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THE COMMITTEE ON SITES for the world's fair in New York in 1892 has recommended that the upper part of Central Park be taken for the purpose, to which shall be added some outlying unoccupied land. The point of special interest just now is that a considerable portion of the New York community object to any part of the park being used, maintaining that the upper portions are the most attractive of all, and, as is freely acknowledged by all, that these will have to be denuded of trees and scraped down to a more level surface by the city contractors, so as to ruin their beauty for a generation to come. It is to be said, also, that the lower parts of the park would be turned practically into little more than an entrance to the fair-grounds proper, thus depriving them of the character which draws so many to them on all holidays. The scheme has its advocates, however; and it is of course true that a part of its support is to be traced to the interests of real-estate owners, as would be the case if any other site were chosen, only here, the interests being the greater, the support is the more earnest.

MODERN PHOTOGRAPHY.[1]

THE occupant of this chair has a difficult task to perform, should he attempt to address himself to all the various subjects with which this section is supposed to deal. I find that it has very often been the custom that some one branch of science should be touched upon by the president; and I shall, as far as in me lies, follow this procedure.

This year is the jubilee of the practical introduction of photography by Daguerre and Fox Talbot, and I have thought I might venture to take up your time with a few remarks on the effect of light on matter. I am not going into the history of photography, nor to record the rivalries that have existed in regard to the various discoveries that have been made in it. A brand-new history of photography, I dare say, would be interesting, but I am not the person to write one; and I would refer those who desire information as to facts and dates to histories which already exist. In foreign histories perhaps we English suffer from speaking and writing in a language which is not understanded of the foreign people; and the credit of several discoveries is sometimes allotted to nationalities who have no claim to them. Be that as it may, I do not propose to correct these errors or to make any reclamations. I leave that to those whose leisure is greater than mine.

I have often asserted, and I again assert, that there should be no stimulus for the study of science to be compared to photography. Step by step, as it is pursued, there will be formed a desire for a knowledge of all physical science. Physics, chemistry, optics, and mathematics are all required to enable it to be studied as it should be studied; and it has the great advantage that experimental work is the very foundation of it, and results of some kind are always visible. I perhaps am taking an optimist view of the matter, seeing there are at least twenty-five thousand living facts against my theory, and perhaps not one per cent of them in its favor. I mean that there are at least twenty-five thousand persons who take photographs, and scarcely one per cent who know or care any thing of the "why or wherefore" of the processes, so far as theory is concerned. If we call photography an applied science, it certainly has a larger number who practise it, and probably fewer theorists, than any other.

He would be a very hardy man who would claim for Niépce, Daguerre, or Fox Talbot the discovery of photographic action on matter. The knowledge that such an action existed is probably as old as the fair-skinned races of mankind, who must have recognized the fact that light, and particularly sunlight, had a tanning action on the epidermis; and the women, then as now, no doubt took their precautions against it. As to what change the body acted upon by light underwent, it need scarcely be said that nothing was known; and perhaps the first scientific experiment in this direction was made rather more than a hundred years ago by Scheele, the Swedish chemist, who found, that, when chloride of silver was exposed to light, chlorine was given off. It was not till well in the forties that any special attention was given to the action that light had on a variety of different bodies; and then Sir John Herschel, Robert Hunt, Becquerel, Draper, and some few others, carried out experiments which may be termed "classical." Looking at the papers which Herschel published in the "Philosophical Transactions" and elsewhere, it is not too much to say that they teem with facts which support the grand principle that without the absorption of radiation no chemical action can take place on a body: in other words, we have in them experimental proofs of the law of the conservation of energy. Hunt's work, "Researches on Light," is still a text-book to which scientific photographers refer, and one is sometimes amazed at the amount of experimental data which is placed at our disposal. The conclusions that Hunt drew from his experiments, however, must be taken with caution in the light of our present knowledge, for they are often vitiated by the idea which he firmly held, that radiant heat, light, and chemical action, or actinism, were each of them properties, instead of the effects, of radiation. Again: we have to be careful in taking seriously the experiments carried out with light of various colors when such colors were produced by absorbing media. It must be remembered that an appeal to a moderately pure spectrum is the only appeal which can be legitimately made as to the action of the various components of radiation, and even then the results must be carefully weighed before any definite conclusion can be drawn. No photographic result can be considered as final unless the experiments be varied under all the conditions which may possibly arise. Colored media are dangerous as enabling trustworthy con-

[1] Address of Capt. W. De W. Abney, president of the section of mathematics and physics, of the British Association for the Advancement of Science, delivered before the association at its meeting recently (from *Nature*).