supposition that, as suggested by Lockyer and by Runge and Paschen, the helium from various sources is not quite homogeneous, but that different samples differ slightly in density. I think that these numbers point to a possible division into groups. The gas from bröggerite appears to have the density 2·18, that from samarskite 2·12, and that from fergusonite 2·14. But the evidence is slender. It is not impossible that the gas from clèveite is lighter; it is unfortunate that the sample of clèveite gas was lost; but its mixture with that from bröggerite weighs less than the gas from bröggerite alone.

It has not, I think, been noticed that the light emitted from a vacuum-tube containing clèveite gas has a richer orange-yellow shade than is shown by gas from bröggerite, samarskite, and fergusonite. This is doubtless due to a greater intensity of the red line; but there is another difference. The clèveite gas shows, in addition to the usual strong lines, a set of fairly strong lines between the very strong green, and the strong blue. These lines have never been observed in samples of gas from bröggerite, samarskite, or fergusonite, no matter how high or low the pressure in the tube, or the intensity of the discharge. But the difference of colour is so marked that it is easy, at a glance, to say whether any tube contains clèveite-helium, or helium from another mineral.

Taking the two lines of evidence together, they undoubtedly strengthen each other, and I am at present engaged in an attempt to fractionate the mixed gases from bröggerite, samarskite, and fergusonite into two or more portions.

Mention should perhaps be made, in conclusion, of Langlet's determination of the density of clèveite-helium ('Zeit. anorg. Chem.,' **10**, 287). The number he obtained, weighing in a globe of 100 c.c. capacity, was 2·00. His sample was examined spectroscopically, and appears to have been free from nitrogen and hydrogen. It is unlikely that he can have made an error of 1·3 milligrams in weighing, especially as he determined the density three separate times. It is not impossible, therefore, that he had under his hands gas much richer in some light constituent than it has been my fortune to fall in with. Whether this is the case or not, further research must show.

III. "On the Reflection of Röntgen Light from Polished Speculum-Metal Mirrors." By Lord Blythswood. Communicated by Lord Kelvin, F.R.S. Received March 13, 1896.

It has been generally supposed that the X rays cannot be reflected.

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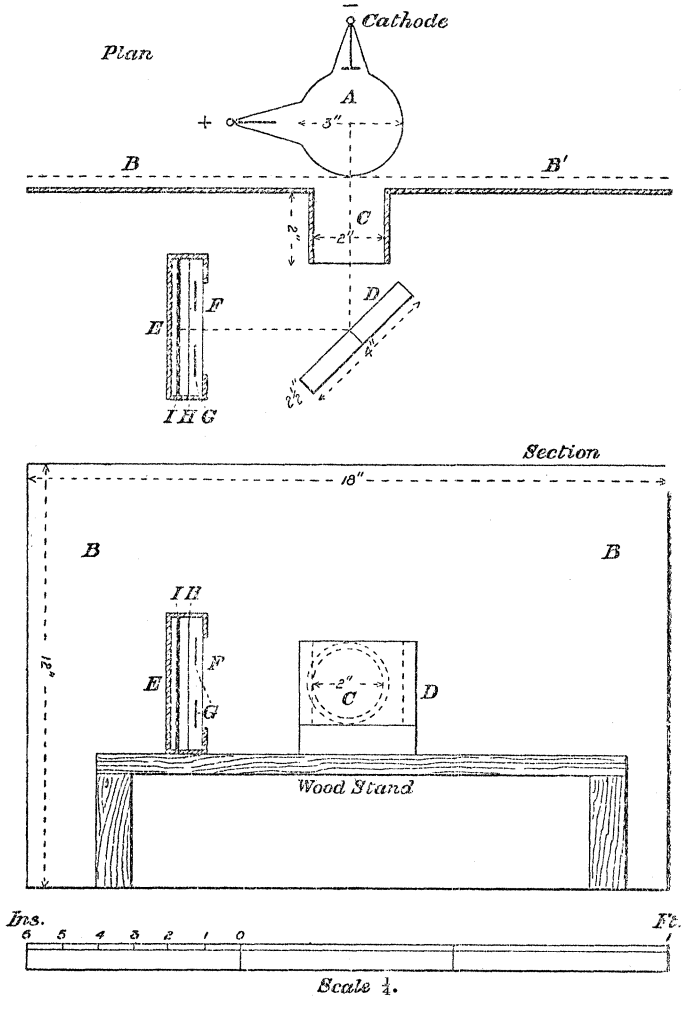

A, Vacuum tubes.
BB′, Lead plate, 18 in. × 12 in. ⅛ in. thick.
C, Hole 2 in. diameter. Pipes 2 in. diameter × ½ in.
D, Speculum-metal mirrors.
E, Zinc box, 4 in. × 4 in., 1 in. deep.
F, Aluminium window.
G, Objects.
H, Black cardboard.
I, Photographic plate.

Some experiments I have carried out in my laboratory at Blythswood induce me to believe that the X rays can be reflected.

I placed a vacuum-tube, A, behind a lead screen, BB, 18 in. × 12⅛ in. thick. The screen had a 2-in. hole in it with a 2-in. pipe attached; 4 in. from the vacuum-tube was placed a speculum-metal mirror, 4 in. × 2½, at an angle of 45° with the lead screen; 4 in. from the mirror was a light-tight zinc box, E, with aluminium window, F; inside came first the objects, G, stuck on to a black cardboard, H, then I, the photographic plate.

The following objects were photographed in about 20 minutes:—

1. Some brass clock wheels.
2. A screw-cutting gauge.
3. Two lead disks.
4. The mirrors, being two pieces of speculum-metal used by me to divide upon. In Photograph 4 the crack between the plate can just be seen in the positive, but in the negative it is quite clear.

I hope to confirm the above experiments immediately: the delay is caused by the vacuum-tubes having all broken down.

IV. "Note on Lord Blythswood's Paper." By Lord Kelvin, F.R.S. Received March 19, 1896.

Röntgen, in (7) and (8) of his original paper,* described experiments seeming to prove the X rays to be incapable of regular reflection. He pointed out that the result of his experiment in (8), seeming possibly due to regular reflection, might be explained otherwise. Communications to the French Academy of Sciences, by Imbert and Bertin-Sans (March 2, 'Comptes Rendus,' pp. 524, 525) and Battelli and Garbasso (March 9, 'Comptes Rendus,' p. 603) refer to experiments proving not regular reflection, as from a polished surface, but a "diffuse" reflection. This, as Sir George Stokes has suggested in letters which I have received from him in the last few days, might either be due, as indicated by MM. Imbert and Bertin-Sans, to the reflecting surface, though polished for ordinary light, being rugged for light of the exceedingly short wave-length which may be attributed with probability to the Röntgen X rays; or else to a sort of phosphorescence, or possibly fluorescence, with regard to X light, produced in the substance of the mirror. One, and only one, of the photographs described in Lord Blythswood's communication, seems possibly decisive in proving regular reflection from the polished speculum-metal which he used. I enclose a copy of it, which may be clearer than that which accompanies his paper. In this I see quite clearly a straight line, with its two ends next the letters A, B, which for brevity I shall call the line AB. The space for

* Translation in 'Nature,' January 23, 1896.