advised, and the patient consented to the loss of the testicle if necessary.

Operation with general anesthesia. The incision was made over the tumor as for hernia. Carrying the dissection through the skin, the subcutaneous tissue was found very edematous. Lying on the external oblique fascia about one cm. outside of the ring was what appeared to be a small testis. An enlarged and porky cord extended from this, and at the external ring was acutely flexed. The testicle was atrophied to such an extent and the cord so short that no attempt to replace it in the scrotum was made. The external oblique fascia was split to the internal ring. Then the indurated cord was tied off as high as possible with catgut and the fascia caught together with interrupted stitches of the same material, a small gauze drain being left in the inguinal canal. Skin closed in the usual way. Dry dressing. After the operation the patient had a very comfortable night, and by morning the temperature had dropped to normal, with the disappearance of all symptoms. The wick was removed on the second day, and the wound healed practically by first intention. Patient was discharged on the eighteenth day.

The specimen removed at operation was examined by Dr. James H. Wright of the clinicopathological laboratory of the hospital, and his report is as follows:

The specimen sent for examination consists of an epididymis without any apparent testicular substance. It is surrounded by what appears to be a thickened tunica vaginalis. Perhaps 1.5 cm. of spermatic cord is present. On longitudinal sections made through the epididymis, the interstitial tissue appears to be increased in amount and the color of the cut surface is dark red with a number of grayish walled tubules showing, which are filled with a yellowish semi-solid material or with thick opaque white fluid.

Microscopical examination of cover-glass preparations from the material in the tubules, stained by Gram's method and afterwards with Bismarck brown, shows a small number of brown-stained diplococci, like gonococci in size and shape, situated both within and outside of the pus cells, which are numerous. In cultures on hydrocele agar from the contents of the tubules above described there developed a variable number of colonies, grayish white and pearly in appearance, and of rounded outline, the larger of which attained a diameter of about 2 mm. after about forty-eight hours in the incubator. These were composed of Gram decolorizing diplococci, sometimes appearing as tetrads and resembling gonococci. Further study of these cocci in subcultures resulted as follows: They do not grow upon plain agar (reaction + 1.7). In one tube, upon which a considerable quantity of material was sown, two or three colonies developed, but several other plain agar tubes inoculated parallel with the hydrocele agar cultures showed no growth after forty-eight hours. The colonies on the hydrocele agar appear as rounded, translucent, pearly disks attaining the diameter of about 2 mm. in some instances.

On dry hydrocele agar the growth has a viscid consistency, stringing out when touched with a platinum needle. Under a low magnifying power the colonies appear as translucent disks with smooth, rounded outlines, showing in their central portions small brownish granular masses irregularly distributed. The coccus decolorizes by Gram, and shows a tendency to grow in the form of tetrads. In a culture about forty-eight hours old the cocci show marked involution forms and degeneration. The organism in this case is clearly the gonococcus.

Microscopical examination of hardened sections taken from different places in the specimen shows the larger tubules to be filled with pus, while some of the smaller tubules are not so affected. The epithelium of the tub-

ules containing pus is for the most part absent, and there is in some instances purulent infiltration and degeneration of the surrounding tissue. In some tubules diplococci like gonococci are present inside the pus cells. The interstitial tissue shows marked infiltration with fibrin, and moderate infiltration with leucocytes and other inflammatory cells.

The blood vessels are dilated and gorged with red blood cells.

In cross section of the spermatic cord, the lumen of the vas deferens contains pus and the epithelium lining it is absent and disintegrated. In the pus, diplococci like gonococci are observed in small numbers. There is some infiltration of the substance of the cord with inflammatory cells together with fibrin. No proper testicular substance is apparent in the sections.

We have to do, then, with a case of epididymitis without abscess formation, the usual clinical condition. The gonococcus clearly was the infecting agent in this case, and it seems to me that the only reasonable ground to take is that it is the micro-organism concerned in all cases of epididymitis with gonorrheal urethritis, possibly rarely associated with a mixed infection. Why the smaller tubules were not generally involved it is hard to explain unless they represent more distant portions of the vasa efferentia beyond the limits of the process. This specimen must, I think, add materially to the evidence that epididymitis is due to the presence of the gonococcus in the epididymis, and is not due to the absorption of toxin from the urethra or to the primary infection of other micro-organisms. Clinically the differentiation from the other possibilities of acute inflammation, as adenitis, incarcerated or partially strangulated hernia, is not without interest.

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THE NERNST LAMP FOR THE PRODUCTION OF ETHER WAVES FOR USE IN THERAPEUTICS.

BY WILLIAM ROLLINS, BOSTON.

ETHER waves from two forms of electric lamps are now used extensively in therapeutics in Europe and to a less extent in America. Where short ether waves are required the arc is the more suitable, as the temperature is higher, making the proportion of short waves greater; and having no glass covering like the incandescent lamp there is no absorption from this source. Glass absorbs practically all the

waves shorter than 300 mμ., as does the atmosphere those given out by the sun. During the past year I have made experiments with Prof. Walter Nernst's lamp, in which a rod containing a preparation of zirconia is heated by an electric current. This like the arc requires no glass covering, though it is supplied with one. Loss of short waves is therefore avoided. The light is well suited for use in therapeutic cabinets in which an even distribution of radiant energy is desired and obtained by using many incandescent bulbs — over ninety in one of Dr. Kellogg's. A second advantage over incandescent bulbs is that the consumption of current for the same number of light waves is greater, less of the current being converted into the longer heat waves. I do not expect the Nernst lamp will supersede the older forms for therapeutic purposes, but it is certain to have a place of its own. Ether waves are now so much used in medicine that it seems desirable to have some general term under which all the forms, such as x-light, ultra violet light, actinic light, ordinary white light, red light, heat and electric waves, can be grouped. I am in the habit of using the term "ether therapeutics" for this purpose, and suggest it to others as a broad though definite term.

Clinical Department.

A CASE OF MALIGNANT ENDOCARDITIS WITH MENINGITIS, PNEUMOCOCCUS INFECTION.

BY L. C. MILLER, M. D., WORCESTER, MASS.

In spite of Broadbent's protest against the use of the term "malignant," as applied to endocarditis instead of "infective," I have preferred it in this case for the reason that it illustrates the fact that malignant endocarditis is usually fatal.

REPORT OF CASE.

Mrs. W., sixty-one years old, widow, hospital matron.

Family history. — Father killed in accident; mother died of consumption; brother of Bright's disease.

Previous history. — She has had more or less articular rheumatism for years. Last spring she had what was called "grippe," accompanied by a nasal discharge. She never permitted an examination of the nose, but Dr. Getchell, from her description of the symptoms, considered that she had disease of either the frontal or ethmoidal sinuses, probably the frontal.

During the above illness a soft systolic murmur was found at the apex of the heart, and a mitral lesion diagnosed.

Recently she has complained of trouble in her head. Some time (a week or two) before her present illness she fell on the ice and struck her head a severe blow. At about the same time, whether before or after it is impossible to determine, she had an attack of dizziness, followed by confusion of mind resembling aphasia. This lasted five or six hours. About four weeks before death she nearly fainted in church.

Present illness. — Feb. 6, about midnight, she had a severe chill, with nausea and retching but no vomiting. The remainder of the night she had chills or chilly sensations. The next morning she felt some nausea. The temperature was not taken.

For three days she remained in bed without improvement.

I saw her first Feb. 9. She complained of a cough and of some mental confusion (feeling stupid, and not being able to finish a sentence). She did not complain of pain or refer her illness to any particular part of her body.

She seemed cheerful, laughed and joked as was her wont, but was evidently anxious about herself. She looked whiter than usual.

Physical examination. — The joints of her hands were much enlarged and thickened. Her pulse was 70', full and regular; the radial arteries slightly atheromatous. (Her pulse was normally from 50' to 55'.) Respiration 20', regular and easy.

CLINICAL CHART.

Chest, lungs. — The right side was negative. On left side, below, especially behind, there was a slight dullness with slightly diminished respiratory sounds.

Heart. — The apex beat was felt in the fifth interspace in the mammary line. Percussion showed no enlargement of the cardiac area. There was a soft systolic murmur, most marked at the apex, much less so at the base. Accentuation of the pulmonic second sound was doubtful. The aortic second sound was more accentuated than the patient's age would account for. The systolic mur-