

motile bodies which form swarms of spores. These spores measure  $1/86$  of a millimeter in diameter and have two cilia, and hyphæ soon grow from these spores and thus continue the species.

The organism is very difficult to cultivate artificially, often dying out several hours after transplantation, but its life may be prolonged by adding insects to the water. Pringsheim could not observe the formation of sexual organs under these conditions. By supplying fresh water frequently he grew the plant for one week. He was never able to find oögonia or antheridia in this fungus. We obtained large quantities of the organism on two separate occasions from the stream, and on microscopic examination they both corresponded in all of their characteristics to *Leptomitius lacteus* as described by Pringsheim.

Figure 2 is a photograph of Table XXV from the *Jahrbuch. f. w. Botanik* showing the excellent drawings of the fungus by Pringsheim. The description at the bottom of the figure describes the plate in detail. The granular protoplasm of the hyphæ is well shown, and the nodes or constrictions are also seen at fairly regular intervals. The round, clear nuclei are usually placed near these constrictions, and the drawing also shows the true dichotomous branching of the mycelium. The spores singly, or in swarms, are clearly depicted, and the beginning of new hyphæ can be seen originating from the single spores. A few of these spores also show cilia, and Pringsheim described active motility of these spores. Figure 3 shows a photograph of the gross specimen as it appears when taken from the stream. The shaggy, coarse appearance of the threads resembles a bushy mass of hair. The specimen when fresh had a most penetrating, offensive odor, and this is still present after having remained about a year in formaldehyd solution.

Figure 4 is a photomicrograph of the fungus under the low power. A long central stem is seen from which smaller branches grow. These again branch into many terminal filaments. Figure 5 is a photomicrograph of a stained specimen.

The fungus was simply dried on a slide and stained by hematoxylin and it shows dichotomous branchings of the end branches, and also contains large clear areas without any granular protoplasm. Figure 6 shows the many branching end filaments when photographed from a fresh specimen. Some of these end hyphæ are said to separate from the rest by transverse fission, and form sporangia. The spores form in these sporangia, and later free themselves and become spore-swarms. Figure 7 shows two groups of three spores each. They are rather oval in shape, and contain coarsely granular protoplasm. Figure 8 shows individual hyphæ under the high power. Granular protoplasm alternates with clear areas, and the clear nucleus of one of the hyphæ appears adjacent to one of the constrictions.

From what has gone before we have concluded that the fungus corresponds in its properties with that described as *Leptomitius lacteus* by Pringsheim.

## Clinical Notes

### A NEW METHOD OF TAKING X-RAY PICTURES

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The object of this paper is to demonstrate what I believe to be an entirely new method of taking x-ray pictures, the result of this process being to overcome the density. In this new method, as the illustrations show, two tubes or even three are used in the apparatus at the same time, one tube being placed above the subject in the usual manner, while the other tube or tubes, which we will call auxiliaries, are placed at a different angle.

An attachment is placed at the side of the subject, which for want of a better name I call a "cut off" or secondary diaphragm, which is placed one-half way or less, on one or both sides of the trunk or head, either posteriorly or anteroposteriorly, and the tube or tubes are so placed that the anode is exactly centered in the middle of the diaphragm, so that when the side tube or tubes are excited they will penetrate or throw rays laterally. Thus the auxiliary tube or tubes strike the subject midway of the trunk or head, by which means that portion is penetrated by the auxiliary tubes and offers less resistance to the tube placed above in the usual manner, the latter penetrating the part nearest the sensitized plate.

It is better to use a compression diaphragm or other apparatus, and especially a tube box that will condense the rays of all the tubes, so that the so-called S rays are cut off.

In this method a good many disappointments will accrue in the preliminary trials. It will be necessary to use two exciting apparatus, as I find it impossible to excite two tubes satisfactorily with

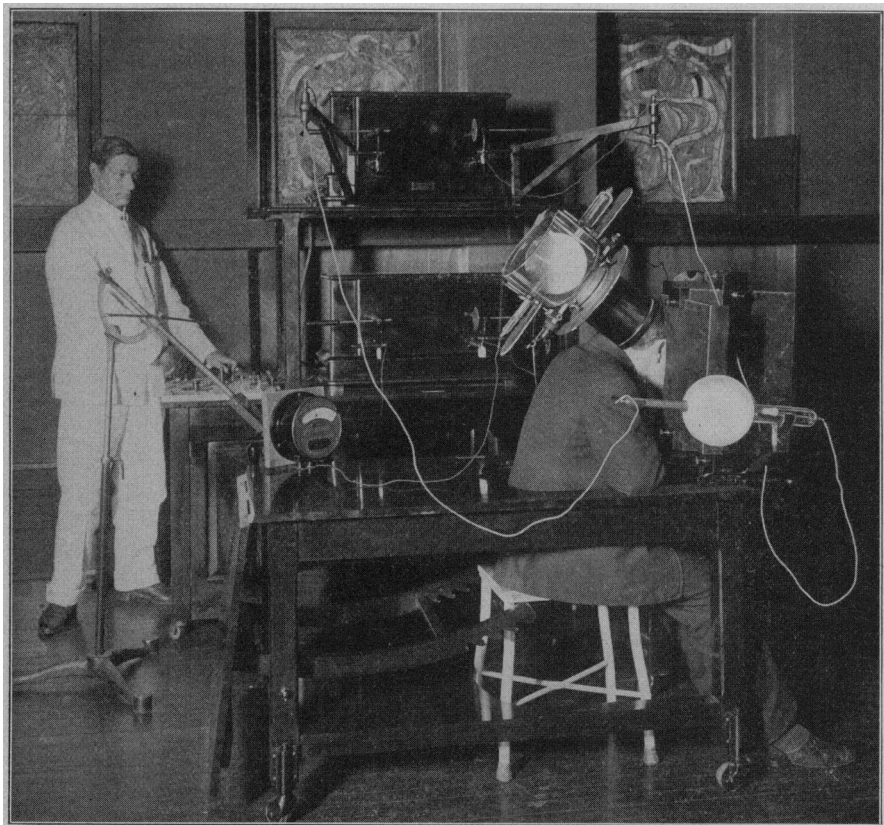


Fig. 1.—A new apparatus for reducing density, showing the working parts: the tube above takes the picture while the rays from the tube on the side passing through the subject in an oblique manner, allow the rays from the upper tube to pass more readily, thus giving greater intensity. An antero-posterior skiagraph of the head is being taken.

one coil in series or in parallel; therefore it will be better to use two coils of equal spark gap and connected in series with one multiple pointed interrupter. Again, it will depend on the density of the subject as to whether the principal or picture-taking tube or the auxiliary tubes shall be of the same or different vacuum. In a person of gross adipose tissue I use the auxiliary tube of very high vacuum, the top tube medium. For

head work, two tubes of medium vacuum will give the best results. But no rule or hard and fast law can be laid down. When once the radiologist has mastered this method of using two or three tubes on the same subject the results and the beauty of his negatives will more than compensate him for additional expense and labor, for the soft tissue skiagraph is of the greatest value, bone work taking a very secondary place.



Fig. 2.—Method of taking a trunk skiagraph in posterior position, the second tube being placed at the side of the patient, thus reducing the density of the abdomen or pelvic region.

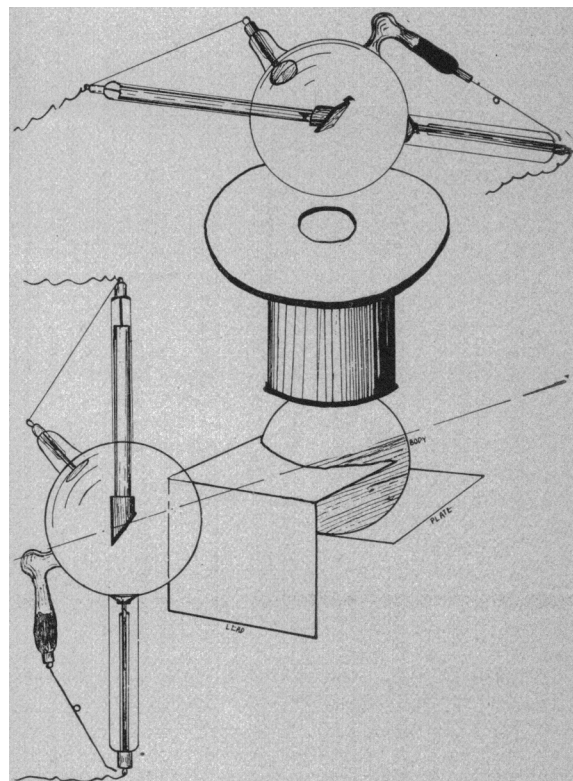


Fig. 3.—Arrangement of tubes, body and plate in improved skiagraphic method.



Fig. 4.—Skiagram of skull taken by new method. Note that left side of the face appears prominently while shadows from right side are exceedingly faint and hardly discernible.

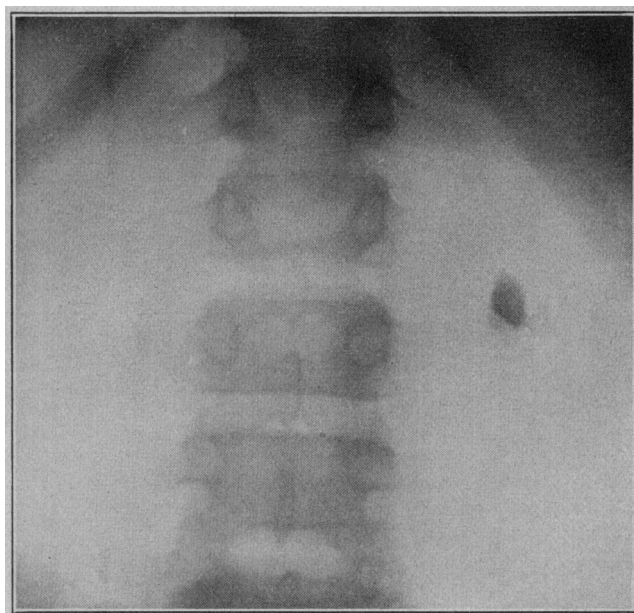


Fig. 5.—Skiagram of renal calculi taken in three seconds by new method.