

respirators; but he informed me that his lungs were very strong. He was, however, good enough to accede to my request. Packing the respirator with greater care, I entered the den with Captain Shaw. I could hear him breathe long, slow inhalations; and after the lapse of seven minutes I heard him cough. In seven and a half minutes he had to quit the place, thus proving that his lungs were able to endure the irritation seven times as long as mine could bear it. I continued in the smoke with hardly any discomfort for sixteen minutes, and certainly could have remained in it much longer.

During this time I was in a condition to render very material assistance to a person in danger of suffocation.

The smoke-cap I wore was one made by Mr. Sinclair, which has a mouthpiece similar to that used in the inhalation of nitrous oxide. But, to show the care necessary in packing the respirator, it is only necessary to remark that, with the packing furnished to me by Mr. Sinclair, it was not possible for either myself or Mr. Cottrell to continue in a dense smoke for more than three minutes; and even these were minutes of laborious breathing. Flannel disks are employed in these respirators, but I cannot recommend them. Cotton-wool carefully moistened and teased is, in my opinion, much better.

It is always possible to associate fragments of lime with the respirator, thus, if necessary, intercepting a portion of the carbonic acid. But in most fires we have a more or less free circulation of air; and I venture to think that not in one case in a thousand of actual fires would the combination of smoke and carbonic acid be so noisome as it was in the experiments here described.

The Society then adjourned over the Whitsuntide Recess, to Thursday, June 11.

June 4, 1874.

The Annual Meeting for the election of Fellows was held this day.

JOSEPH DALTON HOOKER, C.B., President, in the Chair.

The Statutes relating to the election of Fellows having been read, Sir James Alderson and General Boileau were, with the consent of the Society, nominated Scrutators to assist the Secretaries in examining the Lists.

The votes of the Fellows present having been collected, the following candidates were declared duly elected into the Society:—

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Isaac Lowthian Bell, F.C.S.
 W. T. Blanford, F.G.S.
 Henry Bowman Brady, F.L.S.
 Thomas Lauder Brunton, M.D.,
 Sc.D.
 Prof. W. Kingdon Clifford, M.A.
 Augustus Wollaston Franks, M.A.
 Prof. Olaus Henrici, Ph.D.
 Prescott G. Hewett, F.R.C.S.

John Eliot Howard, F.L.S.
 Sir Henry Sumner Maine, LL.D.
 Edmund James Mills, D.Sc.
 Rev. Stephen Joseph Perry,
 F.R.A.S.
 Henry Wyldbore Rumsey, M.D.
 Alfred R. C. Selwyn, F.G.S.
 Charles William Wilson, Major
 R.E.

Thanks were given to the Scrutators.

June 11, 1874.

JOSEPH DALTON HOOKER, C.B., President, in the Chair.

Mr. William Thomas Blanford, Dr. Thomas Lauder Brunton, Professor W. Kingdon Clifford, Mr. Prescott G. Hewett, Mr. John Eliot Howard, Dr. Edmund James Mills, the Rev. Stephen Joseph Perry, and Major Charles William Wilson were admitted into the Society.

The Presents received were laid on the table, and thanks ordered for them.

The following Papers were read :—

- I. "Note on the Absorption-Spectra of Potassium and Sodium at low Temperatures." By H. E. ROSCOE, F.R.S., and ARTHUR SCHUSTER, Ph.D. Received April 30, 1874.

In order to obtain the absorption-spectrum afforded by the well-known green-coloured potassium vapour, pieces of the clean dry metal were sealed up in glass tubes filled with hydrogen, and one of these was then placed in front of the slit of a large Steinheil's spectroscopie furnished with two prisms having refracting angles of 45° and 60° . The magnifying-power of the telescope was 40, and was sufficient clearly to separate the D lines with one prism. A continuous spectrum from a lime-light was used, and that portion of a tube containing the bright metallic globule of potassium was gently heated until the green vapour made its appearance. A complicated absorption-spectrum was then seen, a set of bands (α) in the red coming out first; whilst after a few moments two other groups appeared on either side of the D lines, the group β (less refrangible) being not so dark as the group γ . These bands are all shaded off towards the red, and in general appearance resemble those of the iodine-spectrum. In order to assure ourselves that the bands are not caused by the presence of a trace of an oxide, tubes were prepared in