	Argon-tube.	*Helium-tube.*	
Yellow	Absent.	Brilliant.	W = 587·49. (the helium line, D_3)
Green	7 lines.	7 lines.	Equal in intensity.
Green-blue	5 lines.	5 lines.	,, ,,
	Absent.	Faint.	In helium only.
	Absent.	Brilliant.	,, ,,
Blue	Absent.	8 lines.	,, ,,
Blue-violet	3 lines, strong.	Barely visible, if indeed present at all.	
	2, fairly strong.	2, fairly strong.	Equal in intensity.
Violet	Absent.	Bright line.	In helium only.
	Absent.	4 bright lines.	
	Violet pair.	Violet pair.	Equal in intensity.
	Single line.	Single line.	,, ,,
	Triplet.	Triplet.	,, ,,
	Triplet.	Triplet.	,, ,,
	Pair.	Pair.	,, ,,

It is to be noticed that argon is present in the helium-tube, and by the use of two coils the spectra could be made of equal intensity. But there are sixteen easily visible lines present in the helium-tube only, of which one is the magnificent yellow, *and there are two red lines strong in argon and three violet lines strong in argon, but barely visible and doubtful in the helium-tube.* This would imply that atmospheric argon contains a gas absent from the argon in the helium-tube. It may be that this gas is the cause of the high density of argon, which would place its atomic weight higher than that of potassium.

It is idle to speculate on the properties of helium at such an early stage in the investigation; but I am now preparing fairly large quantities of the mixture, and hope to be able before long to give data respecting the density of the mixture, and to attempt the separation of argon from helium.

(Note added June 14.—It is now practically certain that the presence of so many of the argon lines in the helium spectrum must have been due to the accidental introduction of air. But there still are coincidences, chiefly in the red lines, which would justify the supposition that there is some constituent common to the two gases.)

II. "On the new Gas obtained from Uraninite. Preliminary Note." By J. NORMAN LOCKYER, C.B., F.R.S. Received April 25, 1895.

On the 28th of March, Professor Ramsay was so good as to send me a tube containing a new gas obtained by him from uraninite (clèveite), showing a line in the yellow which was stated to be of the

same wave-length as D_3, which I discovered in 1868. This line Dr. Frankland and myself shortly afterwards suggested might be a line of hydrogen, not visible under laboratory conditions; but solar work subsequently showed that this view was untenable, although the gas which produced it was certainly associated with hydrogen.

Subsequently, other chromospheric lines were found to vary with the yellow line, and the hypothetical gas which gave rise to them was provisionally named "helium," to differentiate it from hydrogen.

It was therefore of great interest to me to learn whether the new gas was veritably that which was responsible for the solar phenomena in question, and I am anxious to express my best thanks to Professor Ramsay for sending the tube to enable me to form an opinion on this matter. Unfortunately, it had been used before I received it, and the glass was so blackened that the light was invisible in a spectroscope of sufficient dispersion to decide the question.

On March 29th therefore, as Professor Ramsay was absent from England, in order not to lose time, I determined to see whether the gas which had been obtained by chemical processes would not come over by heating *in vacuo*, after the manner described by me to the Society in 1879,* and Mr. L. Fletcher was kind enough to give me some particles of uraninite (bröggerite) to enable me to make the experiment.

This I did on March 30th, and it succeeded; the gas giving the yellow line came over, associated with hydrogen, in good quantity.

I have since obtained photographs of the spectrum of the gas, both in vacuum tubes while the Sprengel pump has been going, and at atmospheric pressure over mercury. To-day I limit myself to exhibiting two of these photographs.

One of the photographs exhibits a series of spectra taken during the action of the pump. The two lower spectra indicate the introduction of air by a leak after the capillary had cracked near one of the platinums, giving us on the same plate the banded and line spectrum of air. These prove that there was no air present in the tube when the fourth spectrum was taken. This photograph has not yet been finally reduced, but a preliminary examination has indicated that most of the lines are due to the structure spectrum of hydrogen, but not all of them.

Among the lines which cannot be referred to this origin are two respectively near λ 4471 and λ 4302, which have been observed in the chromosphere, 4471 being as important as D_3 itself, from the theoretical point of view, to students of Solar Physics.

Whilst spectrum No 4 was being photographed with the capillary tube end-on-wise, eye observations were made in another spectroscope directed sideways at it. I give from the Laboratory Note Book the

* 'Roy. Soc. Proc.,' vol. 29, p. 266.

observations I made while photograph No. 4 was being taken, to show that the yellow line was visible during the whole exposure.

Thursday, April 4th, 1895.

Plate F. Exposure 4.

Ten minutes' exposure.

4·42. Exposure started.
4·43. Yellow line brightening up considerably.
4·44. Suddenly as bright as hydrogen.
4.45. Yellow line double.
4·46. Comparison with D gives yellow line in position of D_3.
4.47. Pump much less full; 7 c.c. of gas collected. Yellow line much brighter.
4.48. Air-break introduced. Line still visible, but very faint. Hydrogen lines getting brighter and some double lines appearing in green.
4.48·5. Air-break and jar removed. Yellow line the only one seen, being as bright as C. Line in green the only other line visible.
4.50. Replaced jar. Yellow brightening and the other lines more refrangible, brightening with it.
4.51. Very bright. Steeple nearly full of gas.
4.52. End of exposure.

The lines which appear both in the photographs of the capillary tube and of the gas collected over mercury, are as follows. The lines indicated by an asterisk are near lines recorded in the chromosphere by Young or myself, or photographed during the eclipse of 1893.

Micrometer reading.	Wave-length (Rowland).
3·2495	4581*
·2917	4523*
·2981	4513*
·3234	4479
·3316	4469·5*
·4146	4368
·5740	4196*
·5884	4181
·5933	4177*
·6139	4156*
·6176	4152·5*
·6262	4144*
·6290	4141

With regard to the observations in the visual spectrum, I have not found the uraninite gas, as obtained and observed by my method, to

contain the argon lines as given by Mr. Crookes; nor, with the exception of the yellow line, do I get the special lines noted by him in the gas. (Four of these out of six seem possibly to be due to nitrogen.)

But I do get lines nearly coinciding with chromospheric lines discovered by me in 1868.

On November the 6th of that year, I suspected a line less refrangible than C, and so near it that when both were showing brilliantly the pair appeared double, like D in a spectroscope of moderate dispersive power.*

Later, I discovered another line at 6678·3 (Rowland), which was observed to vary with D_3. There is a line in this position, with the dispersion employed, in the spectrum of the new gas. This line has also been seen by Thalèn, as stated by Professor Cleve in a communication to the Paris Academy ('Comptes Rendus,' April 16th, p. 835), but the other lines given by him (with the possible exception of the one at 5016) have not been recorded by me.

Although I have, at present, been unable to make final comparisons with the chromospheric lines, the evidence so far obtained certainly lends great weight to the conclusion that the new gas is one effective in producing some of them, and it is suggested by the photographs that the structure lines of hydrogen may also be responsible for some of them.

I may state, under reserve, that I have already obtained evidence that the method I have indicated may ultimately provide us with other new gases, the lines of which are also associated with those of the chromosphere.

Messrs. Fowler, Baxandall, Shackleton, and Butler have assisted me in the various stages of the inquiry.

III. "*Acokanthera Schimperi:* its Natural History, Chemistry, and Pharmacology." By THOMAS R. FRASER, M.D., LL.D., F.R.S., Professor of Materia Medica in the University of Edinburgh; and JOSEPH TILLIE, M.D., F.R.S.E., Lecturer on Experimental Pharmacology in the University of Edinburgh. Received March 28, 1895.

(Abstract.)

Several years ago an opportunity was given to one of us to examine poisoned arrows and the poison used in smearing them, of the Wa Nyika tribe of East Africa. While the pharmacological action of this poison was found to have a close resemblance to that

* 'Phil. Trans.,' 1869, p. 428.