

The American Annual of Photography, 1912. Vol. xxvi. Edited by Percy Y. Howe. Pp. 328. (New York: The American Annual of Photography; London: G. Routledge and Sons, Ltd., 1911.) Price 3s. 6d.

In these pages the photographic reader will find much that will interest him, for a host of photographic subjects are delightfully treated, and the illustrations are both numerous and good. Turning over the pages one finds some simple hints regarding telephoto lenses, then a brief discourse on the fascinating procedure of taking photographs against the light productive of many pretty pictures. Simple apparatus for photomicrography and sensitising platinum paper are later dealt with, followed by an interesting article on "Daguerreotype Copying." Much useful information is imparted to the reader in the articles on stereoscopic night scenes, botanical photography, colouring photographs, the English cathedrals, &c. Nearly all the various subjects dealt with are well illustrated, and these add greatly to the value of the annual. At the end there is brought together a typical collection of formulæ and tables which will no doubt be found useful to the working photographer. Good indices to the articles, subjects, illustrators, and advertisers facilitate easy references to the various portions of the book.

Einführung in die Mykologie der Nahrungsmittelgewerbe. By Prof. A. Kossowicz. Pp. viii+138. (Berlin: Gebrüder Borntraeger, 1911.) Price 4 marks.

This book deals with bacteria, yeasts, and moulds in their special relation to foodstuffs, and forms a welcome addition to technical bacteriology. Portions of it particularly concern the domestic arts, and would be of service in connection with courses of "domestic or home science," a branch of training which is now coming to the fore. Commencing with a brief introduction on the morphology and methods of study of the organisms dealt with, the subjects of milk, butter, and cheese are first considered. Then follows the more special section of the book, which is devoted to the consideration of the decomposition and preservation of meat and fish, eggs, vegetables, and fruit. In this the various organisms producing the "spoiling" of these foodstuffs are briefly considered, together with the chief methods of conserving food. It is interesting to learn that the air of the Cuxhaven fish market is ozonised, with the result that the fishy odour is destroyed. Finally, the mycology of the bakery, of sugar, and of fodder is briefly described. The book is a very readable one, and is well and sufficiently illustrated.

R. T. H.

LETTERS TO THE EDITOR.

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Spectroscopic Methods.

In his interesting address on spectroscopic methods, Prof. Michelson falls into a not uncommon error when he says that, in order to obtain a pure spectrum, "two important modifications must be made in Newton's arrangement. First, the light must be allowed to pass through a very narrow aperture, and, secondly, a sharp image of this aperture must be formed by a lens or mirror."

Both these modifications were made by Newton himself, and with a clear understanding of their advantages. In "Opticks," Exper. 11, we read:—"In the sun's light let into my darkened chamber through a small round hole in my window—shut, at about 10 or 12 feet from the window, I placed a lens, by which the image of the hole might be distinctly cast upon a sheet of white paper, placed

at the distance of six, eight, ten, or twelve feet from the lens. . . . For in this case the circular images of the hole which comprise that image . . . were terminated most distinctly without any penumbra, and therefore extended into one another the least that they could, and by consequence the mixture of the heterogeneous rays was now the least of all."

And further on:—

"Yet instead of the circular hole F, 'tis better to substitute an oblong hole shaped like a long parallelogram with its length parallel to the prism ABC. For if this hole be an inch or two long, and but a tenth or twentieth part of an inch broad or narrower, the light of the image *pt* will be as simple as before or simpler [i.e. as compared with a correspondingly narrow circular hole], and the image will become much broader, and therefore more fit to have experiments tried in its light than before."

Again, it was not Bunsen and Kirchhoff who first introduced the collimator into the spectroscope. Swan employed it in 1847, and fully described its use in Edin. Trans., vol. xvi., p. 375, 1849. See also Edin. Trans., vol. xxi., p. 411, 1857; Pogg. Ann., C, p. 306, 1857.

These are very minor matters as compared with what Prof. Michelson has to tell of his own achievements and experiences, but it seems desirable that they should be set right.

R.

Are Eyes ever Autophanous?

THE following communication was written about 1889, soon after my change of residence from Collingwood (in Kent) to Slough (in Buckinghamshire), that is, about twenty-three years ago, and having been laid aside, through the intervention of other interests, has now come to light again in weeding the accumulation of half a rather long lifetime. It seemed unadvisable to recast, from memory, what was set down from present observation. At the same time, the form in which those observations are presented required explanation, such as is now offered.

I propose in the present letter to describe some observations of a rather unique character, and have thought that the occasion warrants my coining a word in connection with—though not descriptive of—their general nature. I had never given much credence to the sayings and statements, not infrequently met with, expressive of a rather widely entertained belief that the eyes of some animals, especially those of the feline *genera*, have the property of "shining in the dark," of emitting light, or (as I now venture to describe it) of being *autophanous*. But I saw no prospect of disproving its existence until accident pointed out a ready way of producing the effect, and thus raising a pretty strong presumption as to the true source of the belief. I propose in a few words to put your readers in a position to verify and extend my subsequent experience, and to enable all who try it to judge for themselves whether the suggested explanation is not sufficient, without attributing to the eye a specific inherent luminosity.

About five years ago I was presented with a puppy, of a good breed of collie, the history of which I must briefly summarise by saying that, until I lost him last November, he was my constant companion day and night. His sleeping quarters during the spring and summer months of '84 were in a kennel placed on the landing of a flight of stone steps leading up to a garden door facing my habitual seat in an inner room, so that we could always see each other when the intervening doors were open. When there was a lamp on the table it was not long before I learnt to look for, and generally to see, Bruno's great eyes watching me out of the darkness. It is immaterial now to recall exactly by what successive steps I learnt the essential conditions of the phenomenon: they now seem so obvious. Eventually I was led to use a bull's-eye lantern, the adoption of which opened the wide field of experience of which I will now endeavour to give some particulars. Let it not be supposed that it is enough to direct the light of a lantern upon a dog's eyes. If such were the case, the observation would long since have been made; for it is by no means essential that the dog's sight shall be turned directly upon the source of light, as will presently appear. What is essential, and what makes all the difference between what the holder of the lantern sees and what a