Notes they would hold him as legitimately excused. They would allow him now, he hoped to exhibit the results he had brought with him, and make some comments thereon, for the subject would necessarily produce an animated discussion, and he would then, with their permission, take up the subject after the recess, when he hoped to bring before them a more complete paper than he could possibly have done had he written one for the present meeting. There had always been a great deal of conflicting evidence as to the increased sensibility imparted to collodion by the introduction of bromides, and many men, standing high in the profession, had recorded their opinion that there was nothing gained by their introduction. One thing was, however, certain, that bromides had produced such a uniformity of action in collodion, that, even if they were to admit that, under the most favourable circumstances, a simply iodized collodion could be made to give results as rapid as one containing a bromide, still all must admit that their introduction had tended in no small degree to improve the productions of photography, for, whereas, an iodized collodion giving good results a few days after iodizing, would, at the end of a few weeks, be comparatively useless for rapid purposes, the introduction of a bromide would render it as useful at the end of as many months. He would now pass round the results of his experiments as far as he had gone, and he thought the value of bromides would be found very evident.

His *first experiment* was with two samples of collodion on one plate. Both were prepared about six months ago. One half of a plate was coated with collodion iodized with iodides of cadmium and ammonium, 3½ grains to the ounce. The other half with iodide of ammonium 4½ grains, bromide of cadmium 1 grain. It would be seen that the bromo-iodized half was clean and full of detail, whilst the simply iodized half was dirty and under-exposed. This experiment was made in a bath quite new, and nearly neutral, giving, with the collodion he usually employed, instantaneous results. There was no colour to indicate the liberation of free iodine in the simply iodized sample.

Experiment II.—One half of a plate was coated with a collodion bromo-iodized as follows:—Iodides of cadmium and ammonium 4½ grains, bromide of cadmium 2 grains. The other half with collodion iodized with iodide of potassium 3½ grains newly iodized. The bromo-iodized half was perfectly clear and brilliant, whilst on the iodized half there was the ghost of an image covered by fog. The experiment did not quite satisfy him, for the iodized collodion was altogether only 24 hours old, and, therefore, could not be in its best condition.

In *Experiment* III, he took the same iodized collodion as in the last for one half of the plate, and introduced 1½ grains of bromide of cadmium into a portion of the same collodion for the other half of the plate. This was sensitized in an old bath. Both halves indicated under-exposure, but the bromo-iodized half was much the best.

Experiment IV was a repetition of the last, but instead of using the instantaneous shutter employed for all the other, experiments he gave about 2 seconds. The bromo-iodized half was quite clear with the exposure about right, whilst the iodized half was partly fogged, but indicated under-exposure.

Experiment V was with iodide of ammonium 2½ grains, bromide of cadmium, 5 grains, for one half of the plate: bromide of cadmium, 5 grains, for the other half. It would be seen that where bromide was employed alone, there was but a faint picture, and that the introduction of 2½ grains of iodide had wonderfully improved the results.

It appeared, however, that where the bromide was present in large quantities, a corresponding amount of iodide was necessary for the best results, for it seemed that the excess of bromide had a tendency to rob the iodide of a portion of its creaminess. The point he wished to determine in his experiments was, how much bromide to use with the greatest advantage; he hoped to have more to say on this point when he resumed the subject after the recess. All the preceding results were produced by iron development: iron, 30 grains, with a very small quantity of acetic acid, not more than 10 minims to the ounce.

His next experiment was made with collodion iodized with iodide of potassium, 3½ grains, for one half of the plate; iodide of potassium, 3½ grains; bromide of cadmium, 1½ grains, for the other half; but developed with pyrogallic acid, 2 grains; acetic acid 10 minims, to 1 ounce of water. The bromo-iodized half gave a thin picture with plenty of half tone, whilst the iodized half had a complete reduction of silver all over of ruby red colour, which would indicate an alkaline condition of bath or over-exposure. Unfortunately, he had not this result with him, for on washing it after fixing, the whole film washed off. He was unprepared for this, for in all the other results with iron development he had taken no care whatever in the washing. It appeared, however, that the pyro exercised some influence upon the film, which made it unable to bear rough treatment. He thanked them for their patient attention to his imperfect remarks, and he hoped to go more completely into the question next season.

Mr. Harmer remarked that he had often observed a much greater tendency in the film to leave the glass when developed with pyro, than when developed with iron, and especially that it would not bear treatment with bi-chloride of mercury after development with pyro.

Mr. Wall had met with similar experience.

The Chairman said the use of bromides was a subject which had long engaged his attention, and some time before it had received much consideration from the photographic world he had come to some definite conclusions on the subject. It was necessary to preserve the different aspects of the subject quite distinct, and consider each part of it under its own most favourable conditions. In speaking then of the respective advantages of simply iodized, or of bromo-iodized collodion, it was necessary to have reference to the developer; and the question which arose was whether simply iodized collodion with pyrogallic acid development, or bromo-iodized collodion with iron development presented the greatest advantages. He thought experiment generally, and his own experience certainly, was in favour of the latter. Another point which had not, he thought, received sufficient attention, was the different effects produced by different bromides. His own conviction was, that a bromide with an alkaline base was much more efficient than the bromide of cadmium; a small proportion of the bromide of potassium, for instance, much more readily reduced over-intensity, and gave softness and half tone than a larger proportion of bromide of cadmium. The character of the pyroxyline was another important element in the consideration. Where a bromide was used he preferred a pyroxyline which tended to give an intense image when the collodion was simply iodized; the addition then of a small portion of bromide gave the maximum of advantages, in rapidity, cleanness, and delicacy, and in reducing the density which would be present when an iodide alone was used. The bromide of cadmium he had not found so efficient in this respect, and larger quantity was necessary. Another element to be considered was the character of the lens to be employed. The use of a lens of long focus reduced the intensity of the light, and had a tendency in like ratio to reduce the intensity of the resulting picture; whilst if a compound lens of short focus were used, the image was very brilliant and intense. It was clear that some modification in the collodion was necessary in these two cases, and the collodion which gave a sufficiently dense picture with a lens of long focus, would probably give a picture too intense with a lens of short focus, and this over-intensity might be reduced by the addition of a bromide. It must not be forgotten, however, that some samples of pyroxyline were of a character unsuited to the use of bromides, and that in such cases the best results were obtained by their omission. He mentioned these points to remind members that the question was one which required considering in all its aspects. The use of a bromide, for instance, was not always an advantage if pyrogallic acid development were used. When they came to iron development, however, the advantages of a bromide were beyond a question, both in sensitiveness and cleanness. The point at issue, however, seemed to be whether greater sensitiveness was obtained with a simply iodized collodion and pyrogallic acid development, or with a bromo-iodized collodion and iron development. He had no doubt himself that with a bromo-iodized collodion and iron development, more sensibility could be obtained than with the most rapid simple iodide and pyro. Still there were interesting points to settle, and as he understood Mr. Blanchard, he was not satisfied that as yet he had given the iodides alone a fair test.

Mr. Blanchard: precisely.

The Chairman, continued, the iodized collodion which gave fog was probably too newly iodized. It should have been iodized at least 24 hours to secure its best conditions.

Mr. Blanchard said his newest sample had been iodized that length of time; but he thought probably a longer time might be better.

The Chairman said that each should be tried under its own best conditions of bath as well as developer.