We have come to the conclusion that these new lines, including the 'parasitic' ones, are essentially connected with the transition and cannot therefore be treated as if they were merely accidental.

A detailed account of this work is to be published shortly.

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[1] Mooy, H. H., *Comm. Leiden*, 213 *d*.

Spectrum of Singly Ionized Tellurium (TeII)

AN extensive investigation of the spectrum of tellurium as excited especially in condensed discharges through capillary tubes and in vacuum sparks and photographed in the region from λ 7000 A. to λ 400 A. has led me to an elucidation of the analysis of the higher spark spectra of the element[1]. A further study of the above data has now revealed the structure of the spectrum of singly ionized tellurium (TeII). The lines νν 86,096, 82,742, 78,447 are identified as forming the fundamental combination $5p^4S - 6S^4P$ which has enabled the extension of the scheme into the region of longer wave-lengths. It has been possible to set up a related system of doublet and quartet terms through the detection of several intercombination lines. The $5p^2D$ and ^2P intervals are found to be 2,734 cm.$^{-1}$ and 4,180 cm.$^{-1}$ respectively. The structure is analogous to that of SeII worked out by me previously[2].

Full details of the analysis are being prepared shortly.

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[1] *Proc. Roy. Soc.*, A, 133, 220 (1930); 158, 562 (1937).
[2] *Proc. Roy. Soc.*, A, 149, 56 (1935).

Achromatic Lenses employing Lithium Fluoride and Fused Quartz

THE introduction of lithium fluoride in synthetic crystal form (a technique developed by Dr. D. C. Stockbarger[1] and his colleagues at Massachusetts Institute of Technology) has been the means of filling a much-needed want in optical materials. In Great Britain little use appears to have been made of this material. Its chief characteristic is its high transparency from wave-length 1200 A. up to 20,000 A.; furthermore, its homogeneity is excellent (even in large crystals) and in this respect is superior to fluorite or quartz.

I made use of this material some two years ago when a vacuum spectrograph[2] was constructed employing lithium fluoride for the optical components. No deterioration of the surfaces of the prism or lenses of this instrument has been detected during this period.

More recently, I have completed calculations for the design of a lens system (combining lithium fluoride and fused quartz), which gives complete achromatism for a spectral range between λ 5461 A. and λ 2749 A. This fact would appear to be of considerable importance, for it means that a lens system designed for use in the ultra-violet part of the spectrum can be focused in visual light, and no change in focus will be necessary for the ultra-violet. Moreover, a band of ultra-violet wave-lengths may be employed with such a lens system instead of strictly monochromatic illumination, as has hitherto been necessary in the case of ultra-violet microscope lenses.

Lithium fluoride combined with fused quartz achromatic lenses might also be of value for the collimator and telescope lenses of spectrometers used in the ultra-violet region, spectrographs, and possibly photographic lenses.

The suitability of these two materials for achromatizing purposes is clearly indicated in the calculations. The spherical aberration and the offence against the sine condition can also be kept within the permissible tolerances.

The microscope lens system which has been designed is now under construction and the results will be published in due course.

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London, S.W.7. Jan. 31.

[1] Stockbarger, D. C., *J. Opt. Soc. America*, 15, 359 (1937).
[2] Johnson, B. K., *J. Sci. Instruments*, 15, 126 (1938).

Meteoric Falls in the U.S.S.R.

Meteorite at Kukschin, Nezhin, Tschernigow, Ukraine. This meteorite fell on June 11, 1938, at about 11^h U.T. (2^h p.m.). The place of the fall is 0·9 km. east of the village of Kukschin, Nezhin district, Tschernigow region (lat. 57° 03′ N., long. 31° 50′ E.), 25 km. north-west of the town Nezhin. The sky was quite cloudless; but no conspicuous optical phenomena were witnessed. Acoustic phenomena, resembling the roar of distant thunder or gunfire, were heard over an area of 12 km. radius. Their duration was on the average 8 sec. Three shepherds, G. Pivovar, I. Miroshnikov and I. Mosko, heard, moreover, a noise and whistle and had a glimpse of a grey or bluish body cutting itself into the ground a few metres from them; a cow fell to the earth at a distance of 4·5 m. About one hour later they took the meteorite out of the pit, 30 cm. deep, it had formed. Its top was 2 cm. below ground. The soil is here dried up owing to drought, but is normally swampy and covered with grass. The fallen meteorite, weighing 2,250 gm., of irregular shape, with smoothed angular contours, scattered the earth 5 cm. from the edges of the pit, mostly in the eastern direction.

The Geological Institute of the Ukraine Academy of Sciences, Kiev, was informed of the fall, and on June 29, Souchtchitzky, a scientific worker of the Institute, took the meteorite to Kiev. At the Institute, Pilipenko, analytical chemist, obtained the following results by analysis of the meteorite.

Composition		I Per cent	II Relative Numbers	III Relative Numbers	IV Per cent
SiO_2	..	44·40	12·48	39·80	39·96
FeO	..	40·04	86·86	46·79	46·23
Al_2O_3	..	2·21	0·23	0·52	1·75
MnO	..	0·003	0·04	0·02	0·053
Cr_2O_3	..	0·54	0·19	0·29	0·45
MgO	..	7·89	—	—	6·22
CaO	..	2·51	—	—	1·91
S	..	2·88	1·23	2·47	2·77
NiO	..	traces	13·60	3·20	1·85
TiO_2	..	„	0·12	0·05	0·018

The crust was taken off during the analysis (III, totalling 1·75 gm.). The inner substance of the