voidable they should not be continued long without change.

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PYRONIN - METHYL GREEN: A BRILLIANT DOUBLE STAIN FOR CELLS AND BACTERIA.

BY WILLIAM F. WHITNEY, M.D., BOSTON.

THE staining properties of a combination of pyronin (a basic red aniline) and methyl green were first brought forward by Pappenheim in his work on plasma cells; but he did not emphasize its great general utility, and it is to this especially that I desire to call attention. For the brilliant contrasts which are obtained in specimens stained by it in the simplest way make it of the greatest value for the examination of fresh isolated cells and of smears of sputa, pus and other fluids.

The method of preparation and use is as follows: A 1% solution of pyronin and methyl green¹ in distilled water are made separately, and mixed in the proportion of four parts of the former (red) to one part of the latter (green). The resulting rather opaque, deep purplish fluid will keep for several weeks without precipitating. If, however, only occasional use is required, as in office practice, the solutions are best kept in separate bottles, and a little of the mixture can be quickly made with a dropper.

Cover-glass preparations.—A drop of the fluid to be examined (gonorrheal pus, for example, gives a very brilliant picture) is spread thinly in the usual way and dried; on this a few drops of the color are placed; it is heated for a few seconds and washed off thoroughly with water. The cover glass can then be mounted directly on a slide in a drop of water, or, preferably, after drying, in xylol balsam.

On examination with a high dry, or better with an oil immersion lens, it will be seen that the nuclei of the cells are bluish green, the bodies of the neutrophilic leucocytes are unstained, while those of the lymphocytes, mast cells, endothelial and epithelial cells have varying shades of purple by which they can be readily distinguished from each other. Against all of these any bacteria stand out in sharp contrast by their brilliant red color. The effect of the whole picture is heightened by the transparent background, which is perfectly colorless if the preparation has been properly washed.

This stain does not touch the red corpuscles, and if it is desired to bring them out or use it for the examination of blood, the smear must be treated first either by the Ehrlich heating, ether-alcohol, methyl-alcohol or Zenker-nitric method for fixing the hemoglobin. Then it is to be colored with a 1% aqueous solution of orange G, well washed, and lastly covered with the pyronin-green mixture. In this way the red corpuscles are of a light yellow

color, and reddish granules appear in the orange-colored cytoplasm of the polynuclear leucocytes.

The 1% solution of pyronin can be used alone as a good counter stain after Gram's method by simply allowing it to remain on the decolorized preparation for a minute or two. The bacteria, which have been decolorized, take up the red, and thus come into vivid contrast to those which have retained the original violet.

Fresh preparations.—For the examination of fresh cells (scrapings from tumors, etc.) it is only necessary to add a drop of the mixture to the fluid or to the scrapings suspended in water. After thoroughly stirring about with the point of a needle, a cover glass is placed over the drop. The excess of fluid can be drawn off by placing a bit of filter paper carefully against one edge of the cover glass. After this the cells can be washed by bringing a drop of clear water against the edge opposite to the paper and allowing it to run through in the same way. Nucleus and cell body are stained differently, and the various kinds of cells can be readily distinguished from each other. All the nucleoli are prominent by their deep pyronin staining. The corpora amylacea of the prostate are colored a light brown.

Frozen sections.—A good double staining is given to frozen sections of tissues hardened in formalin, by placing them for a short time in a little of the fluid, and then washing in water. They can be mounted in glycerin, or syrupy levulose, but should be examined at once, as the color diffuses in a short time. Since alcohol extracts the color completely, permanent preparations are very difficult to be obtained. Pappenheim has given a complicated method with resorcin as a mordant, but it has not been a successful one in the hands of others.

In conclusion it should be remembered that if the slides and covers are scrupulously clean, the smears spread thin and evenly, turbid solutions filtered, and the diffused color thoroughly washed out, then the chances of a successful preparation are always greatly increased.

X-LIGHT IN ANTHROPOMETRICAL SIGNALMENT.

BY WILLIAM ROLLINS, BOSTON.

THE time will come when the law will require every person on reaching adult age to be signalized. Meanwhile we know from the researches of Bertillon and others that the anthropometrical department of signalment is the foundation of every valuable method of identifying criminals. Any procedure which will make these measures more exact must be valuable, for already the number of signalments is several hundred thousand in France alone. Every day the chances of making a mistake in identification become greater. The difficulty is not in the first separation, but in the last group, in which the measures are most alike. The ordinary measures taken are—height, length of trunk, reach, length of head, width of head, bizygomatic diameter, length of right ear, length of left foot, length of middle finger, length of left middle finger, length of left forearm. Of these measures it may be said

¹ Grubler's colors, obtained from Ernst Leitz, 411 West Fifty-ninth Street, New York, were used.