8mg/cm^2 thick, and placed at the center of this chamber, Stereoscopic photographs were taken by using two vertical mirrors. The magnetic field was about 500 oersted. The aim of the present experiment was to ascertain the existence of positive particles accompanying the beta-decay of P^{32}, on which Sizoo (1940), Groetzinger (1946), Chao (1947), Rogers (1948), and Scott (1949) have already reported. Many cautions were paid in analysing the Wilson chamber photographs, since tracks caused by negative particles moving towards the source might be mistaken for those of positive particles. To examine the reliability of the analysis of tracks, the following two ways were undertaken. (a) $H\rho$-distributions of negative tracks were plotted and compared with the known results. (b) The so called fictitious and concentric source spot method developed by Spaa and others in 1950 was applied to ascertain whether the positive tracks truely represented the positive particles or not.

The results obtained are listed in the following table,

TABLE I

Number of photographs	Number of beta-ray tracks	Number of positive tracks	Ratio of positives to negatives
348	2093	6	0.3%

$H\rho$-values of those positive particles were 1675, 2024, 2240, 2420, 3220 and 3910 oersted-cm respectively. These tracks seemed apparently to be those of positrons because the track density was similar to that of electron. If they were positrons, they should be assigned to the positrons of the pairs produced by some mechanism, since the positron decay is energetically impossible for P^{32}. According to the theoretical discussion given recently by Nambu and Nakano (now in press), some P^{32} decay to the excited state of S^{32} and then this state transit to the ground state by nuclear pair creation, since the gamma-ray emission is forbidden in this case. They obtained the value e^+/e^- to be about 0.13%, which is roughly in agreement with our experimental result.

More detailed experiments are now in progress.

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3. Measurement of the Coefficient of Friction by the Photo-elastic Method. (II)

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In the previous report, we pointed out that we could observe directly the effect of the friction near the contact surface by the photo-elastic method. (This Bull. **23**, 15 and 53, (1950)) Now, in order to observe this effect of the friction on the elastic body, we made a preliminary experiment on the kinetic friction. Regarding the test pieces of photo-elasticity, we prepared two kinds of them, namely, (1). 25% gelatin-jelly, which was 16 cm. long, 11.2 cm. wide and 0.8 cm. thick, (2). 20% gelatin-jelly, being 16 cm. long, 16 cm. wide, and 0.8 cm. thick. In each of them a circular hole of 4.9 cm. in diameter was made and an ebonite disc of 5.8 cm. in diameter was fitted in it. The ebonite disc was rotated by a motor at the uniform speed of about 1 r.p.m.. The phenomena of kinetic friction caused by the rotation of the disc (rotating axis was horizontal) was observed. The coefficients of kinetic friction are tabulated as follows.

Table I. The coefficient of friction μ and the angle of friction α measured at the contact surfac. β is the angle between the vertical line and the radius of the disc at the measured point.

	β	τ	σ_y	$\mu=\lvert\tau/\sigma_y\rvert$	$\alpha=\tan^{-1}\mu$
Test piece (1)	0°	+0.270	−2.01	0.134	7.6°
	50°	+0.216	−1.48	0.146	8.3°
	90°	+0.330	−1.60	0.207	11.7°
Test piece (2)	0°	+0.471	−1.60	0.295	16.5°
	39.6°	+0.344	−1.22	0.281	15.9°

In addition, we found the change of stress before and after the rotation of the disc. But the change was fundamentally different according to the test piece (1) or (2). This may be due to the fact that pure phenomena of friction are not seen at the contact surface, owing to the inadequate form of the test pieces. Using the new test pieces of improved form, the experiments are being carried on.

4. Measurement of Ionic Mobility Using an Alpha-Ray Counter

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In the previous paper (this Bulletin, **21**, 61 (1950)), we described a method of measuring ionic mobilities by analysing the shape of the output pulse of an alpha-ray counter. And we also reported that the mobility of positive ions of air seems to change from 2.2 to 1.7 cm^2/sec/volt during the interval from 2.5×10^{-4} to 1×10^{-3} sec of the age of the ions.

In the present study, we have examined this transition more carefully. Making the more detailed theoretical analysis on the effect of the transition of ionic