characteristic of the bead slit system that the spectra moved slightly, mainly along the lines, as the rocket rolled. The effect appears in spectra F and G which show the spectrum displaced somewhat along the lines during exposure.

Preliminary examination of the spectra showed a progressive extension of the spectrum into the ultraviolet. At 25 km the spectrum was photographed to 2925A. Spectrum E taken at 34 km extended to 2650A and showed measurable blackening from approximately 2100 to 2260A which may be lost in reproduction. At 24 km therefore there was still enough ozone above to prevent recording the spectrum in the central region of the Hartley band of ozone, but transmission in the window between the Hartley band and the oxygen absorption at shorter wavelengths was observed. At 55 km sufficient ozone was passed through to permit photographing the spectrum throughout the Hartley band.

An analysis of the absorption features of the spectrum and a determination of the solar spectra intensity curve of the sun and of the details of the ozone distribution in the atmosphere are in progress.

Disintegration of $_{17}Cl^{34}$

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THE β^+-spectrum of $_{17}Cl^{34}$ has been already studied by Sagane[1] by means of a Wilson chamber and its maximum energy has been estimated to be 3 Mev. On the other hand, Brandt,[2] using the absorption method, has obtained a value of 2.5 Mev. Neither author indicated any presence of γ-rays from the disintegration of $_{17}Cl^{34}$.

In order to obtain more accurate data on the energy and disintegration process of $_{17}Cl^{34}$, I have undertaken the experiment with a Wilson chamber of longer effective time. The source of $_{17}Cl^{34}$ which is relatively thin is prepared by the bombardment of CuS by fast deuterons, according to the reaction

$$_{16}S^{33}(d, n)_{17}Cl^{34}.$$

As S^{33} is a rare sulphur isotope (only 0.74 percent), the activity of Cl^{34} is relatively weak. The active chlorine is precipitated in the form of AgCl; purification and precipitation are repeated, until the source shows no other activity than that of 33-minute period from $_{17}Cl^{34}$.

The experimental conditions are as follows: The cloud chamber is filled with air at an initial pressure of 1.9 atmos., the magnetic field being 900 gauss. The source is placed outside the chamber. After traversing a mica window of 12 mm diameter, (3.94 mg/cm²), the trajectories of the positrons are photographed stereoscopically.

In total, 2088 positron tracks with $H\rho > 3500$ gauss-cm ($E_\beta > 680$ kev) have been measured. Their energy distribution is shown in Fig. 1, curve A. The maximum energy of

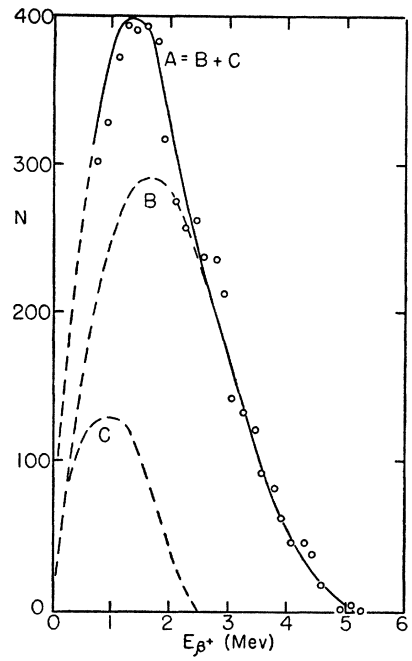

Fig. 1. Energy distribution of the positrons from Cl^{34}.

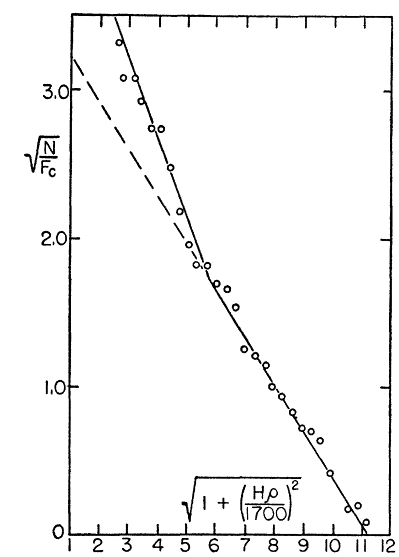

Fig. 2. Van der Held plot of the positron spectrum from Cl^{34}. The abscissa represents the energy, including the rest energy, of the positron in units of the rest energy of an electron.

β^+-spectrum is estimated to be 5.1 ± 0.3 Mev. In order to know whether the spectrum is simple or complex, analysis has been carried out according to Van der Held's method[3] which is a combination of the Fermi's and Konopinski-

Uhlenbeck's plots. It has the advantage that one can deduce the correct form of a single spectrum from the observed maximum energy. The result of analysis (Fig. 2) shows that the spectrum is not simple and is composed of at least 2 components with the maximum energy of 5.1 and 2.4 Mev, respectively. The ratio of their intensities is 4:1 (Fig. 1, curves *b* and *c*).

During the experiments, besides the positron tracks, about 200 recoil electrons have also been observed, which have their origin either in the mica window or in the glass wall of the chamber. The energy distribution (Fig. 3) indicates a maximum energy of 3.1 ± 0.3 Mev which corresponds to a γ-ray energy about 3.4 Mev.

In summary, $_{17}Cl^{34}$ emits a β^+-spectrum which is complex, composed probably of two components or more with maximum energies about 5.1 and 2.4 Mev, and emits besides, at least a γ-ray of energy about 3.4 Mev. According to the decay constant and the observed β^+ maximum energy, the disintegration of $_{17}Cl^{34}$ belongs to the forbidden transition (it lies on the second curve of the Sargent's diagram).

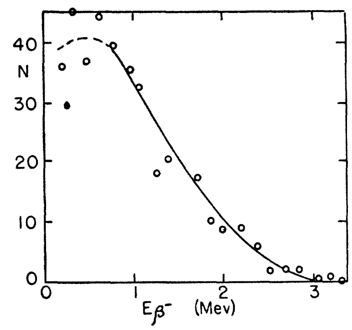

FIG. 3. Energy distribution of recoil electrons from gamma-rays from Cl^{34}.

[1] R. Sagane, Phys. Rev. **50**, 1141 (1936).
[2] H. Brandt, Zeits. f. Physik **108**, 726 (1938).
[3] E. F. M. Van der Held, Physica **8**, 196 (1941).