

tracted from several minerals: From pechblende, from St. Joachimsthal, in Bohemia; from carnotite (vandate d'urane), from Portugal and Utah (U.S.A.); from thorianite, and finally from two minerals found in France—from autunite, from Saint Symphorien, and from Pyromorphite, from Issy L'Evêque (Saône-et-Loire.)

The radium obtained from all these minerals by successive chemical decompositions appears in the form of salts, either sulfate or carbonate of radiferous barium (insoluble salts), or bromide or chloride of radiferous barium (soluble salts).

The salts of radium and their radiation are controlled in the manufactory of Nogent by the electroscopes and electrometers constructed especially for that purpose under the direction of M. Daune, assistant in the physical laboratory of Madame Curie. The soluble salts have resulted in the making of radiferous medicines and radiferous waters, by their incorporation with medicinal substances and with water. Thus I have been able to attempt the study of injections of radiferous water into the tissues of the "lupus vulgaris" and of the "lupus erythematosus," and injections of radiferous¹ gray oil in syphilis. These studies were pursued during my attendance at the Infirmary-Hospital at Saint Lazare and at the "Biological Laboratory for the Study of Radium."

This manner of using radium is very interesting. It is true that by this method only the smallest quantities of radium may be used, but thus are used in their fullest capacity, "emanation,"² and the rays A, which have certainly, as I have made certain by personal experiments³, a bactericide power. Not being able to enlarge on the subject in this article, I shall not expatiate here on this very interesting side of radio-therapeutics, but I come to the customary manner of applying radium.

III. The radium used in direct application for diseases of the

¹ The word "radiferous" shows that the natural salt of the radium is contained in the water and the oil, in opposition to the expressions, "water with radio-activity" or "substances with radio-activity," which will be illustrated farther on.

² Radium in dissolution in chemical substances is in a free state. In this state it emits, in addition to the radiation of which we shall speak further on, a gas called "emanation." This emanation imparts to all the bodies with which it is placed in contact, including the cells of our tissues, the quality of transmitting in their turn the rays X, B and J. It gives to them, for a limited time, radio-active power, and it is thus that in using the substances with radio-activity (radio-active quinine and radio-active water), you can economize by transmitting the power of radium without transmitting natural radium.

³ Note on the use of radium in therapeutics, "Annals de Dermatologie," edited by Masson, October, 1906.