Conférences d'Actualités Scientifiques et Industrielles. Année 1929. With a preface by J. Lemoine. Paris, Hermann, 1930. viii+270 pp.

This book contains a series of lectures, independent of each other, given by various scientists at the *Conservatoire national des arts et métiers* during the year 1929. This is the third such series, the first having been given in 1927. Three of the lectures have a particular appeal to those interested in recent developments in theoretical physics. One of these is by L. de Broglie on *Une crise récente de l'optique ondulatoire*. This fine discussion of the foundations of wave mechanics by the genius who created this theory closes with the pregnant remark, "Nous saurions bien des choses si nous savions seulement ce qu'est un rayon de lumière."

The other lectures referred to are *Les atomes de lumière et les quanta* by E. Bloch and *Les problèmes de structure et la mécanique nouvelle* by L. Bloch. All the lectures are non-technical, the idea evidently being to present the essential features without the distraction involved in details.

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Fonctions Automorphes. By Pierre Fatou. (Volume II of Appell and Goursat's *Théorie des Fonctions Algébriques.*) Paris, Gauthier-Villars, 1930. xiv+521 pp.

Some years before his death, which occurred in 1929, the brilliant analyst P. Fatou undertook the preparation of a revised edition of Appell and Goursat's *Fonctions Algébriques.* Fatou was invited by Professor Goursat to add to the original edition a treatment of automorphic functions. He responded by writing a comprehensive exposition of that subject, which it was found desirable to publish in a separate volume. Thus, Chapters 13 to 16 of the *Fonctions Algébriques,* which make up the second volume of that work, really form an independent treatise, due entirely to Fatou.

Chapter 13 begins with a study of the elementary properties of linear transformations of a complex variable z. With a free use of projective geometry, a knowledge of which is assumed, groups of linear transformations of z are shown to be isomorphic with groups of motions in non-euclidean spaces. Fatou uses Montel's theory of normal families of functions to obtain a new and very simple proof of the theorem that a group of real linear transformations which has no infinitesimal transformation is properly discontinuous. It is also proved that every group which has no infinitesimal transformation induces a properly discontinuous group of transformations of three-dimensional space.

Chapter 14 deals with the determination of the fundamental domains of Fuchsian and of Kleinian groups, and with the construction of such groups through the stipulation, in advance, of their fundamental domains. Chapter 15 presents the chief known properties of Fuchsian and of Kleinian functions. The theta series are studied in detail. Chapter 16 gives an interesting account of conformal mapping and uniformization.

Fatou's style is rapid, but clear. One sees that he insisted everywhere on complete rigor, and that he refrained from presenting conjectures as facts. His masterly treatise will sustain, and encourage the advancement of, the elegant theory of Schwarz, Schottky, Klein, and Poincaré.

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