THE ROMANCE OF PHOTOGRAPHY.[1]

ALL phenomena are wonderful in the measure that we are unaccustomed to them, and if quite strange to us they are incredible. The romantic character of the details of any subject is therefore an individual matter, but the author in this particular case assumes no exact, and very little general, knowledge on the part of his readers, and so he is justified in his repeated asseverations of the marvellous character of the various details of the discovery and achievements of photography. We take it that the duty of the writer of such a volume is very largely to rob his subject of its atmosphere of romance by showing its gradual development and the reasonableness of its results. In this the author is successful. He gives no "instructions," but merely tells his story in a readable form and illustrates it well, for every one of the sixty or more illustrations has a definite and sufficient reason for its presence. He treats it in an easy and sometimes, perhaps, rather too discursive manner, giving many apt analogies of the development of photography and of its applications in instantaneous work and kinematography, the making of book illustrations, the photography of the invisible as by means of Röntgen rays or the ultra-violet of the spectrum, and the reproduction of colour.

Telegraphed Photographs. These photographs are just as they were received by the electric telegraph. The left-hand portrait is that of the Crown Prince of Germany, and the other is a portrait of Prof. Korn. From "The Romance of Modern Photography."

One of the most interesting chapters deals with the detection of crime and the identification of criminals, for it is seldom that those who are not engaged in the work itself have the opportunity of seeing examples of photographs taken for these purposes. There is also a chapter on telegraphic photography, described in NATURE of August 19 (p. 445). The accompanying illustration from this chapter is reproduced by the courtesy of the publishers. In another chapter we learn how "the largest photograph in the world," 40 feet long by 5 feet wide, was developed by mounting it face outwards on the periphery of a large broad wheel made for the purpose, and rotating it in a comparatively shallow tank that contained the developer, and find details of many other cases in which great difficulties were successfully overcome. The number of examples given of extraordinary methods of work is considerable, and they cover so wide a field that probably no one who reads the book will fail to find something new to him.

When an author sets out with the avowed purpose of dealing with the romantic side of such a subject, the critic naturally looks for a little exaggeration here and there, and when so many branches of the subject are dealt with he expects to discover a few inaccuracies. It may be true to a certain extent to say that kinematography will enable our descendants to see the incidents in our great battles, but it is a mistake to state, concerning a picture of a group of men in the act of diving, that "the whole detail of this living scene was recorded by the great artist, Light, in one five-hundredth part of a second" by means of a focal-plane shutter, as the narrow slit in the shutter probably took thirty or forty times as long as this to pass over and so expose the surface of the plate. It is also incorrect to state that a Lippmann photograph "must have its mercury background" to view it properly. But the slips of this kind are not very serious, and they are very few.

C. J.

[1] "The Romance of Modern Photography." By Charles R. Gibson. Pp. 345. (London: Seeley and Co., Ltd., 1908.) Price 5s.

M. MAURICE LOEWY.

"RIEN ne saurait exprimer la consternation et l'affliction que la mort foudroyante de Tisserand a répandues autour de lui, car l'amitié, l'estime et l'admiration entouraient comme d'une auréole l'illustre astronome qui s'est éteint dans la nuit de mardi." These words, which M. Loewy spoke at the graveside of his friend and predecessor, Tisserand, may very well be remembered when expressing our sense of the loss which France and science suffer in the sudden removal of the director of the National Observatory of Paris. Even the painful suddenness, which added an increased bitterness to the grief we experienced in the loss of Tisserand, is repeated again with depressing emphasis, for we understand that M. Loewy was struck down while attending a meeting of the Conseil des Observatoires astronomiques.

The director of a great National Observatory does not usually enjoy unfettered discretion in the selection of the lines of investigation to be pursued. In such institutions large pieces of work are not unfrequently undertaken, for the conduct of which both ample time and funds are needed. Too often he who plans does not see the full fruition of his work, and loyalty to the reputation of predecessors and the influences of tradition alike restrict the direction along which activity is possible. The long connection of M. Loewy with the Paris Observatory, previous to his occupancy of the director's chair, would make him particularly anxious to complete, if possible, certainly to forward, two very heavy legacies of work be-

queathed to him by former astronomers. One of these was the great Paris catalogue of stars, depending upon meridian observations made within the period 1837–1881, including the re-observation of all Lalande's stars. The complete work, published in four sections, furnishes the places of nearly 35,000 stars, based upon 387,000 single measures. This heavy piece of work was brought to a very satisfactory conclusion under the supervision of M. Loewy, and by its completion the observatory staff is relieved of an oppressive incubus. The other is the International Star Chart, which had its origin under Admiral Mouchez. Not only has this work been prosecuted with ardour at the observatory, but encouragement and assistance were given to all who participated in the scheme, by means of conferences that have been held from time to time in the observatory at the suggestion of the regretted director. To both these projects M. Loewy gave as generous and consistent support as though he were responsible for their introduction.

M. Loewy's more immediate influence on the conduct of the observatory is shown in the steady prosecution of another piece of work, the chart of the moon derived from photographs taken with the equatorial coudé, a form of telescopic mounting with which M. Loewy's name is closely connected. The long focal length, which is one of the advantages secured in this class of telescope, giving an image of the moon more than seven inches in diameter, made this instrument peculiarly suitable for the investigation. The admirable reproductions made from the negatives justify the time and attention that have been bestowed on the enlargements. Concurrently with the issue of the maps there have been published acute dissertations on the physical constitution of the moon, founded on a minute critical study of the lunar surface. This close and detailed examination led the director to conclude that there were evidences of a permanent elongation of the moon's figure towards the earth, and of a surface action tending to diminish the angular velocity of rotation.

But besides the study of the moon's surface, the equatorial coudé has served another purpose. The principle of construction is so well known that it is not necessary to describe it here. But in designing this instrument M. Loewy had in view the possibility of obtaining greater stability than is attainable with ordinary equatorials, and by taking advantage of this stability to measure large angular distances on the celestial sphere. Having determined, by a thorough examination of the theory, the sources of error inherent in the instrument, M. Loewy proceeded to use it for obtaining a new value of the constant of aberration by an entirely novel method. For this purpose he placed a double mirror, formed by silvering two faces of a large prism of glass, in front of the object glass. The double mirror was capable of rotation about the axes of the telescope, so that by reflection from the two silver surfaces the images of two stars in different parts of the sky could be brought into the field side by side, and the distance between them measured in the common plane of reflection. By choosing suitable stars and making the necessary measures six months apart, the quantity measured could be made four times that of the constant of aberration. For greater accuracy the stars selected had the same altitude so as to reduce the effects of refraction to a minimum. But by changing the plan of observation it was possible to investigate the effects of refraction separately. The instrument lent itself to methods of great beauty and ingenuity, displaying both the mechanical ability of the inventor and the varied resources of the mathematician and astronomer. The Royal Astronomical Society fittingly acknowledged its appreciation of the important services M. Loewy had rendered to astronomy by awarding him the gold medal. Needless to say, he was an honorary member of that society as of many others, both in his own country and abroad.

It would not be possible, even if it were desirable, to record all the varied occupations in which M. Loewy was engaged in the course of his scientific career. His position made him frequently the adviser of his Government in many important matters. His services to the Bureau des Longitudes, in his capacity of director of the Connaissance des Temps, will be readily acknowledged. The part he played in various conferences, such as those which arranged the scheme for observing the planet Eros and for securing uniformity in the employment of astronomical constants, has been already mentioned. We can only deplore, in company with the whole guild of science throughout the world, the loss of one who ornamented a dignified position and worthily supported the traditions of the National Observatory. Within the last few years the continuity of its direction has been too frequently interrupted by the loss of its distinguished chiefs. Among these brilliant memories the name of Maurice Loewy will hold an honoured place. Round his grave in respectful sympathy were grouped the representatives of many learned societies. In addition to those of France, there were present members of the Academy of Sciences of Vienna, of the R. Accademia dei Lincei, while the Royal Society of London, as well as the Royal Astronomical Society and the British Association, were represented by Sir David Gill and Major MacMahon.

NOTES.

IT is reported that at Monday's meeting of the Paris Academy of Sciences Prof. Lapparent described some experiments by Prof. Bordas upon the conversion of corundum into precious stones by the influence of radium. It is stated that when fragments of corundum were placed in contact with a tube containing radium for a month they changed colour entirely, and were transformed into crystalline varieties of the mineral, some pieces becoming yellow, like topaz; others purple, like amethyst; blue, as sapphire; and red, as rubies. The gems thus produced were submitted to a jeweller, who was unable to distinguish them from precious stones. We shall await with interest the appearance of the *Comptes rendus* of Monday's meeting for particulars of these experiments and results.

THE death is announced of Prof. Gustav Adolf Zeuner, the distinguished authority on applied mechanics. Born at Chemnitz in 1828, he was the founder, and editor from 1853 to 1857, of the German journal the *Zivilingenieur*. In 1855 he was appointed professor at the Zurich Polytechnic, of which institution he was director from 1865 to 1868. From 1871 to 1875 he was director of the Freiberg School of Mines, and from 1873 to 1890 he was also director of the Dresden Polytechnic. He retired in 1895. His works included treatises on valve gearing and on the mechanical theory of heat.

DR. ELIS STRÖMGREN, private tutor at the Kiel University, has been appointed professor and director of the Copenhagen Observatory in succession to Prof. T. N. Thiele, retired.

SIR HERBERT MAXWELL has been appointed chairman of the council of the National Association for the Prevention of Consumption in succession to the late Sir William Broadbent, and Dr. C. Theodore Williams has been elected vice-chairman.