

centigrams of radium of 500,000 original activity¹. It is important to know which part of this activity is retained by the varnish—that is to say, to know what the activity and the composition of the exterior irradiation in the varnish of this appliance are—irradiation which penetrates into the tissues. But all the appliances used have their exterior irradiation analyzed by M. Boudoin, the assistant in the physical laboratory. The activity of the exterior irradiation of the apparatus which I am taking as an example is between 290,000 and 300,000². The irradiation allows:

70 per cent. of rays A (Alpha).
75 to 80 per cent. of rays B (Beta).
10 to 15 per cent. of rays G (Gamma).

As may be seen, there is no “emanation”—it crosses no body. The rays A are least numerous, for they allow themselves to be easily absorbed by the varnish; the rays G are less numerous even in the original composition of the radiation than in radium in the free state, although they nearly all pass. As the rays A are easily absorbed, they act especially on the surface of the tissues; the rays B, less easily absorbed, act more deeply, and the rays G deeper still.

Once anyone possesses this knowledge and wishes to use this apparatus on diseased tissue from the first layers of the cells right to the deeper ones, he should use it directly, without any interposition. If, on the other hand, he wishes to treat deeper tissues without injuring the surface—that is to say, without using the rays A, which act only on the surface—he places between the skin and the apparatus the leaf of aluminum of which I spoke, and the rays A are then all absorbed and the rays B and G alone pass. If he does not wish to work except with the most pene-

¹ Activity 500,000 means that this activity is 500,000 times greater than the activity of an equal quantity of pure uranite. Uranite is, in fact, taken as the unit of measurement. As pure radium has 2,000,000 of activity, it may be seen that the radium placed on the apparatus which I am dealing with is a quarter of the pure radium.

² The rays A and B are composed of substantial atoms endowed with an extremely small body (these are the ions charged with positive electricity for the A and negative for the B), and animated by an extreme rapidity, that of light. They cross opaque bodies by sliding into the interatomic spaces of the body. The rays G are the expression of a vibration of the ether. This motion of the ether is determined by the disintegration of the radium in atoms A and B. These rays G are of the same kind as the rays A of the ampulla of Crookes, as the light which comes to us from the stars, as the transmission by Herziennes waves of wireless telegraphy, etc. These three groups of rays, A, B and G, being animated by great momentum, give forth energy to the bodies that they strike, and it is this energy, communicated, which modifies the cells and cures them or destroys them, according to the force used.