

A STUDY OF THE EFFECTS OF LONG WAVE X-RAYS ON THE STAPHYLOCOCCUS AUREUS AND ON THE MICROSPORUM AUDOUINI

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THE rays known as "long wave x-rays" (grenz, borderline, infra-Roentgen) have extremely long waves, the average being 2 Angström units. They are employed in very superficial radiotherapy, as they have a very low degree of penetration.

These rays are produced by voltages under 10 kilovolts. A special tube is used, the Müller tube, which has a Lindeman glass window permitting these long wave rays to pass through. The ordinary Coolidge tube, being of soda glass, would not allow these soft rays to go through its wall.

In order to know if these long wave rays have any microbicide action, or if they have none, like the rays of shorter wave lengths, the following experiments were made in the laboratory of the Notre-Dame Hospital.

First experiment.—A culture of *S. aureus* made on a Petri dish received 2 erythema doses (6 minutes), and was then cultivated on a new Petri dish. The irradiated culture as compared with the control one showed no difference in the rapidity, quantity, and quality of growth.

Second experiment.—A culture of *S. aureus*, made on a Petri dish, received 5 erythema doses (15 minutes). Cultivated on a new Petri dish no difference was observed between this and a control culture not irradiated.

Third experiment.—A culture of *Microsporum*

Audouini, on Sabouraud's medium, received 5 erythema doses (15 minutes). This culture, resown, has developed with the same rapidity as that of the control, and without the loss of its macroscopic characters.

Fourth experiment.—Two guinea pigs, of about the same size and weight, were injected under the skin of the abdomen. The first received one-half c.c. of a culture of *S. aureus* diluted in saline solution and irradiated with 5 doses (15 minutes); the second, as a control, received one-half c.c. of the same emulsion not irradiated. Both animals behaved in the same way. In the following days they presented slight depression. At the inoculated point a little nodule was observed. On the fourth day both presented at the point inoculated a little scar, about 1 cm. in diameter on the control guinea pig, a little smaller on the guinea pig inoculated with the irradiated culture. The cicatrization presented nearly the same conditions in both animals, and 15 days later no trace of inoculation appeared on either.

CONCLUSIONS

It seems in the light of these few experiments that the long wave rays have no effect, at least "in vitro," upon the microbes and fungi studied, since no change has been observed in the rapidity, quantity, quality or virulence of the irradiated cultures.

Some psychologist has observed that the truly artistic temperament enjoys being miserable. It is his contention that when we read of the trials, sufferings and unhappiness of some great musician, we should not pity him but should, on the contrary, be glad that he underwent those emotional trials. This same writer says that when we enjoy minor music, we are giving rein to the same morbid sentiment that enjoys pain. Like all generalities, these statements are not wholly accurate but no hospital worker of any experience is unfamiliar with that type of patient who "enjoys" poor health.

Some of these are wellnigh incurable because this affliction of the temperament has a firm hold. We can, however, endeavour to interest them in the beauties of life, the trees, the birds, the green grass and the loveliness of flowers which were all given man for the uplift of his soul. Better still, and as a prime requisite, we should ourselves endeavour to pitch the music of our lives in the major key. Only when we have done that can we lead others into a realization of the beauty that is apparent to the seeing eye, no matter where it may be.—*The Modern Hospital*, March, 1929.