

ROENTGEN RAYS AND STERILITY.

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Abrogation of that most ostensible function of the testes—spermatogenesis—among those who have worked a good deal in an X-ray atmosphere, is the altogether new, and, to some, alarming actuality found by the authors to have attended this occult influence. Not until data have been gathered from the great amount of material which should be available can even an approximate estimate be had as to what degree and kind of X-ray exposure the worker of average age and health must have experienced before azoöspermia ensues; and this, whether as a gradually progressive tendency or as a sudden climax after some particularly long and intense action of the rays.

The question now of greatest importance to many who find themselves affected with azoöspermia or oligo-necrospermia, is one of prognosis. It may be a matter of months or years before this can be answered.

It is reasonable to presume that, those, who for personal reasons have worked behind lead screens, or, for the conjoined interest of patient and self have used the so-called focussing tube-shields, will have escaped the consequences referred to.

The cases examined show that all of those who have been making X-ray work a specialty for the past three years—whether as medical men or artisans in electrical apparatus of this kind—are the subjects of total azoöspermia. A smaller number who have had much less exposure, but continuing up to the time of examination, show varying states of oligo-necrospermia.

A single example of sterility in a physician, who at the time of our discovery was being treated for oligo-necrospermia, with many misshapen forms, was found, on making fresh inquiries, to have had a good deal of X-ray exposure for one period of eighteen

months, but for the past two years he had not been in the presence of an active tube.

Another case presented in his seminal fluid a seemingly normal number of active spermatozoa, and yet for a year or more he had been an occasional attendant at X-ray seances. This may point to the fact that the repeated prolonged exposures bring about the result.

In some 40 per cent. of the azoöspemia cases, none of whom had had any venereal disease or traumatism involving the genital tract, the interesting testimony was elicited that, having been married for some time before taking up the work, one or more children had been born, while since becoming X-rayists their wives have not been pregnant.

In view of Albers-Schoenberg's experiments upon rabbits and guinea pigs, it would seem that this result among Roentgen ray workers should not have been so surprising, when we realize that in much of their work they stand near enough to the patient to have the active rays strike the pelvic region of their bodies with considerable directness. The diagnoses in these cases have been based upon repeated careful examinations of seminal fluid obtained in reasonable quantity (grm. i.-iii.) by digital compression per rectum of the seminal vesicles, ampullæ of the vasa deferentia, ejaculatory ducts and the prostate, as well as (although not in all cases, unfortunately) of fluid obtained as a normal physiologic discharge.

None of the cases have been conscious of any deterioration or change in regard to potentia cœundi. The number of men examined thus far is sixteen, while reports substantiating these statements have been received from a number of others.

Dr. Lapowski reported a striking and interesting case before section on genito-urinary diseases of the New York Academy of Medicine on January 17, 1905, at which we made the first announcement of these findings. The case was one of fistula in ano with pruritus ani; advised against X-ray treatment. Examined before X-ray treatment; many active motile spermatozoa. Two exposures, ten minutes each. Examination showed oligonecrospermia. Two further similar exposures; examination showed azoöspemia. Examination four months later showed normal fluid, with many actively motile spermatozoa.

The insidious development of this condition without the slightest subjective warning leads us to call attention to the results

recently reported by Halberstaedter* from a number of well-conducted experiments upon female rabbits which show the susceptibility of the ovary to this same influence to be even greater than that of the testis, and the result to be analogous.

We may also infer from his report that lead screens will serve to protect these organs from the injurious action of radiations from the X-ray tube.

The employment of Roentgen rays for fluoroscopic, skia-graphic and therapeutic purposes, in view of what we know of the injuries which may be produced by them, calls for the utmost care to protect all (operators, subjects and spectators) who may be exposed. All parts of the body not directly exposed for examination or treatment should be amply protected by means of efficient tube-shields, screens or metallic foil.

Appended is a list of some of the more important recent contributions to medical literature bearing upon our topic:

- Albers, Schoenberg..... Muenchener Medizinische Wochenschrift, 1903, No. XLIII., p. 1859.
- Frieben..... Muench. Med. Wochenschrift, 1903, No. LII., p. 2295.
- Heineke..... Muench. Med. Wochenschrift, 1903, No. XLVIII., p. 2090.
- Heineke..... Muench. Med. Wochenschrift, 1904, No. XVIII., p. 785.
- Seldin..... Fortschritte auf dem Gebiete der Rontgenstrahlen, 1903-1904, Dec. 9, Band VII., p. 322.
- Baermann und Linser... Muench. Med. Wochenschrift, 1904, No. XXIII., p. 996.
- Halberstaedter..... Berliner Klinische Wochenschrift, January 16, 1905, No. 3, p. 64.
- Bergonie et Tribondeau. Comptes rendu de la Société de Biologie, 1904, pp. 400-402 and pp. 592-596.
- Philipp..... Fortschritte a. d. Gebiete der Roentgen Strahlen, 1904, Band VIII., Heft 2.