

than one conversation with him at that time on the subject, and he only yielded, and in favour of amateurs, after much solicitation on the part of the late Lord Rosse and Sir Charles Eastlake, who thereupon became the first president of the Photographic Society."

The accompanying extract from the correspondence which appeared in the *Times* of August 13, 1852, between the inventor of the Calotype process and the presidents of the Royal Society and Royal Academy, shows the spirit in which the two latter approached the subject of the patent rights, and the generous tone in which the former responded:—

"The art of photography on paper," Lord Rosse and Sir Charles Eastlake write, "of which you are the inventor, has arrived at such a degree of perfection that it must soon become of national importance; and we are anxious that, as the art itself originated in England, it should also receive its further perfection and development in this country. At present, however, although England continues to take the lead in some branches of the art, yet in others the French are unquestionably making more rapid progress than we are. It is very desirable that we should not be left behind by the nations of the Continent in the improvement and development of a purely British invention; and, as you are the possessor of a patent right in this invention, which will continue for some years, and which may, perhaps, be renewed, we beg to call your attention to the subject, and to inquire whether it may not be possible for you, by making some alteration in the exercise of your patent rights, to obviate most of the difficulties which now appear to hinder the progress of art in England. Many of the finest applications of the invention will probably require the co-operation of men of science and skilful artists. But it is evident that the more freely they can use the resources of the art, the more probable it is their efforts will be attended with eminent success. As we feel no doubt that some such judicious alteration would give great satisfaction, and be the means of rapidly improving this beautiful art, we beg to make this friendly communication to you in the full confidence that you will receive it in the same spirit—the improvement of art and science being our common object."

This letter is dated "London, July," and Fox Talbot replied as follows, under date "Lacock Abbey, July 30":—

"... I am as desirous as any one of the lovers of science and art, whose wishes you have kindly undertaken to represent, that our country should continue to take the lead in this newly-discovered branch of the fine arts; and, after much consideration, I think that the best thing I can do, and the most likely to stimulate to further improvements in photography, will be to invite the emulation and competition of our artists and amateurs by relaxing the patent right which I possess in this invention. I therefore beg to reply to your kind letter by offering the patent (with the exception of a single point hereafter mentioned) as a free present to the public, together with my other patents, for improvements in the same art. . . . The exception to which I refer, and which I am desirous of keeping in the hands of my own licensees, is the application of the invention to photograph taking for sale to the public. This is a branch of the art which must necessarily be in comparatively few hands. . . . With this exception, then, I present my invention to the country, and trust that it may realise our hopes of its future utility."

In the *Phil. Mag.* iii. 1833 will be found a very curious paper, which might interest Sir Wm. Thomson (who, however, has probably read it), "On the Velocity of Electricity; a proposed method of ascertaining the greatest depth of the ocean." Crystallography and optics came in for a considerable share of Talbot's attention. In 1836, in the *Comptes Rendus*, we find him describing researches on borax crystals, and besides various papers

on the subject mentioned produced in 1836, he gave the Bakerian lecture of that year, the subject being "Facts relating to the Optical Phenomena of Crystals." In 1842 he read a paper at the British Association "On the Improvement of the Telescope," and another in 1847 "On a New Principle of Crystallisation." He describes in the *Astronomical Society's Memoirs* (xxi.) a total eclipse of the sun, July 28, 1851, observed at Marienburg, Prussia, and in the British Association Report for 1871 will be found a paper by him "On a New Method of estimating the Distances of some of the Fixed Stars."

The subject of heat also had its attractions for his many-sided mind, and in 1836 he contributed to the *Phil. Mag.* papers on the Repulsive Power of Heat and on Radiant Heat. Even botany received a share of his attention, for we find in the *Transactions of the Edinburgh Botanical Society* for 1868 a "Note on *Vellozia elegans* from the Cape of Good Hope."

But the half is not told, and it would take up more space than we can spare, even were it quite appropriate in these pages, to refer to his numerous contributions in literature and archæology to the Royal Society of Literature (of which he was vice-president), the Society of Biblical Archæology, and by other methods. Orientalists will call to mind that Talbot was one of the first who, with Sir Henry Rawlinson and Dr. Hincks, deciphered the cuneiform inscriptions brought from Nineveh. He was the author of several books of much interest and learning, and in his "Pencil of Nature," a fine quarto published in 1844, and probably the first work illustrated by photographs, he describes the origin and progress of the conception which culminated in his invention.

#### THE PHOTOGRAPHIC EXHIBITION

THE Photographic Exhibition which is now open at 5A, Pall Mall East, is well worthy of a visit by all lovers of the art-science, exemplifying as it does the progress that has been made in dry-plate processes. The perfecting of these processes must have a marked effect on the future of photography, as when they are capable of being employed under all circumstances, the heavy paraphernalia attendant on the wet process may be consigned to the lumber-room, and the worker in the field or laboratory need only be dependent on his box of sensitive plates and his camera. We cannot enumerate all the processes, examples of which are exhibited. We may mention, however, that the simple bromide of silver emulsion either held on the plate embedded in collodion or gelatine appears to bear away the palm for excellence, unless it be the process with which Mr. England has produced his splendid collection of Swiss views, in which (though no information is given in the catalogue regarding it), we think we can trace the delicacy due to albumen in the sensitive film, combined probably in some way or another with bromide of silver. Another feature of the exhibition are the enlargements which are shown by various exhibitors, amongst whom we may name, as being specially worthy of mention, the Woodbury Company, the Royal Engineers, and the Autotype Company. The enlargements taken by Mr. E. Viles with the microscope are also worthy of more than a passing remark. They are all beautifully executed, but perhaps the picture of the proboscis of the common blow-fly should be specially singled out, being almost perfectly enlarged to 200 diameters. We believe that a comparatively low-power objective was employed, and that from the small negative obtained by it an enlargement in Monckhoven's solar camera was produced. These pictures are hung too high to be well seen, and Mr. Viles perhaps might be persuaded to show them at some of this season's scientific soirées. As regards the application of photography to scientific purposes there are no other examples to be found in the exhibition, a matter which we deeply regret, seeing the

large use that is made of the art-science in nearly every investigation of the present day. As regards the artistic element present, it is not in our province to dwell upon it. In many examples of portraiture it would have been well had that abomination—retouching of the negative—been avoided. As showing what a grand pencil is sunlight to the artist, we may mention the exhibits of Robinson, Blanchard, Mrs. H. Roscoe, and Slingsby, in all of which are to be found true artistic feeling and perfect manipulation. The works of Payne-Jennings, Bowness, the Royal Engineers, Stephen Thompson, and England may be classed amongst the best of the landscape work.

Amongst technical work we have examples of a capital photo-relief process by Warnerke, by which an artist's own drawing can be faithfully reproduced as a block for surface printing. The mechanical printing processes from gelatine are also admirably represented by the Autotype Company, as is that known as Woodbury-type.

This notice would be incomplete without calling attention to the photographs taken during the recent Arctic expedition under Sir G. Nares, which have been exhibited by the Admiralty, and also to those taken by Mr. Grant, who accompanied Sir Allan Young in the *Pandora*. Both sets of photographs are very good when the difficulties under which they were taken are considered.

#### THE NORWEGIAN DEEP-SEA EXPEDITION<sup>1</sup>

THE *Voringin* left Tromsø on July 14, lay the following day, which was a Sunday, in Kjoslen, by Lyngen, and we recommenced our work on the 16th, off Fuglø (71° N. lat.). From this point a cross-section was

made to lat 71½°, long. 14° E., the bottom reaching nowhere more than 900 fathoms. On the 18th we steered southwards, and took up another cross-section parallel to the above, and about twelve geographical miles distant. This was finished on the 20th, and we sailed to Tromsø, where we arrived at midnight. In the last cross-section



FIG. 1.—Beerenberg, Jan Mayen, from the South-west.

we found a depth of more than 1,200 fathoms on the north-east border of the deep-sea bay abutting on the steep bank outside Vesteralen and Lofoten.

In Tromsø the ship was completely fitted out for our cruise to Jan Mayen. We left that town on July 24, passed out the Malangenfjord, and steered westwards. In lat. 70°, long. 5° E., we reached the cross-section, whose eastern part we had already worked out, and

shaped our course directly for Jan Mayen. This was on the 26th, and the dredge came up, full of mud, biloculina clay, but almost without animals. The following day we found 0° C. in 500 fathoms depth, but farther west, in lat. 71°, long. 5° W., the isotherm of 0° C. was found, late in the night, in only twenty fathoms' depth. This proves that we were fairly in the polar current, and that the boundary between it and the warm Atlantic current (the

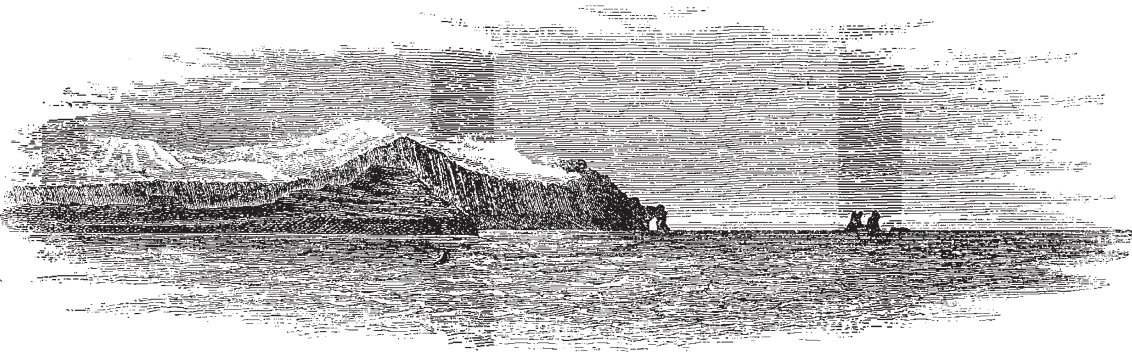


FIG. 2.—Jan Mayen—South-west Cape, and the Seven Rocks.

so-called Gulf Stream) is a very steep surface, like that of the "cold wall" on the American coast. The temperature of the surface of the sea was here 4°·6 C. At night the fog came on, and the next day we steered cautiously westwards, sounding at short intervals; but the depths

<sup>1</sup> See NATURE, vol. xvi. p. 271.

went on increasing to more than 1,000 fathoms, before a less depth was sounded. At last, just when we were sitting at the dinner-table, we heard the mate cry out, "I can see the glacier ahead." The ship was immediately stopped, and a sounding gave 140 fathoms. The fog began to ascend a little, and we were soon able to dis-