its sensibility to the degree that is requisite for receiving the images of the camera obscura. In conducting this operation, it will be found that the results are sometimes more, and sometimes less satisfactory, in consequence of small and accidental variations in the proportions employed. It happens sometimes that the chloride of silver is disposed to darken of itself, without any exposure to the light—this shows that the attempt to give it sensibility has been carried too far. The object is, to *approach* to this condition as near as possible, without *reaching* it; so that the substance may be in a state ready to yield to the slightest extraneous force, such as the feeble impact of the violet rays, when much attenuated. Having, therefore, prepared a number of sheets of paper, slightly different from one another in the composition, let a piece be cut from each, and, having been duly marked or numbered, let them be placed side by side in a very weak diffused light, for about a quarter of an hour; then, if any one of them, as frequently happens, exhibits a marked advantage over its competitors, Mr. Talbot selects the paper which bears the corresponding number to be placed in the camera obscura.

With regard to the second object—that of fixing the images—Mr. Talbot observed, that, after having tried *ammonia*, and several other re-agents, with very imperfect success, the first which gave him a successful result, was the iodide of potassium, much diluted with water. If a photogenic picture is washed over with this liquid, an *iodide of silver* is formed, which is absolutely unalterable by sunshine. This process requires precaution; for, if the solution is too strong, it attacks the dark parts of the picture. It is requisite, therefore, to find, by trial, the proper proportions. The fixation of the pictures in this way, with proper management, is very beautiful and lasting. The specimen of *lace* which Mr. Talbot exhibited to the Society, and which was made five years ago, was preserved in this manner. But his usual method of fixing is different from this, and somewhat simpler —or, at least, requiring less nicety. It consists in immersing the picture in a strong solution of *common salt*, and then wiping off the superfluous moisture, and drying it. It is sufficiently singular, that the same substance which is so useful in *giving* sensibility to the paper, should also be capable, under other circumstances, of *destroying* it; but such is, nevertheless, the fact. Now, if the picture which has been thus washed and dried, is placed in the sun, the white parts colour themselves of a pale lilac tint, after which they become insensible. Numerous experiments have shown the author that the depth of this lilac tint varies according to the quantity of salt used, relatively to the quantity of silver; but by adjusting these, the images may, if desired, be retained of an absolute whiteness. He mentions, also, that those preserved by *iodine* are always of a very pale primrose yellow, which has the extraordinary and very remarkable property of turning to a full gaudy yellow, whenever it is exposed to the heat of a fire, and recovering its former colour again, when it is cold.

Brit. Assoc.—Athenæum.

On the Construction of Apparatus for Solidifying Carbonic Acid, and on the elastic force of Carbonic Acid Gas in contact with the liquid form of the Acid, at different Temperatures. *By* Mr. Robert Addams.

Mr. Addams prefaced his communication by adverting to the original production of liquid carbonic acid by Dr. Faraday, in 1823, and also to the solidifi-

cation of the acid by M. Thilorier, and then exhibited three kinds of instruments which he (Mr. Addams) had employed for the reduction of the gas into the liquid and solid forms. The first mode was mechanical, in which powerful hydraulic pumps were used to force gas from one vessel into a second, by filling the first with water, saline solutions, oil, or mercury; and in this apparatus a "*gauge of observation*" was attached, in order to see when the vessel was filled. The second kind of apparatus is a modification of that invented and used by Thilorier. The third includes the mechanical and the chemical methods, and by which, as stated, a saving of a large quantity of acid formed in the generator is effected; whereas, by the arrangements of Thilorier's plan, two parts in three are suffered to rush into the atmosphere, and are lost. With this set of instruments are used two gauges of observation—one to show when the generator is filled with water by the pumps, and consequently all the free carbonic acid forced into the receiver; and the other to determine the quantity of liquid acid in the receiver. He likewise exhibited other instruments for drawing off and distilling liquid carbonic acid from one vessel into another, and mentioned some experiments which were in progress, and especially the action of potassium in liquid carbonic acid,—an action which indicated no decomposition of the real acid, but such as implied the presence of water, or a hydrous acid. A table of the elastic force, or tension of the gas, over the liquid carbonic acid, was shown, for each ten degrees of the thermometer, beginning at zero, and terminating with 150 degrees. The following are some of the results:—

Degrees.	lb. per sq. inch.	Atmospheres of 15 lb each.
0	279.9	18.06
10	300.	20.
30	398.1	26.54
32	413.4	27.56
50	520.05	34.67
100	934.8	62.32
150	1495.65	99.71

Mr. Addams announced his intention of examining the pressure at higher temperatures, up to that of boiling water, and above; and asserted his belief that it may be profitably employed as an agent of motion—a substitute for steam—not directly, as had been already tried by Mr. Brunel, but indirectly, and as a means to circulate or reciprocate other fluids. The solidification of the acid was shown, and the freezing of pounds of mercury in a few minutes, by the cooling influence which the solid acid exercises in passing again to the gaseous state. Ibid.

On the Possibility of obtaining, by Voltaic Action, Crystalline Metals, intermediate between the Poles or Electrodes.

These observations were in connexion with, and in support of, those laid before this Section last year, by the author, on the same subject.

After drawing the attention of the members to the important influence