From the work now in progress on the solar spectrum from 7 to 13μ it is hoped that upper limits will be set to a series of other suspected atmospheric gases.

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Scintillation Spectra of As^{76}

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THE radiations of As^{76} have been investigated extensively in the past. Gamma-rays of approximately 0.57, 1.2, and 1.75 Mev have been reported by Siegbahn[1] and Wu, *et al.*,[2] while Miller and Curtiss[3] have found, in addition to the above, a gamma-ray at 2.15 Mev. The present investigation also indicates the presence of this fourth gamma-ray.

Radioactive arsenic was prepared by thermal neutron bombardment of part of the National Bureau of Standards sample No. 83a (>99.99 percent purity) of arsenic trioxide. The resulting activity had a half-life of 27.6±1 hours with no indication of the presence of any other period. Figure 1 shows the spectra obtained with a single one-inch sodium iodide crystal. The high energy peaks were obtained with a stronger source. The observed energies are listed in Table I.

Further investigation of the spectra was made with a Hofstadter type two-crystal spectrometer.[4] The energies so determined are also listed in Table I. All energy determinations were based on calibrations with Cs^{137} and Co^{60}. The two crystal spectra, Fig. 2, clearly indicates the presence of four gamma-rays.

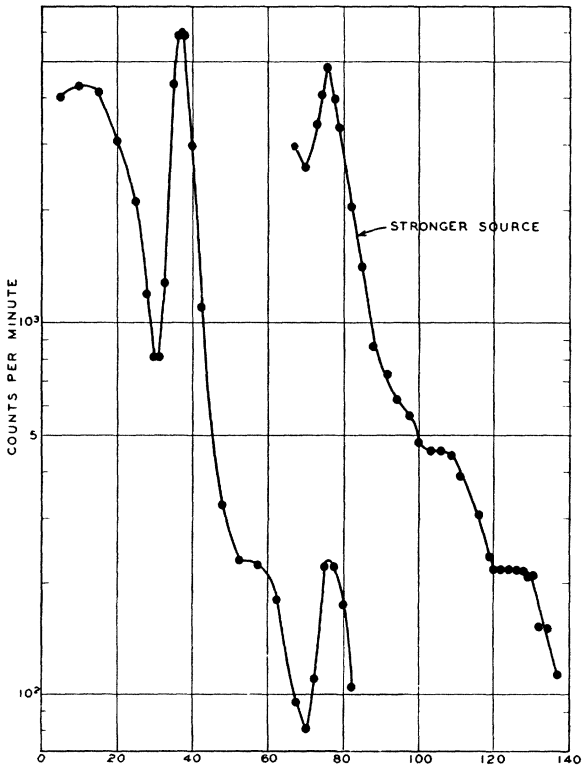

FIG. 1. Single crystal spectrum of As^{76}.

TABLE I. Gamma-rays from As^{76}.

Number	Energy from single crystal Mev	Energy from coincidences Mev
1	0.59	0.58
2	1.19	1.20
3	1.73	1.76
4	1.99	2.02

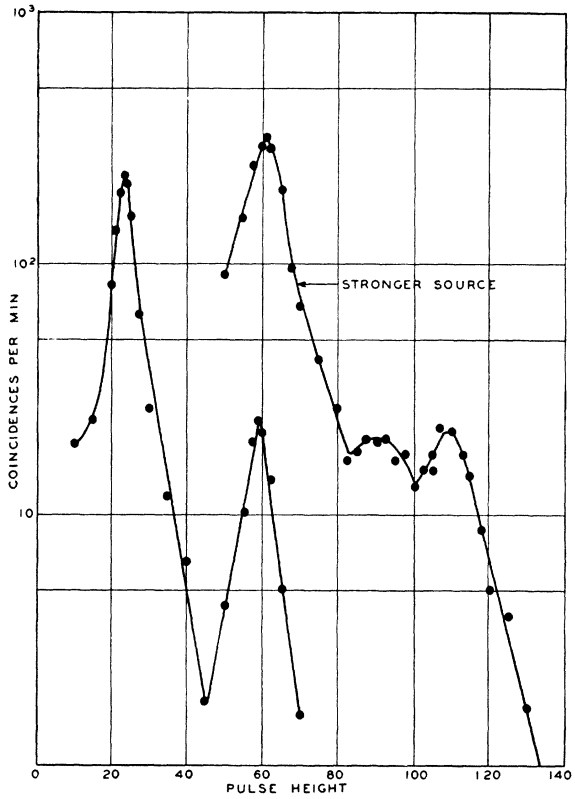

FIG. 2. Hofstadter-type two-crystal spectrum of As^{76}.

The two crystal curves were taken with the geometry described by the authors.[5] The gamma-ray energies were calculated from the observed recoil-electron energies together with the known degraded crystal geometry. If there is a cross-over gamma-ray of between 2.3 and 2.7 Mev as indicated by Myers and Wattenberg,[6] its intensity must be less than 10^{-4}

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Protons and the Aurora*

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AT the conference on Ionospheric Physics at Pennsylvania State College in July, D. F. Martyn presented a theory of magnetic storms and aurora which assigned a primary role to